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Elementary Educators' Knowledge, Beliefs, and Planned and Implemented Practices for Digital Citizenship

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This is to certify that the doctoral dissertation by

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Abstract

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M Ed., University of Florida, 2007

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Proposal Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Limited research has focused on the knowledge, beliefs, and professional practices of elementary educators related to digital citizenship. The purpose of this study was to identify elementary educators' knowledge and beliefs about digital citizenship, as well as understand their plans and implemented practices, supports, and barriers related to digital citizenship instruction. This study was grounded in Mezirow's theory of transformative learning, Siemen's theory of connectivism, and Ribble's concept of digital citizenship. Descriptive statistics were used to analyze data collected from an original survey instrument developed from the literature by the researcher. Participants were recruited using publicly accessible email addresses and the monthly newsletter from Hawaii Society for Technology Education; a total of 74 educators completed the survey. All educators in the district who met the demographic criteria of working at the elementary level as a teacher, curriculum coordinator, or technology coordinator were welcome to participate in the study. Data were analyzed for frequencies and percentages to develop generalized statements about the population. The results indicated, on average, that educators rated themselves with high knowledge and beliefs about digital citizenship concepts with the exception of digital law. Additionally, correlational analysis revealed schools with greater adoption rates of 1:1 technology-device integration had a significant impact on professional practices in digital citizenship implementation and overall instructional practices. This research study contributes to positive social change by helping educational leaders identify what is needed to support educators in teaching with digital citizenship, and especially in supporting those educators in schools which are further behind in adopting 1:1 technology integration.

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Dedication

I dedicate this study to elementary educators across the world who are making a difference the best they can, every day.

Acknowledgments

First and foremost, I would like to thank my husband, who saw me through every frustration, moment of writer's block, shouts of joy, and all other emotions that comes along with writing a dissertation. You were my rock, my ears, my battle warrior, and my cheerleader. I couldn't have done it without you Babe! I would like to thank my parents for the encouragement and my sister for the rivalry and reinforcement as we both worked toward this scholarly recognition.

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Chapter 1: Introduction to the Study

Increased integration of technology in the K–12 educational arena has enabled schools to adopt new instructional practices to support 21st-century learning. Twenty-first-century learning can be defined as specific learning skills that are central to digital literacy and promote the collaboration, problem solving, and critical thinking necessary for success in a technologically dependent world (Rich, 2011). Digital literacy is only one aspect of digital citizenship, which creates a framework for the way individuals interact in situations online and in person. In this study, I described what patterns exist for educator knowledge, beliefs, and planned and implemented practices for digital citizenship. Digital citizenship can be defined as the appropriate, ethical, and responsible use of technology (Gazi, 2016; Hawai'i State Department of Education [HIDOE], n.d.c; Hobbs & Jensen, 2009; Impero Software, 2016; Ohler, 2011; Ribble, 2011, 2015, 2017; Ribble & Bailey, 2007; Ribble & Miller, 2013).

With increased access and use of technology in school and home environments, students are using technology more than ever before. Elementary-aged children and younger children now have access to mobile devices and, therefore, need to be taught safe behaviors for Internet use (Shillair et al., 2015). Without proper education or guidance, students may fall prey to poor habits that could put them in danger of breaking laws or participating in negative postings, ultimately impacting their futures. Researchers have demonstrated ways students and adults misuse technology and the gaps of knowledge they possess about specific methods to use technology appropriately (Davis, Katz, Santo, & James, 2010; Farmer, 2011; Sincar, 2013). Educational institutions must become more aware of actions of misuse (Ribble & Miller, 2013) and begin to address

issues with an emphasis on what students and educators should be doing as young as elementary school age (Gazi, 2016; Martens & Hobbs, 2015; Ohler, 2011, 2012; Oyedemi, 2015; Ribble, 2015). Educators should be incorporating digital citizenship in their instruction with technology to prepare students to make appropriate, responsible, and ethical decisions when using technology in their future. Therefore, results of this study contributes to the body of knowledge by identifying what elementary educators know, believe, plan, and implement in their instructional practices with respect to digital citizenship. Results from the study contributes to social change by helping educational leaders identify specifically how to support educators in teaching with digital citizenship and also supports in the creation of policies that could be used to handle issues of technology misuse.

Chapter 1 follows with background information, a problem statement, purpose of the study, research questions, a general overview of the theoretical and conceptual frameworks, details about the nature of the study, assumptions, study scope and delimitations, limitations, and the significance of the study. The chapter also includes definitions of specific terminology used throughout the dissertation.

Background

In 2010, Global Scan and British Broadcasting Channel World Services conducted an Internet poll of 27,000 adults from nearly 26 countries and found that 87% of participants believed Internet access should be a fundamental right afforded to all people (British Broadcasting Channel, 2010). In 2013, the National Center for Education Statistics reported that 71% of the U.S. population over the age of 3 had access and regularly used the Internet (U.S. Department of Education, n.d.). The United Nations

Educational, Scientific, and Cultural Organization (2013) highlighted the idea that 21st-century curriculum should focus on more than merely critical thinking and problem-solving skills. The curriculum should also include skills for work in a technological environment including an awareness of ethical and responsible behavior, working to develop learners who will produce an inclusive, equitable society for future generations (United Nations Educational, Scientific, and Cultural Organization, 2013). As published by the Nation's Report Card, the National Assessment of Educational Progress (NAEP) administered a Technology and Engineering Literacy examination in 2014 to eighth-grade students around the United States; demographic results reported 50% of students were asked to use digital media at least monthly to complete school work.

In contrast, NAEP revealed 87% of students reported they regularly figured out how to solve technology problems and fix technology on their own, outside of school (The Nation's Report Card, 2014). Furthermore, The Nation's Report Card released results from a survey administered in conjunction with NAEP's mathematics and reading assessments in 2015 to understand fourth, eighth, and 12th grade students' computer access and use. Results reveled only about 17% of students did not have access to computers at home and more than 90% of students had access to computers at school (The Nation's Report Card, n.d.). Additionally, fourth-grade teachers reported that their use of computers to enhance instruction, specifically in mathematics, had increased by 20% when compared to results from the 2009 survey (The Nation's Report Card, n.d.).

Lastly, Common Sense Media (2016) conducted a census survey of U.S. adolescents and preadolescents, which revealed they spent from 5 to 9 hours a day participating in social media interactions. The extensive length of time accessing and

engaging in social media could be considered an unhealthy addiction (Common Sense Media, 2016).

Internet Crimes, Laws, and Policies

The Federal Bureau of Investigation's (FBI) Internet Crime Complaint Center (IC3) 2015 Internet Crime Report indicated cybercrimes had increased by nearly 25,000 reported cases since 2013 (U.S. Department of Justice, 2015). Of the more than 288,000 reported cybercrimes, 4,812 reported harassment/threats of violence, and 19,967 reported crimes were in some way associated with social media (U.S. Department of Justice, 2015). Additionally, news reports continued to surface about cyberbullying and the use of social media, especially among adolescents (Ribble & Miller, 2013). Some states, such as California, created laws that allowed schools to expel students who engage in cyberbullying in and outside of school hours (Kohli, 2016).

In 2012, the Canadian nonprofit organization for digital and media literacy, MediaSmarts, published the third edition of a national survey to determine teacher, parent, and student beliefs and knowledge related to technology use. Results showed teachers believed that to maximize the benefits of technology use, students needed to be taught to use technology across the curriculum. Teachers thought they needed to provide instruction which encouraged students to take responsibility for their actions and develop lifelong skills for working and collaborating with others in school and in the community as a whole to become citizens (Media Awareness Organization, 2012).

Developing Standards for Digital Citizenship

Ribble and Bailey (2007) popularized the term *digital citizenship,* which is the societal view of the appropriate and responsible use of technology. Ribble identified nine

elements of digital citizenship: digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibilities, digital health and well-being, and digital security (2011). These nine elements establish the basis for providing students with instruction that helps them navigate the online world more effectively and develop into ethical and responsible users of technology. Technology instruction should predominantly focus on helping the younger generation build a sense of responsibility related to technology use at personal, local, and global levels (Ohler, 2011).

In 2016, the International Society for Technology in Education (ISTE) released revamped technology instructional standards for K–12 students which included an entire standard devoted to digital citizenship (Snelling, 2016). ISTE's rationale for redeveloping curriculum standards was to create standards better aligned with the changing world of interconnectedness (Snelling, 2016). The standards eliminated focus on what skills students possess (digital literacy) and placed greater emphasis on what students will become as result of the changing education infrastructures of the world (Sykora, as cited in Snelling, 2016). Refreshed standards are necessary to promote the changing connectedness of the world as a result of technology development (Stoeckl, 2016). As the world has advanced and globalization has become more widespread, the ability to be a citizen is not limited to only the local community, state, or country of nationality or residency. Citizenship now encompasses the entire world through access to the Internet; therefore, the act of being a citizen requires certain mutually agreed behaviors that benefit the community and society as a whole (Stoeckl, 2016). ISTE (2017) hoped the standards

would empower teachers and students to take responsibility for being members of the globalized world.

Of the previously six instructional strands found in the 2007 ISTE student standards, digital citizenship was retained and included in the seven strands of the 2016 standards (ISTE, 2018a). As found on ISTE's (2018a) website, Student Standard 2 includes four indicators:

- Students will create and maintain a "digital identity" and become aware of the permanence of their interactions online.
- Students will have "positive, safe, legal, and ethical" action online and in networked technologies.
- Students know the rights and respect obligations of "using and sharing intellectual property."
- Students learn about how their online activity can be tracked and take precautions to keep their digital property private and safe.

The reasoning behind the inclusion of digital citizenship was to ensure students would be able to grasp what it means to be a citizen, not only in the physical world but also in the digital world. Students would be able to make informed decisions about their behavior online for personal, educational, and professional reasons (Snelling, 2016).

ISTE released updated standards for educators in 2017; these ISTE educator standards contained teacher-performance indicators to help educators promote technology use in education (Smith, 2017). The 2008 standards indicated educators should "promote and model digital citizenship and responsibility" (ISTE, 2007, p. 2). However, the refreshed standards emphasized educators' power in shaping learning through the use of

technology (Smith, 2017). According to Richard Culatta, CEO of ISTE (as cited by Smith, 2017, para 7), "The ISTE Standards for Educators set the vision for how educators can use technology to create next-generation learning environments."

Educators' standards comprise seven key points, with citizenship listed as Number 3. As published on ISTE's website under the citizenship standard, it states, "Educators inspire students to positively contribute to and responsibly participate in the digital world" (ISTE, 2018b, para 3). The standard contains four indicators that emphasize educators modeling, promoting, and establishing learning opportunities for students to build online relationships and communities, develop a sense of curiosity, understanding of digital literacy and critical research, ethical use of technology, and the importance of safe and secure practices for technology specific to one's own digital identity (ISTE, 2017).

Technology Infrastructure Development for K–12 Education

In the last several years, the availability and use of technology and mobile learning devices in U.S. classrooms have become increasingly widespread as a result of educational funding sources such as the eRate program, which provides affordable broadband to schools and libraries (Federal Communications Commission, 2016). Additionally, many schools have adopted technology policies and infrastructures such as shared laptop and tablet carts, Bring Your Own Technology or Device, or 1:1 mobile device for students. Many schools and districts have implemented technology initiatives without the foresight to plan for the potential of technology-related issues (Ribble, 2015). Educators, administrators, parents, and community leaders did not foresee problems such

as cyberbullying, sexting, plagiarism, identity theft, and physical health issues from technology use. News reports and social media have documented examples of poor technology use and overall social judgment (Acedo & Hughes, 2014; Ribble, 2015). Additionally, overly zealous social-media postings and online gaming blur the lines between *real life* and *online life,* making technology addiction more prevalent among this generation of students. Educational professionals should be modeling appropriate online behavior through their personal practices and online presence (ISTE, 2018a Lowenthal, Dunlap, & Stitson, 2016). Initiatives and programs are being developed on a national level to increase technology access and use for K–12 students; yet, limited research exists about what elementary educators know and believe about digital citizenship and what they plan for and implement into their instructional practice.

Context of the Study

An example of national initiatives and programming for technology access at the K–12 level is the Future Ready Schools initiative: a nationwide pledge of superintendents to make policy and infrastructure changes to support digital learning and student success in their school districts (Alliance for Excellent Education, n.d.). The HIDOE, along with many other school districts across the nation, submitted a Future Ready Pledge through Future Ready Schools to the U.S. Secretary of Education. HIDOE committed to "fostering and leading a culture of digital learning within our schools...to teach students to become responsible, engaged, and contributing digital citizens" (2014, p.2). Additionally, in 2014, HIDOE drafted a Future Ready Learning Plan to have comprehensive technology plans throughout the state that promoted 21st-century technology empowerment, training, and use by 2019.

Unlike other states that have many school districts under the umbrella of the state's department of education, Hawaii is a single unified school district across seven islands. In states with many districts, inconsistency in programming, infrastructure, funding, and resourcing may exist because districts can make decisions unique to their population of students and teachers. Hawaii is similar because being unified does not necessarily mean consistency exists across the statewide district. However, to address inconsistency and a commitment to become future ready, the district has made a long-term goal to implement 1:1 technology-device infrastructure for students in all K–12 schools (HIDOE, n.d.b). Furthermore, the 2017–2020 HIDOE strategic plan focuses on Hawaii-specific outcomes to prepare students for local and global leadership. Developing quality digital citizenship skills and practices can help people become better global citizens. The strategic plan identified that the state must "ensure graduates demonstrate the general learner outcomes and have … habits … to achieve aspirations" (HIDOE, 2016, p.7). The development of good digital citizenship skills at younger ages can support students in maintaining appropriate online habits to be successful in future endeavors.

As a result of the Future Ready and Strategic plan for 2017–2020, elementary, middle/intermediate, and high schools throughout the state are in various phases of implementation with technology devices. Furthermore, as technology-device access increases, the expectation to use technology regularly in classrooms rises. Additionally, along with technology-device increase comes expectations for how individuals will learn to use technology to be equipped to work in the 21st century. Finally, the Hawaii Future

Ready Pledge and Learning Plan indicates a commitment to providing educators with the training necessary to support student learning.

In this study, I aimed to identify patterns and trends among elementary educators in Hawaii related to digital citizenship instruction. With this information, leaders can plan appropriate professional development to support any gaps that may exist in preparing educators to instruct students to use technology effectively and efficiently. Additionally, this study was aligned with the strategic plan to strengthen infrastructure for teacher professional development and training by providing a baseline for what teachers know, believe, and are already doing in their classroom or professional roles. Results of this study could support HIDOE in deciding what training is necessary to support learning specific to appropriate, ethical, and responsible technology use for educators. By surveying elementary educators, an understanding of what is happening across the state can better paint a picture of any potential gaps, so leaders can address them through proper training or programming. Additionally, because I aimed to reach educators across the state, this study was used to provide a glimpse of what is and is not consistent from island to island, so educators can target professional development and training to meet the specific needs of regions in the state.

Problem Statement

Although the concept of digital citizenship has been recognized since the early 2000s, curriculum programs for digital use have not provided teachers or students with enough knowledge for interactions in the online world (Ribble, 2015). Currently, minimal research has focused on elementary educators' knowledge, beliefs, and planned and implemented practices of digital citizenship. This problem is significant in the discipline

because it aligns with initiatives and programming which support the use of technology at all levels of education, and especially elementary, which is positive. However, the lack of study about knowledge, beliefs, and professional practices can lead to greater problems in the future, as students develop poor habits for technology use as a result of lack of training in their developmental years.

Chapter 2 will provide an explanation of what is known in scholarly literature about digital citizenship instruction and educator knowledge and beliefs about technology instruction; however, extant research has focused on specific elements of digital citizenship and provided minimal research on the overall concept (Baumann, 2016; Klinger, 2016; Snyder, 2016; Suppo, 2013). The problem that I addressed in this study was the deficit in knowledge about what elementary educators know about digital citizenship, what they believe about digital citizenship, what they plan and implement for digital citizenship instruction, and what factors support or impede them in implementing digital citizenship instruction.

Purpose Statement

The purpose of this quantitative survey study was to describe patterns of Hawaii public school elementary educators' knowledge and beliefs about digital citizenship and their planned and implemented practices for a digital citizenship instruction. The secondary purpose of this study was to develop the survey tool, the *Survey of Digital Citizenship* (SDC), to assess educators' knowledge, beliefs, and professional practice on digital citizenship. Researchers in the fields of education and psychology can use the *Standards for Educational and Psychological Testing* published by the American Educational Research Association, American Psychological Association, and National

Council on Measurement in Education (1999) as guides in the development of original instruments for research. The standards serve as "definitive, technical, and operational … for all forms of assessments that are professionally developed and used in a variety of ways" (Camara, 2014 via Doğan, 2016, p. 2).

Additionally, a formative evaluation process can support the design and development to collect data to determine the validity of tools (Dick, Carey, & Carey, 2014). I used a quantitative research method with an original survey tool, the SDC, to collect data from elementary teachers, curriculum coordinators, and technology coordinators about knowledge, beliefs, planned, and implemented practices for digital citizenship. Using a formative-evaluation process, I established evidence of content and response process validity of the SDC.

Research Questions

Because this study relied on descriptive statistics, I tested no statistical hypotheses. The variables in this study are not independent or dependent, and the study only reported descriptive statistics of each variable. I described relationships between variables based on patterns which emerged from educators' responses. Because the variables of interest are likely to interrelate, Question 5 provided information about what trends exist in the relationships between the variables. A more thorough explanation and rationale for only presenting research questions can be found in Chapter 3.

Research Question 1 (RQ1): What are elementary educators' knowledge and skill levels of digital citizenship?

Research Question 2 (RQ2): What level of beliefs about digital citizenship do elementary educators use in their instructional practices?

Research Question 3 (RQ3): To what degree do elementary educators plan to implement digital citizenship in their curriculum?

Research Question 4 (RQ4): To what degree do elementary educators implement digital citizenship in their instructional practices?

Research Question 5 (RQ5): What factors support or impede elementary educators' ability to plan and implement digital citizenship?

Theoretical and Conceptual Frameworks

I used two theoretical frameworks: Mezirow's theory of transformational learning (1994) and Siemens' theory of connectivism (2005), and one conceptual framework: Ribble's nine elements of digital citizenship (2011). Digital citizenship provided a structure, as it has become the cornerstone to analyze and measure teacher perceptions regarding technology and teaching. Many authors referenced digital citizenship when discussing issues related to appropriate technology use by students in and outside of school, as well instructional practices designed to prepare students to work in the 21st century.

Mezirow's (1997) theory describes frames of references for adult learners, which are ways in which knowledge affects change based on individuals' habits of mind and points of view. A component of this theory is the idea of autonomous thinking, showing citizenship and making moral decisions, which directly relates to the definition of digital citizenship. In this study, I used RQ1 and RQ2 to address frame of reference, established by determining what educators knew and believed about the concept of digital citizenship. Chapter 2 includes a more comprehensive examination of the major components of transformative learning.

Ribble's (2011) nine elements of digital citizenship included elements to probe the phenomena of digital citizenship knowledge, beliefs, and instructional practices. According to Ribble (2015), "Digital citizenship aims to teach everyone (not just children) what technology users must understand to use digital technologies effectively and appropriately" (p. 15). Ribble (2015) intended the nine elements to provide for an "understanding of the complexity of digital citizenship and issues of technology use, abuse, and misuse" (p. 15). Furthermore, the nine elements are not a specific set of rules, but a concept to support technology users in making appropriate decisions when using technology and should serve as a place for educators to start when planning and implementing technology into curriculum and instruction. Chapter 2 includes a more detailed discussion of Ribble's nine elements.

Siemens' theory of connectivism, which combines tenets of behaviorism, cognitivism, and constructivism to recognize learning as actionable knowledge, supported Research Questions 3–5. Kop and Hill (2008) defined actionable knowledge as the "process of the learner connecting to and feeding information into a learning community" (p. 2). Based on the implications of connectivism, educators' learning-environment design enables them to better pass on the knowledge they possess. Additionally, connectivism promotes the idea learning is bidirectional and development in media resources which can support networked learning when the learner possesses the necessary skills to navigate, locate, identify credibility, and apply to the correct contexts (Kivunja, 2014).

From a connectivist perspective, teachers provide students with examples of the responsible and appropriate use of technology and address issues of unethical use of

technology. Connectivist teachers model appropriate technology behaviors for students (Thota, 2015). Therefore, a connectivist perspective provides a framework to understand what teachers plan in regard to digital citizenship, what they implement in their classrooms, and what supports or hinders their ability to plan or implement digital citizenship. Chapter 2 includes a more extensive discussion of the aspects of connectivism.

Nature of the Study

Quantitative survey study data was accrued from Hawaii public school elementary teachers, curriculum coordinators, and technology coordinators. Throughout this dissertation, the term *educators* refers to elementary teachers, curriculum coordinators, and technology coordinators. In this study, I attempted to describe patterns of educators' knowledge and beliefs about digital citizenship and their planned and implemented practices for digital citizenship. With permission from HIDOE, I shared the survey with educators through publicly accessible email addresses of elementary principals and curriculum and technology coordinators, who then forwarded to Listservs and faculty members meeting participation requirements. Additionally, the Hawaii Society for Technology Education (HSTE), a professional organization, shared the study through their monthly membership newsletter.

Lodico, Spaulding, and Voegtle (2006) and Creswell (2009) suggested using a survey instrument to collect data, enabling a researcher to gather data on opinions, beliefs, and perspectives related to specific phenomenon from a population. Because 209 elementary schools span seven islands, researchers can reach educators more effectively through quantitative research methods rather than other methods. Elementary (K–5/6)

schools in the HIDOE comprise a range of faculty sizes, depending on enrollment numbers, so school may have varying numbers of teachers at each grade level. Aside from Oahu, the most populated island, many islands have schools that combine elementary, intermediate (middle), and high school; however, the survey stated this study was specifically designed for those educators in the elementary division. A demographic question about professional responsibility reinforced the request for only elementary-educator participants. Data collection through a survey shared through email and administered online eliminated issues of geographic location and staff availability while also providing greater access to the population being examined. I analyzed data using descriptive statistics with reports of frequencies and percentages for survey items in order to describe patterns.

Definitions

21st-century learning: Specific learning skills that are central to digital literacy and promote collaboration, problem solving, and critical thinking that are necessary for success in a technologically dependent world (Rich, 2011).

Cyber ethics: Moral decisions about what is right and wrong in an Internet environment (Park, Na, & Kim, 2014; Pusey & Sadera, 2012).

Cyberbullying: A form of harassment that occurs in online environments (Farmer, 2011; Jones & Mitchell, 2015; Ribble & Miller, 2013).

Digital citizen: For this study, a digital citizen is an "effective and ethical user of technology" based on the general learner outcome #6 from Hawaii State Department of Education (HIDOE, n.d.c, para 8). This definition, more than other definitions, is important, because the population for my study was elementary educators working for

HIDOE who are expected to use rubrics and classroom evidence to score students on *general learner outcomes* (GLOs) and report student progress on a quarterly report card (HIDOE, n.d.c).

Digital citizenship: Appropriate, responsible, and ethical use of technology (Choi, 2016; Gazi, 2016; HIDOE, n.d.c; Curran, Ribble, & Ohler as cited by Impero Software, 2016; ISTE Connects, 2016; Mossberger, Tolbert, & McNeal, 2008; Ohler, 2011; Ribble, 2015). Chapter 2 provides context and comprehensive information about how this definition arose.

Ethics: Moral decisions about what is right and wrong in an individual's environment (James et al., 2010; Pardo & Siemens, 2014).

General learner outcome (GLO): "overarching goals of standards-based learning for all students in all grade levels" (HIDOE, n.d.c, para 1) used by HIDOE educators to assess student characteristics. Elementary teachers are required to address six GLOs in their instruction and provide a score on the report card. The focus of this study was specifically on GLO 6: "Effective and ethical user of technology" (HIDOE, n.d.c, para 8)

Ribble's nine elements of digital citizenship: Nine distinct topics outline the norms for technology use, including the appropriate and inappropriate use of technology. Educators can use these nine elements to plan and implement technology in the instructional curriculum (Ribble, 2015).

Web 2.0: Technology tools and skills are user-generated and collaborative in nature, allowing individuals to make connections with people, places, and concepts beyond the physical space of the classroom, thereby expanding students' ability to

understand on a deeper level of conceptualization (Choi, Glassman, & Cristol, 2017; Foroughi, 2015; Frydenberg & Andone, 2014; Kop & Hill, 2008; Thota, 2015).

Assumptions

In this study, I made a number of assumptions. I assumed:

1. Educators read the request for participation email or watched the introduction video and read the participant consent form and understood the context of the survey.
2. Educators were truthful to the best of their abilities in assessing their knowledge, beliefs, and professional practices.
3. Educators took time to read through each of the questions and answered them individually instead of merely clicking through a section or randomly selecting an answer.
4. Educators participated voluntarily and did not feel coerced into completing the survey.
5. Educators who participated in the survey represented a sufficient sample of the population spanning all seven islands.
6. Educators who participated in the survey represented a sufficient sample of the population spanning a variety of age ranges, years of professional teaching experience, and genders.
7. Educators who participated in the survey represented an accurate proportion of elementary teachers, curriculum coordinators, and technology coordinators, reflecting the actual population.

8. The analysis of survey results was free from researcher bias from experience working for HIDOE.
9. The survey tool was valid in content and design.

Study assumptions primarily relate to how educator participants responded to the questions in the survey as well as how the demographic information represents the actual population under examination. The choice to include demographic information allowed the research results to be generalized to the wider population, thereby permitting more explicit statements about what the data revealed about specific demographic groups (Hathaway, 1995).

Alternatively, Assumption 8 in the list above relates to researcher bias. This assumption was supported by using an anonymous survey. Because my experience working for HIDOE was only at one school on the most populated island, and the educators who participated in the study did not identify themselves personally, I had no way to persuade or influence former colleagues' responses. I did not know which were their responses or even if they participated. I applied empirical-analytical detachment to my inquiry, which allowed me to be sufficiently removed from the research results to avoid personal bias in my analysis (as suggested by Hathaway, 1995). Additionally, removing specific elements regarding particular schools, classrooms, or organizations allowed for the phenomenon being studied to be applicable to the overall population and not specific or in isolation to unique situations (as in Hathaway, 1995). In regard to Assumption 9, the use of a formative-evaluation process in the instrument development (explained in detail in Chapter 3) supported the validation of the instrument used to document the phenomenon for all educators across all demographic groups.

Scope and Delimitations

This research was limited to only elementary teachers, curriculum coordinators, and technology coordinators. The rationale behind using these participants pertained to their professional responsibilities in HIDOE. The curriculum coordinator meets with classroom teachers' multiple times in a grading quarter (decided by the school administration). They discuss instructional plans, evaluate student data, and make decisions for future instruction, giving curriculum coordinators knowledge about what classroom teachers plan and implement in their learning environments in curriculum and instruction.

Technology coordinators are responsible for all hardware and software a school purchases or uses, training of faculty on district-implemented programming, and ensuring the school follows state policy on technology integration. Some technology coordinators have additional teaching responsibilities related to providing technology lessons for all grade levels in the school. In these situations, technology coordinators communicate with grade-level teams to plan technology instruction specific and appropriate to those grade levels. However, they are also able to make instructional decisions based on their use of the Hawaii State Career and Technical Education Standards (Department of Education, State of Hawaii, 2005).

Finally, the elementary classroom teacher ultimately makes the decisions about the instruction given to students (Acedo & Hughes, 2014; Patesan & Bumbuc, 2010; William, 2011). Their knowledge and beliefs drive the pedagogy and support the end goals outlined by state standards (van Braak, Tondeur, & Valcke, 2004; Wilson, Scalise, & Gochyyev, 2014). In this study, I asked about the knowledge, beliefs, and professional

practices of educators responsible for instruction at the elementary level; therefore, I invited individuals in the above-mentioned roles to participate. I included a demographic question about their professional role to allow me to consider levels of knowledge and beliefs based on position, but also holistically, for instructing students. If I acquired a wide enough spread among educators in the three roles, or at least a representative ratio accurate to school staffing, where no more than one technology coordinator and one curriculum coordinator participated per school, I made statements of generalization based on professional roles.

Limitations

As explained in more detail in Chapter 3, the choice of using a quantitative rather than a qualitative methodology was due, in part, to wanting to include educators from schools across the entire state. The state comprises seven islands, and the time and cost of traveling to every elementary school in the state to conduct a qualitative study would not be feasible. Time and cost are considered acceptable factors when deciding on a design method (Hathaway, 1995).

A survey design offered some limitations to data collection; in this case, the main issue was the participant response rate. Suppo (2013) conducted a survey study on educator beliefs and professional practices for digital citizenship in the State of Pennsylvania, working to access all superintendents, technology coordinators, and curriculum coordinators in the entire state. Suppo closed the survey after 2 weeks due to lack of participant response. Three differences exist between Suppo's study and this study: (a) Pennsylvania is not a unified school district, (b) the state is significantly larger than Hawaii, and (c) Suppo focused on administrative roles only, which reduced

population numbers. I included some administrative roles along with classroom teachers, who make up the majority of school staffing.

I shared the study with school administrators, including a letter of permission from the superintendent of HIDOE. Under the guidelines of HIDOE's Research and Data Governance office, access to all employees meeting the population criteria is not permitted and only publicly accessible email addresses were permissible. All principal email addresses appear on the HIDOE homepage. Using publicly accessible email addresses, I asked school administrators to share the study with members of their staff who fit the criteria of classroom teacher, technology coordinator, or curriculum coordinator. I carefully considered the time of year in which I conducted the study to encourage a sufficient response rate. I conducted the survey during the third quarter of the school year, after the holidays and before state testing. This timeframe includes a relatively lower amount of additional responsibility that might interfere and cause educators to be unwilling to complete additional tasks or respond to external requests.

Finally, although I was an employee of HIDOE for more than 2 years, I used anonymous surveys to ensure I was not influenced by respondents' responses because of any professional or personal connection. Additionally, I only worked at one school in HIDOE, so my knowledge of technology infrastructure and teacher knowledge was only representative of that one school. I recognized the situation at my former place of employment was not necessarily true of all other schools. I discuss this issue at great length in the ethical procedures section of Chapter 3.

Significance

This study is unique because I attempted to draw data from the entire population of Hawaii public school elementary educators rather than merely a sample of the population. Information from this study may directly impact social change in Hawaii because it will provide education leaders with insight they can use to make informed decisions regarding policy and programming directly impacting the Future Ready Plan and State Strategic plan. Research results may also assist leaders with information they could use to develop programming that assists educators in addressing digital citizenship for students at the elementary school level. Educational leaders and administrators can use the information to design or provide appropriate staff development for educators on digital citizenship and implementation in the classroom.

This study may also provide valuable information to educational leaders in large, widespread districts in the United States, as well as to other school districts that have made a Future Ready Pledge. Schools are auditing their plans to ensure they meet the components they committed to when they pledged to be future ready. Finally, this study is significant because it begins to address a gap in the literature regarding elementary educators' beliefs and knowledge of digital citizenship, curriculum planning, and implementation of digital citizenship, and what supports or impedes their instruction with respect to students as 21st-century learners.

Summary

Digital citizenship is not merely a trend of technology development that will reach a point of exposure and then disappear; instead, digital citizenship is a concept that aligns with the way individuals live their lives in the ever-growing connectedness of the real and

online worlds (Ribble, 2015). Education continues to change to support more technology integration in classrooms from the earliest primary years through higher education. Students experience technology at home and at school more than previous generations. Developing into a person who is a user of technology that supports responsible decision making, appropriate choices, and ethical viewpoints supports a more positive world. Educators have a responsibility to support digital citizenship in their learning environments from the earliest years of education. Using a survey to collect data, I described patterns and trends among elementary educators for knowledge, belief, and professional practice in relationship to digital citizenship.

The information provided in this chapter presented the context for the study. It provided background information and outlined the problem from which this study took root. The chapter introduced the theoretical and conceptual frameworks, but Chapter 2 provides a more thorough examination of the frameworks. The chapter included definitions that are useful in understanding the information presented not only in Chapter 2 but throughout the remainder of the dissertation. The proceeding chapter will present a thorough examination of scholarly research and literature

Chapter 2: Literature Review

The purpose of this quantitative survey study was to describe patterns of Hawaii public school elementary educators' knowledge and beliefs about digital citizenship and their planned and implemented practices for digital citizenship instruction. As the 21st century has seen an increase in access to digital tools in classrooms, a need exists to go beyond schools' and districts' acceptable use policies (AUP). These AUPs outline the negative aspects of technology use and the legal ramifications associated with poor digital practices. Instead, educational institutions need to focus on the development of curriculum programming that highlights technology use for self-empowerment, creativity, collaboration, and academic purposes (Dotter, Hedges, & Parker, 2016). As human beings, the development and transformation of technology has impacted many aspects of everyday life, shaping people's lives as they learn to work with and through a growing dependence and need for technology (Gazi, 2016). Technology development has impacted education as well as industry and commerce, where students will eventually participate (Karal & Bakir, 2016). Educational institutions are key elements in ensuring students receive the necessary skills to participate appropriately and efficiently as citizens in the globalization of today and tomorrow's world (Engin & Sarsar, 2015; Gazi, 2016; Karal & Bakir, 2016).

Chapter 2 follows with an explanation of how I conducted a literature review, including databases accessed and keywords used. I provide an in-depth discussion of the two theoretical frameworks and the conceptual framework, including elaboration on key components of the nine elements of digital citizenship. The chapter includes an explanation of how the definition of digital citizenship developed, based on scholarly

literature. In this chapter, I discuss issues related to misuse of technology as well as policy and laws developed to address poor use of technology. Additionally, I identify extant research on digital citizenship knowledge and concepts. More topic areas included in this chapter are reviews of research focused on preservice teachers, students' ethical choices and actions for technology use, and evaluation of research on teachers' knowledge and beliefs on information and communication technology (ICT) in classroom instruction. A rationale for digital citizenship instruction in K–12 and an explanation of instrument development to assess digital citizenship knowledge complete the review.

Literature-Search Strategy

An assortment of scholarly journals and articles supported a review of literature for the present study. I emphasized peer-reviewed sources dated within 5 years of the completion of this study. Some sources are older than 5 years, due to the nature of the topic and the initial hype of digital citizenship as a technology trend. An influx of articles and studies took place between 2007 and 2011 and then a resurgence of interest took place on the topic of digital citizenship in 2015, continuing to the present day. Databases that provided the most relevant material included Dissertation Database, Education Research Complete, Sage Premier, ProQuest, Academic Search Complete, and Science Direct. Search terms used with each database included the following terms. The use of an asterisk (*) at the end of words allowed for the database to cull items that might have various endings but still be connected; for example, tech* would provide hits that included technology, technologies, and technological: *digital citizenship, Ribble, teacher beliefs, teacher knowledge, digital literacy*, planning OR implementation, teacher/practice, elementary OR primary OR grade school, tech* competence*, global*

collab, education and collab* and global*, tech* use, educat* and citizen*, social media and educat* and collab*, social media and educat* and glob*, netiquette, Internet citizenship, cyber citizenship, networked citizenship, online citizenship, citizenship education, cybercrime, cyber bullying, Siemens, connectivism, connectiv* and citizen*, Mezirow, transformative learning,* and *autonomous thinking.*

At times, searches yielded too many results and had to be narrowed to ensure relevance. A skimming of abstracts assisted in determining the suitability of a periodical. I narrowed results based on their relevance to the topic of teachers' beliefs or knowledge on digital citizenship or professional practices with digital citizenship. Additionally, to keep current with publications throughout the writing process, I set up email alerts based on search key terms using Walden Library database services and Google Scholar to ensure any new peer-reviewed, full-text publications could be included in the literature review.

Conceptual and Theoretical Frameworks

Mezirow's (1991) transformative learning theory and Siemens' (2014) theory of connectivism provided lenses through which I explored digital citizenship. An additional conceptual framework, Ribble's (2011) nine elements of digital citizenship supported the definition and parameters of the concept of digital citizenship.

Transformative-Learning Theory

Mezirow's theory of transformational learning is an adult-learning theory focused on the idea that one's understanding of experiences rests on past knowledge (Taylor, 2007). In this theory, learning is a process in which individuals use previous experience to guide their future action (Mezirow, 1997; Taylor, 2007). Frames of references for

adults have developed over years of experience, constructed based on their values, feelings, interactions, connections, associations, and knowledge to shape their reality (Mezirow, 1997). Frames of reference rest on individuals' *habits of mind* and *points of view* (Mezirow, 1997, pp. 5–6).

Mezirow (1978) described habits of mind as the code individuals use to think and act on situations: the decision-making process driven by cultural, social, educational, political or psychological experiences; habits of mind can be broad and abstract or narrow and focused (Mezirow, 1997). Individuals use habits of mind to mentally uphold their ethnocentrism, the maintaining of what they know and believe to be right about their culture, network, society, and world (Mezirow, 1997). Habits of mind determine how an individual reacts to a new situation or person outside the parameters of what they have always known, such as a teacher forced to change their instructional practices that have proven effective year after year, due to new institutional policy or programming. For example, as teachers experience new literacy practices for 21st-century learning, they use their own experiences to help them to determine how to best adapt the practices to fit their classrooms (Roach & Beck, 2012). Therefore, points of view influence habits of mind (Mezirow, 1997).

Points of view are an individual's beliefs, attitudes, feelings, and judgments that determine the person's interpretation of situations. An individual's point of view can change as a result of experiences related to problem solving, a major impacting event, or a compelling argument/experience (Christie, Carey, Robertson, & Grainger, 2015, p. 11). For example, when teachers face a policy or program change, they may need extensive collaboration with colleagues to help them to accept the change and adjust to the new

professional requirements. Habits of mind, in contrast, are often hard to change because the views are ingrained over time as the person grows (Mezirow, 1997). When points of view change and later, habits of mind change, people modify their frame of reference. This modification can happen over time as individuals critically reflect on situations altered their point of view and encouraged their habit of mind to change (Mezirow, 1997).

Mezirow (1978) proposed individuals define themselves based on the perspectives they mentally create. Stuckey, Taylor, and Cranton (2015) recognized Boyd and Myers's (1998) view of transformative learning, which emphasizes the idea unconscious content affects individuals and their intimate way of knowing as they begin to recognize their identity as separate but intertwined with society. Additionally, Mezirow (1997) theorized in society, people learn together and have connected experiences to create shared understandings of the way things are meant to be, such as societal norms or codes of behavior. Therefore, an individual's frame of reference will alter through their analysis and reflection on their beliefs, knowledge, and experiences. Mezirow (1996, as cited in Taylor, 2007) identified learning as a process impacted by experience that ultimately creates a new frame of reference or revamps existing frames of reference that support the individual in making future decisions. Mezirow (1997) identified four processes of learning may occur to change frames of reference: elaboration of points of view, establishing new points of view, the transformation of points of view, and the transformation of habits of mind.

Elaboration of points of view is the expansion of the way individuals think, confirmed by what they already believe (Mezirow, 1997). In education, teachers may

view themselves as not being technologically savvy because they do not use much technology in their personal or professional life. However, new programming requires teachers to integrate more technology into their classroom and they may not receive any support for this programming. The lack of support, knowledge, or experience extends their view of not being technologically savvy and further deters them from using technology.

The second process of learning, establishing new points of view, results from exposure to adverse situations that may confirm stereotypes as they strive to maintain their ethnocentricity, also defined as their self-identity and the beliefs they have developed as result of their upbringing, culture, and heritage (Mezirow, 1997). For example, a teacher might have a set of beliefs about whether or not a particular curriculum is not suitable for the group of students they are teaching, despite how other teachers feel. However, after hearing of a situation that proves their belief to be right, they are further substantiated in maintaining this belief.

The third process of learning is when individuals transform their points of view through experiences with new groups or entities that result in reflection and reevaluation of previous frames of references (Mezirow, 1997). In education, a teacher may have a particular point of view about specific professional practices that are not necessary or suitable for their group of students. They may have an experience, such as attending a professional-development conference, observing a colleague's classroom, or working collaboratively with a peer that causes them to shift their thinking or adapt their practice away from their original belief system. Repeated transformation of a point of view will alter a habit of mind (Mezirow, 1997).

Finally, the fourth process of learning is the transformation of habits of mind through the recognition of personal biases and the ongoing change in one's thinking and behaviors. This process occurs when the learner experiences enough situations to change the habit of mind (Mezirow, 1997). An educator may adopt new beliefs about instructional practices after receiving professional development, listening to colleagues who have had success in implementing programming, or trying out small aspects of a program or curriculum; in other words, these new experiences significantly affect them enough to change their beliefs. Scholarly literature has shown that for students to be prepared as workers of the future, they must have flexibility to adapt to the changing environments of education and industry (Brock, 2010). Being able to adapt to change and transform as a learner in one's formative years, and later as a professional, supports the fourth process of learning. Furthermore, developing short- and long-term learning goals can lead to the creation of frames of reference; therefore, educators must recognize how they are responsible for the development of their students' frames of reference (Mezirow, 1997).

With regard to teacher professional practice, Taylor (2007) conducted a qualitative meta-analysis of 41 peer-reviewed journal articles that used transformative learning as an aspect of the conceptual framework. The analysis revealed a modification of Mezirow's (1997) original theory to encompass the evolution of theory. Taylor identified several studies that pointed out the importance of being a good citizen as a component of transformational learning. Lange (2004, as cited in Taylor, 2007) especially recognized how social responsibility changed one's sense of self and purpose in the world. Real-world applicable learning experiences has had an impact on

establishing frames of reference as recognized in scholarly literature (Taylor, 2007). Moreover, teachers need to be responsible for the necessary preparation of future workers by providing students with opportunities to learn the necessary skills and shape their worldview to become good citizens (Brock, 2010).

An additional aspect of Mezirow's learning theory is the idea of "autonomous thinking," defined as showing citizenship and making moral decisions (Mezirow, 1997, p. 8). Mezirow believed essential knowledge for 21st-century education must include opportunities to develop skills for flexible, collaborative, socially responsible thinkers who can make creative decisions necessary for the situation at hand (Mezirow, 1997). Aspects of autonomous thinking align with elements of digital citizenship in the promotion of making socially responsible sound decisions when using technology (Mezirow, 1997; Ribble, 2015). Transformational-learning theory is relevant to this study because educators are adult learners; thus, this theory provides information that can be used to understand how they learn. In addition, transformational-learning theory provides information educators can use to recognize their role as learners and models of ethical and responsible use of technology when planning to instruct in the 21st century, which leads to the following discussion of Siemen's theory of connectivism.

Connectivism

Siemens (2005) developed a learning theory for the 21st century that combined elements of behaviorism, cognitivism, and constructivism, but with the inclusion of implications for technology use in education. Siemens (2005) proposed informal learning plays a significant role in the learner's experiences because learning happens in a variety of ways, such as interactions with communities and social networks as well as work-

related experiences. Siemens (2005) believed learning is a lifelong and continuous process and technology is altering the way individuals are thinking, learning, and solving problems. The introduction of technology has changed the way people acquire knowledge , not only with emphasis on where to find knowledge, but also knowing what something is or how to do specific things (Siemens, 2005). Connectivism may be less rooted in the traditional classroom learning environment and better linked to informal or personal experiences that build one's knowledge base (Snyder, 2016). This type of learning promotes an epistemology that goes beyond the individual and instead emphasizes collaboration and social networking (Kivunja, 2013).

Williams, Karousou, and Mackness (2011) recognized two styles of learning: *prescriptive learning* and *emergent learning* (p. 45). Prescriptive learning means actively recognized and expected curriculum in traditional learning settings (Williams et al., 2011). Emergent learning is learning that comes from individuals collaborating, interacting, and socializing (Williams et al., 2011). Emergent learning, as with connectivist principles, reinforces the learning connections people make through the interconnectedness of collaborative and social interactions of Internet use (Snyder, 2016). Implications of connectivism include an understanding synergy ultimately leads to the expansion of the knowledge base of an organization (Siemens, 2005).

Connectivism recognizes the importance of the individual and the role the individual plays in supporting the growth of knowledge in an organization as well as beyond to the networked world (Siemens, 2005). Additionally, this theory promotes the recognition new media sources may be resources for knowledge acquisition; understanding information is bidirectional as a result of technology advances (Kivunja,

2014). Although this theory is most closely related to course design of eLearning, connectivism has merits in a study exploring digital citizenship because many of the aspects of online course design can be applied to K–12 teachers integrating technology use into their learning environments.

Over the past decade, Web 2.0 tools and skills have altered the use of technology in classrooms and forced teachers to change their ways of thinking and instructing to support a more hands-on and participatory learning environment (Foroughi, 2015). Web 2.0 tools and skills are commonly recognized as the trends and technological developments of collaboration and user-generated content (Foroughi, 2015; Frydenberg & Andone, 2014; Thota, 2015). People can misuse specific technologies and tools and lack professional training to support learners in developing new skills, which prevent teachers from implementing a completely Web 2.0 classroom (Thota, 2015). Connectivist teachers model for students the appropriate behaviors and discuss issues that may impact students legally, socially, and ethically when using technology (Thota, 2015). Additionally, connectivist learning environments promote the philosophy individuals are responsible for their own learning and should develop as responsible learners, consistent with their values and engagement as a global participant (Thota, 2015).

Connectivism theory continues to facilitate the changing nature of technology in education as technology advances past Web 2.0 into Web 3.0 tools (Foroughi, 2015). Web 3.0 tools are closing information gaps and decreasing the time in which worldly knowledge is created and disseminated (Foroughi, 2015). To frame the trends of technology development, access, use, and integration, Siemens (2005) developed eight principles as part of the theory of connectivism.

Principle 1 is *opinion has an impact on learning and knowledge* (Foroughi, 2015; Siemens, 2005). Technology will advance to make use of smart search engines, which will produce search results with more multimedia components and organize the data in ways not previously considered (Foroughi, 2015). Additionally, resources are becoming more succinct across platforms available as common or open-education resources (Hussain, 2013). With this type of technological advancement, it will become important for students to have a strong foundation in digital-literacy skills and knowledge of digital law when accessing and using a more complex set of resources.

Principle 2 is that when *learning happens people make connections* (Foroughi, 2015; Siemens, 2005). Teachers and students will be able to contact peers and scholars in new ways with greater access to resources and media (Foroughi, 2015). Having a strong foundation of digital etiquette and digital communication can better facilitate the growing of relationships. Connections and networking also support good citizenship because technology is advancing to be more collaborative in nature, allowing individuals to work with peers despite geographic boundaries through collaborative platforms and virtual environments (Dalgarno & Lee, 2012; Foroughi, 2015).

Next, Principle 3 is *education can accrue through nonhuman means* (Foroughi, 2015; Siemens, 2005). With the increase in digital aggregates, searching and using the Internet are becoming more tailored to the individual (Foroughi, 2015). Synchronization of devices and hand-off functionality allows users to pick up where they left off from one device to another device, the way they might use a bookmark in a book. These functionalities can be beneficial for productivity as people move about but can also be harmful if individuals do not ensure certain protocols are in place to protect personal

information. Because technology is developing to be more intuitive, it can cause people to develop poor habits that could result in negative digital citizenship. Education can support individuals by making them more aware of the potential hazards and having them establish certain protocols and behaviors to prevent issues arising from technology use.

Principle 4 states *the ability to acquire more knowledge supersedes the already obtained knowledge*, meaning individuals will continue to search for more answers in pursuit of knowing more than what is already known (Foroughi, 2015; Siemens, 2005). Being able to retrieve information about a concept, idea, political issue, or social trend has never been faster (Foroughi, 2015). News and information updates in nanoseconds in addition to the speed at which people are posting and sharing information they find interesting, exciting, shocking, or unbelievable. However, having good digital-literacy skills will support a learner being able to sift through the magnitude of information to determine what is credible and reliable, enhancing the ability to become a more informed consumer or engaged citizen.

Principle 5 is *learning is best facilitated through connections* (Foroughi, 2015; Siemens, 2005). Web 2.0 has allowed individuals to make connections with people, places, and concepts beyond the physical space of the classroom, expanding the ability for students to understand on a deeper level of conceptualization (Kop & Hill, 2008). Students will need to understand how connections can be made between concepts and ideas (Siemens, 2008). Having adequate and consistent access to Internet-enabled digital devices will prevent lapses in developing the ability to create connections (Foroughi, 2015).

Next, Principle 6 proposed *recognizing connections among people or objects is a major attribute of success* (Foroughi, 2015; Siemens, 2005). As students become better critical thinkers, problem solvers, and collaborative team players, they are building their aptitude to be successful in future work environments (Foroughi, 2015). Much like Principle 5, knowing about and having consistent digital access is a major component in developing the necessary connections for success (Foroughi, 2015).

Principle 7 indicated *having current knowledge is vital to learning* (Foroughi, 2015; Siemens, 2005). Similar to Principle 4, digital-literacy skills and access to digital tools will support a learner in knowing what is currently happening in the world and which shared information is factual. The speed at which knowledge is generated and shared is faster than it has ever been and having the skills to use technology to keep current supports learning not just in the formative years of education, but as a lifelong learner who continues to evolve and adapt with the change of the world and the knowledge being shared (Foroughi, 2015; Siemens, 2005). Additionally, control over who is the provider of knowledge is being released from the teacher or educational institute by putting greater emphasis on the student taking responsibility for their learning (Foroughi, 2015).

Finally, Principle 8 indicates *decision making is essential to survival* (Foroughi, 2015; Siemens, 2005). As technology becomes more specific and customizable to the user, it becomes even more important for the user to know how to make decisions and which actions are considered acceptable, responsible, and appropriate to be a contributing citizen in society. Teachers will continue to provide education, as their experience can support students in making decisions by sharing their skills and knowledge as a model or

director of learning with students, as they make choices for their future (Foroughi, 2015; Siemens, 2008).

The eight principles of connectivism help outline the impact of technology development on the educational process (Foroughi, 2015). Teachers and students contribute to the learning environment and to the interconnected world as they increase their use and integration of technology in their learning environment. Taken in isolation, each principle highlights specific behaviors that currently and will continue to influence individuals' technology use in the future. However, it is the combined essence of the principles that helps highlight how technology will influence education and what teachers can do to support students in their ability to become responsible, ethical, and appropriate users of technology who value lifelong learning.

Specific principles of connectivism that support this study are the understanding of learning resulting from nonhuman means (i.e., the teacher is not the sole source of learning), the recognition of the value of current or relevant knowledge, and how the decision-making process of planning for instruction can lead to the preparation of students as citizens of the future. This theory is relevant to this study because the teacher makes decisions about what knowledge is going to be acquired through their instruction, formal and informal. Digital citizenship could be viewed as informal learning or hidden curriculum (Acedo & Hughes, 2014), but by exposing students to acceptable technology-use practices and maintaining standards for this type of behavior, the teacher enables codes of behavior and expectations that will be part of the current learning environment and perhaps future learning environments in which students adapt to change formally and informally.

Digital Citizenship Definition and Overview

Scholars such as Ribble (2015) and Mossberger et al. (2008) viewed citizenship connected to Internet and technology use as norms, appropriate behavior, and participation in an online society, otherwise termed digital citizenship (Choi, 2016). Digital citizenship, as defined by Ribble, Bailey, and Ross (2004) is the ethical, social, and cultural awareness of issues related to technology use. This also includes acceptable norms and implications of actively using technology (Ribble et al., 2004). According to Hobbs and Jensen (2009), digital citizenship is

> the skills and knowledge needed to be effective in the increasingly social media environment, where the distinction between producer and consumer have evaporated and the blurring between public and private worlds create new ethical challenges and opportunities for children, young people, and adults. (p. 5)

Gazi (2016), Ohler (2011), Ribble and Bailey (2007), Ribble (2011, 2015, 2017), and Ribble and Miller's (2013) definitions for digital citizenship encompass having acceptable online behavior, norms or codes of online actions, and responsible technology use. According to the white paper, "Digital Citizenship: A Holistic Primer," coauthored by Impero Software and the directors of the Digital Citizenship Institute, Curran, Ribble, and Ohler, "Digital citizenship reflects our quest to help students, as well as ourselves, develop the skills and perspectives necessary to live a digital lifestyle that is safe, ethical, and responsible, as well as inspired, innovative and involved" (Impero Software, 2016, p. 2). The authors' intention in publishing this document was to "help schools understand and effectively teach digital citizenship" (Impero Software, 2016, p. 1).

For this study, all reference to digital citizenship will mean an individual's appropriate, ethical, and responsible use of technology for all aspects of device use, websites, open-education resources, documents, and collaborative environments such as social-networking sites. This definition grew from examining and combining the definitions provided by previously scholars. An additional consideration included the definition of the HIDOE's (n.d.c) General Learner Outcome 6: "Effective and ethical user of technology" described in Chapter 1.

Digital citizenship is neither a trend in technology development nor a label for online-behavior guidelines but instead is a matter of real issues impacting technology users regardless of age or status (Snyder, 2016). Nine elements highlight positive and negative online behavior (Ribble, 2011). Because Web 2.0 tools were developed with adults in mind, many interactions that occur online require a maturity level that many K–12 students, especially elementary aged, may not be ready to manage. The maturity level necessary to engage with Web 2.0 tools are forcing students to mature faster than those in previous generations (Ribble & Miller, 2013).

Junko and Ananou (2015) outlined the social, emotional, ethical, and cognitive impact technology has had on today's learners to understand how education can lessen adverse effects and provide a more well-rounded student. When educators emphasize digital citizenship in the educational setting, students engage in appropriate online-behavior practices (Chou, Block, & Jesness, 2012). Therefore, it is not only valuable for educators to have knowledge about digital citizenship but to also implement sound practices into their instruction with technology

Ribble's Nine Elements of Digital Citizenship

Ribble's (2011, 2015) nine elements of digital citizenship are digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibilities, digital health and well-being, and digital security (and safety), each defined below.

Digital Access

Digital access is the idea of having equitable access to technological resources to participate fully in society including providing accommodations for individuals with disabilities. In the classroom setting, digital access can be used to accommodate students with disabilities accessing traditional curriculum content. Choi's (2016) concept analysis found many studies attribute access to digital resources, otherwise termed the *digital divide,* as a barrier to being able to develop as a citizen with media and information-literacy skills.

Digital Commerce

Digital commerce is the ability to buy and sell goods electronically to promote a globalized market for products (Curran & Ribble, 2017; Ribble, 2015). Students need to be made aware of costs associated with buying items online such as extra coins for a game or a new application for the tablet (Curran & Ribble, 2017). Furthermore, students need to recognize how their personal information can be made vulnerable through the use of insecure websites when making online purchases (Curran & Ribble, 2017).

Digital Communication

Digital communication is the way individuals connect through digital means as well as the flow and interaction of information accessed through technology. Uzuboylu

and Hürsen (2011) recognized when people are lifelong learners, they change their behavior as a result of experiences impacting their personal and professional lives. Being a lifelong learner means developing competencies such as information retrieval or learning how to communicate in an intelligent, appropriate, and efficient manner using technology such as email and cell phones (Ozdamli & Ozdal, 2015). It may be more valuable to focus on the intended message before picking a tool to deliver it through text, email, and social media applications such as SnapChat and Twitter, or face-to-face (Curran & Ribble, 2017).

Digital Literacy

Sometimes referenced as new literacies, media literacies, or information literacies, digital literacy is essentially an individual's basic understanding of computer functions and technology use by being able to apply digital skills to specific situations to engage in the online world (Curran & Ribble, 2017). Teachers who provide opportunities for students to develop quality digital-literacy skills such as navigating and evaluating online platforms and comprehending the building blocks of computer and device use such as email, search engines, word processing, and producing are preparing students to be better 21st-century workers (Curran & Ribble, 2017). New literacy skills are necessary for digital citizenship (Simsek & Simsek, 2013). Access to reliable and creditable information has increased with the development of new literacies; there by enhancing one's ability to "share, compare, and contextualize information by developing new skills" (Simsek & Simsek, 2013, p. 133). Online collaboration and communication skills improve users' self-efficacy with technology use as users become more confident using the Internet to access and evaluate information, as well as cooperate, collaborate, and

communicate with others through the web (Aesaert, Van Nijlen, Vanderlinde, & van Braak, 2014; Choi et al., 2017; Livingstone & Helsper, 2009; Moeller, Joseph, Lau, & Carbo, 2011; Simsek & Simsek, 2013).

Digital Etiquette

Digital etiquette is sometimes referred to as 'netiquette,' indicating accepted standards for behaving in digital forums. Netiquette indicates online morality and ethics (Park et al., 2014). Cyberspace has its own code of behaviors separate from the real world that support users in determining what is acceptable and not acceptable to do when engaging in activities online (Park et al., 2014). Digital etiquette also relates to organizations needing to have AUPs and individuals understanding of when it is appropriate to use certain technologies and devices in their personal and professional lives (Ribble, 2015). Additionally, etiquette is about humanizing the interactions people have with one another by remembering it is not a machine but a person on receiving opposite end of tweets, texts, and emails (Curran & Ribble, 2017). Teachers support students in developing this element by having them learn how to communicate in different messaging situations and with various people, including the use of positive or constructive communication versus negative, aggressive, or poorly articulated communication (Curran & Ribble, 2017).

Digital Law

Digital law is about the understanding of what actions are considered poor behavior and what actions break actual laws, aligning significantly with issues related to intellectual property and copyright issues (Curran & Ribble, 2017). Furthermore, digital law is about developing a code of conduct for fair access, sharing, downloading, altering,

or reusing material distributed digitally. Educating students in digital law includes instructing them on how to do Internet research and properly cite sources of different types of media including photographs, articles, and videos (Curran & Ribble, 2017).

Laws were created to ensure individuals' rights are protected and to ensure those who behave inappropriately in digital environments are prosecuted. Inappropriate online behavior encompasses the development and sharing of computer viruses or hacking protocols, plagiarizing and distributing publications by other people while claiming them as one's own work, sharing files that should be paid for before using, the creation and distribution of media of an unacceptable nature such as child pornography, and actively pursuing an individual and invading their life through the use of social-media outlets so as to cause them harm or fear (known as Internet stalking; Ribble, 2015). Students also need to be aware of the legal ramifications of not giving credit to sources and sharing inappropriate content through sexting or other social media (Curran & Ribble, 2017).

Digital Rights and Responsibilities

Digital rights and responsibilities are the freedoms of using the digital world while also being responsible for the use of what one accesses. When educators help students to recognize responsibilities come with using technology, they provide students with the opportunity to be positive contributors to the global world (Curran & Ribble, 2017). Additionally, parents play a significant role in supporting rights and responsibilities by monitoring their child's online accounts and activities (Curran & Ribble, 2017) and by being an example in their use of social media.

Digital Health and Well-being

Digital health and well-being are an individual's ability to maintain physical and mental health while still engaging in the digital world, including the recognition and acknowledgment that one can overuse technology compared to the ability to find balance between online and real-world lives. This element's negative aspect is based on the amount of time individuals spend looking at screens and not physically moving (Curran & Ribble, 2017). Of adults, 65% use social media regularly (Pew Research Center, 2015). With the high usage of online platforms for entertainment and interaction, it is valuable to model to students how to build healthy relationships with people through digital communication and face-to-face interactions (Curran & Ribble, 2017).

Digital Security (and Safety)

Digital security is about the protocols, policies, and procedures individuals use to ensure their use of the Internet does not have a negative impact on other aspects of their lives. This element emphasizes the precautions individuals must take to ensure private information is not compromised or stolen as a result of electronic interactions. People practicing good digital safety and security have habits and practices like purchasing and installing virus protection on their computers, creating backup systems for valuable documentation through external hard drives or cloud storage, and only using sites with clear safety protocols when sharing sensitive and personal information (Ribble, 2015). Knowledge and experience specific to computer security are essential for teachers to understand and pass on specific behaviors (Jagasia, Baul, & Mallik, 2015).

Through the use of Ribble's (2015) nine elements of digital citizenship, educators, students, parents, and policymakers are able to develop an understanding of ethical,

appropriate, and responsible uses of technology. Stakeholders can also discern what are unacceptable, poor, or illegal uses of technology in the confines of educational settings and in the broader, more open, interconnected and globalized world. The nine elements provide a framework to address issues by focusing on specific aspects of technology use and integration. These elements should be taught continuously throughout a student's education to ensure developmentally appropriate topics are covered at crucial times in students' use of technology (Ribble, 2015). Additionally, students should be repeatedly exposed to the elements to reinforce appropriate, ethical, and responsible technology-use behavior over time (Ribble, 2017).

Issues of Poor Technology Use

Issues of poor technology use will arise when individuals are not trained on specific laws and policies in place for responsibly and ethically using technology. Many dangers exist through Internet access (Shillair et al., 2015); individuals should learn safe online behaviors at younger ages than ever before. Elementary-aged students are particularly susceptible to technology misuse because they are at the beginning stages of digital literacy and understanding of appropriate behaviors for interacting with others in real-world interactions and online interactions. I provide examples of how people misuse technology in the following section.

In 2011, the Pew Research Center released a report entitled "Teens, Kindness, and Cruelty on Social Network Sites," indicating at least a quarter of survey respondents had their interactions online impact their life significantly (Lenhart, Madden, Smith, Purcell, & Zickuhr, 2011). The real-life impact resulted in the form of face-to-face arguments following online communication, friendship loss, or feeling uncomfortable attending

school after online situations (Ribble & Miller, 2013). Statistics such as these indicate responsible and appropriate technology use needs to be addressed at the school level (Ribble & Miller, 2013). Student access to technology is not limited to devices provided at school; however, the misuse of social media and technology impacts the social environment of the school, increasing bullying because the physical constraints of face-to-face interactions or because school hours are no longer a factor (Ribble & Miller, 2013). To address this issue, some states across the United States are beginning to develop laws that allow school leaders to suspend or expel individuals engaging in cyberbullying or sexual harassment and the distribution of naked photographs and videos using technology (known as sexting; Ribble & Miller, 2013).

Students proficiency in technology-literacy skills accompanies a growing rise in cyber-related crimes. News reports and social media continue to document examples of poor technology use and overall poor social judgment (Ribble, 2015). Students may inadvertently engage in online interactions that are harmful to themselves or others as a result of lack of knowledge (Snyder, 2016).

Policy and Laws for Responsible Technology Use

School disciplinary policies for technology misuse fall into one of two categories: issues handled case-by-case or firewalls and blockades preventing students from accessing parts of the Internet (Ohler, 2011). Additionally, educators have concerns regarding other important issues such as learning to use the Internet and technology in a responsible way and are not addressing the discerning of appropriate and inappropriate content (Ohler, 2011). Currently, two significant federal laws exist to enforce the teaching of Internet ethics, safety, and security: the Children's Internet Protection Act of

2001 (updated 2011) and the Broadband Data Improvement Act of 2008 (Pusey & Sadera, 2012). These laws address K–12 schools' requirement to have policy related to acceptable online content access and the instruction of acceptable online behavior. The laws are vague and not strictly enforced (Pusey & Sadera, 2012).

In 2008, Pruitt-Mentle and the Stay Safe Online Organization conducted the first National Cyberethics, Cybersafety and Cybersecurity Baseline Study to discern how U.S. schools addressed cybersecurity, cybersafety, and cyberethics. Research results revealed schools address Internet ethics, safety, and security by only focusing on issues related to plagiarism and cyberbullying (Pusey & Sadera, 2012). More current literature reflects the continued focus on understanding and addressing issues of cyberbullying (Jones & Mitchell, 2015; Steinmetz, 2013; Styron Bonner, Styron, Bridgeforth, & Martin, 2015).

Digital Ethics Behavior of Students

Pardo and Siemens (2014) described ethics as being left to the interpretation of an organization's stakeholders' views of what is acceptable and unacceptable online behavior. Several researchers studied unethical online behaviors of students. James et al. (2010) conducted a 3-year empirical research study called the GoodPlay project, which documented and analyzed the online behaviors of youth to identify the digital knowledge and ethics they possess. James et al. collected data through interviews, analysis of theoretical standpoints on culture, psychology, and sociology, and identified research trends on developing new media usage. The researchers identified five topics that represent areas of poor technology use or ethical dilemmas. These topics include "identity, privacy, ownership and authorship, credibility, and participation" (Davis et al., 2010, p. 126; James et al., 2010, p. 269).

Identity is the understanding of how individuals represent themselves in online environments including what information they share. Shared information may be too revealing or deceptive and misleading (Davis et al., 2010). Privacy issues align with what personal information one shares or what individuals share about others, such as posting and tagging photographs of someone in a questionable or unflattering situation. Ownership and authorship issues arise with the collaborative and often open resourcing of many Web 2.0 technologies. Credibility relates to building and giving trust (Davis et al., 2010), such as reading reviews of places or products to determine the authenticity of what is being marketed online. Last, participation aligns with individuals' sense of right and responsibility when interacting in online, collaborative, and social-interactive environments (Davis et al., 2010). Researchers acknowledged additional research needs to be conducted to understand what youth believe to impact their choices when making ethical online decisions and what supports are necessary to meet their needs. Researchers proposed the creation of a curriculum to support youth in developing the skills necessary to make good choices online, but additional research will be needed to determine effective objectives and activities.

In continuation and in partnership with Common Sense Media, the GoodPlay Project, and Global Kids, researchers Davis et al. (2010) qualitatively analyzed electronic dialogues from a 3-week series of online discussions by more than 150 teachers, adolescents, and parents. Results revealed adults were more likely to engage in ethical and morally responsible thinking compared to adolescents. Additionally, adolescents disclosed they engaged in unethical online behaviors such as downloading and stealing others' intellectual property with indifference toward their actions. Implications of this

study are the significant role adults, teachers, and parents play in modeling for children and adolescents about how to be a good digital citizen. The researchers recommended using support groups and intervention programs that encourage adults, specifically parents, to dialogue with children about moral and ethical online behavior (Davis et al., 2010).

Furthermore, Konrath, O'Brien, and Hsing (2011) conducted a cross-temporal meta-analysis study tracking the empathy of college students over a 30-year period (1979–2009). The researchers conducted a literature search in the Web of Knowledge database for studies that used the Interpersonal Reactivity Index (IRI) to study empathy among U.S. college students at traditional 4-year undergraduate institutions; a total of 72 studies met the criteria for this meta-analysis (Konrath et al., 2011). Researchers analyzed the IRI subscales of each of the 72 qualifying studies through correlation of the year the study was conducted and mean scores on the IRI. Regression analysis revealed mean scores for studies conducted in the same year. Results of scores from the IRI revealed, under the empathy subscale, a 48% drop in empathetic concern and a 34% drop in perspective taking (Konrath et al., 2011). These results, along with other research into empathy, are believed to contribute to the lack of physical interaction and increased access to more violent content online such as videos and gaming, resulting in the dehumanization of people (Konrath as cited by Swanbrow, 2010; Ribble & Miller, 2013). Intervention programs have been introduced to support teaching empathy to children and adolescents, such as a program called Roots of Empathy (Konrath et al., 2011); however, the program does not specifically state these programs are the answer. Instead they recommend schools and families continue to introduce interventions to counteract some

of the negative behavior from overuse of technology, such as just having 20 to 30 minutes of face-to-face contact with other people, free of technology use (Konrath et al., 2011).

Poor online behavior, such as cyberbullying or harassment, may be an individual's way of escalating their popularity or seeking validation by making others feel weaker or victimized (Farmer, 2011). When students do not receive education about how to interact with others, online or in person, they lack the capacity to relate to others, especially those with differing ideas, cultures, or belief systems, and they do not develop a moral or ethical code based on respect and understanding (Snyder, 2016). Therefore, unguided technology use may result in a lowered moral compass and a higher rate of negative interactions between humans.

Teachers and students, regardless of their educational level, can be taught to use various technologies, but should have a foundation for responsible and ethical technology use to prevent them from developing poor lifelong habits and the potential for causing harm to others (Wilson et al., 2014). An understanding of what is acceptable and what is unacceptable when using technology needs to be established in the learning environment and at home. Thus, when time is given to address potential issues of poor technology use or highlight appropriate use of technology, students will be less likely to make poor choices.

Scholars recommended that emphasis on the importance of exposure to instructional experiences will help students recognize appropriate and ethical behavior in the digital world (Davis et al., 2010; Farmer, 2011; Konrath et al., 2011; Pardo & Siemens, 2014; Ribble & Miller, 2013; Snyder, 2016; Swanbrow, 2010). Additionally,

teachers can model acceptable behaviors in their own technology practices in planning and integrating digital citizenship into the curriculum. Therefore, establishing what teachers know and believe about digital citizenship or what they plan and implement in their learning environments will help determine what additional support they need to ensure teachers and students learn and use all aspects of digital citizenship.

Prior Research into Digital Citizenship Knowledge and Concepts

Limited research specifically examined the knowledge or beliefs of teachers regarding digital citizenship through the lens of Ribble nine elements. Some researchers focused on student behavior in relationship to some aspects of digital citizenship. A few research studies focused on attempts to develop or integrate curriculum that addressed digital citizenship into learning environments, specifically middle and high school levels. Researchers conducted very minimal research at the elementary level with teachers, and virtually nothing with elementary students with respect to Ribble's nine elements or digital citizenship in general.

Although researchers regularly cited Ribble in journal articles regarding developing a concrete definition of digital citizenship, many citations are used to provide a rationale for why digital citizenship will prepare students for the future, supporting technology-infused curriculum, and how digital citizenship could help prepare teachers and administrators for potential hazards that can arise with technology use that is not covered by organizational acceptable-use policies. Studies cited below either directly referenced Ribble's nine elements as the framework for the research design or used the nine elements as a key definition related to the research question(s). The majority of the literature focused on preservice teachers, identified as "Digital Natives." Based on

Prensky's (2001) definition, a digital native is someone who has never known a time without the Internet. However, scholars debate the exact point in time when "natives" were first born.

Several dissertation studies incorporated Ribble's nine elements as either a reference to define specific aspects of digital citizenship or as a conceptual framework Such dissertations include the works of Baumann (2016), Boyle (2010), Klinger (2016), Lindsey (2015), Lyons, (2012) Snyder (2016), and Suppo (2013). Of the studies referenced, only one, Baumann, used teachers of elementary-age students as participants. Additionally, Baumann only examined one element of digital citizenship: safety and security. Boyle, Lyons, and Suppo conducted quantitative studies whereas Baumann, Klinger, and Lindsey used qualitative research strategies. A comparison of scholarly literature from dissertation and other research follows.

Preservice Teacher Training

Sincar (2011, 2013), Pusey and Sadera (2012), Lindsey (2015), Karal and Bakir (2016), and Çiftci and Aladag (2018) conducted research studies on preservice teachers' knowledge of digital citizenship. Sincar (2011) and Karal and Bakir conducted qualitative studies, Lindsey and Sincar (2013) conducted mixed-methods studies, and Pusey and Sadera and Çiftci and Aladag conducted a quantitative survey study. Additionally, Pusey and Sadera emphasized the curriculum of cyber ethics, cyber security, and cyber safety (C3) rather than Ribble's nine elements of digital citizenship as the framework to determine digital citizenship knowledge.

Sincar (2011) conducted a qualitative study of 17 preservice teachers' recognition of Ribble's nine elements. Then, Sincar adapted the study into a mixed-methods study

also using preservice teachers to consider the influence of gender on digital citizenship habits. Sincar used semistructured interviews lasting 30–60 minutes with open-ended questions and inductive analysis to identify themes and patterns. The results of the study indicated participants possessed adequate behaviors for digital literacy and digital communication but lacked proficiency in the other seven elements.

In 2013, Sincar used a quantitative form to identify gender and social-media usage (type and duration per day) among 210 preservice teachers and semistructured interviews with the participants that emphasized five basic questions and five open-ended questions on causes for inappropriate technology and device usage. Sincar used multiple linear regression for the quantitative portion and deductive analysis of themes and patterns for the qualitative portion. Results revealed more male than female preservice teachers engaged in inappropriate behaviors in technology use; however, women were not entirely free of poor behavior. Sincar's studies in connection with Ribble's nine elements concluded preservice teachers were not prepared to exemplify good digital citizenship for their future students. Greater emphasis should be placed on the ethical and responsible use of technology for personal and curriculum instructional purposes in college-preparation programs (Sincar, 2013). Additionally, this lack of preparation among preservice teachers could indicate the need for professional development for current teachers focused on the nine elements of digital citizenship (Snyder, 2016).

Like Sincar (2013), Lindsey (2015) used a mixed-methods study but used action research focused on a training program at the university level. Participants were faculty working in the College of Education and teacher-candidate students. Through this study, researchers aimed to determine if a technology-support system that used appropriate

digital citizenship behavior would affect participants' plans for future classroom instruction. Data was collected using surveys, focus-group interviews of teacher candidates, interviews with course instructors, researcher journal reflections, and field-note observations. Lindsey analyzed data using an ANOVA for the quantitative portion and a constant-comparative method to identify themes from open codes for the qualitative portion. Participants felt the intervention had a positive impact on their professional practice and intended to implement learned strategies into their future instruction (Lindsey, 2015).

Karal and Bakir (2016) conducted a qualitative case study involving preservice teachers. Data-collection methods involved observations and interviews of 11 preservice teachers over a period of 5 weeks while they completed their required classroom-teaching practicum. The authors identified all participants as digital natives, aligned with Prensky's (2001) definition, aiming to measure the perceptions of digital citizenship terms by preservice teachers. Results from Karal and Bakir revealed preservice teachers closely associated digital citizenship terms and Ribble's nine elements of digital citizenship with clear but simple definitions of each element. However, preservice teachers only emphasized being put on digital communication, digital access, and digital literacy in the classroom environment (Karal & Bakir, 2016). Implications of the Karal and Bakir study align with the research findings of Sincar (2011, 2013) and Lindsey (2015), in which exposure to digital citizenship curriculum at the university level supports preservice teachers' preparation to use these practices in their future classrooms.

Pusey and Sadera (2012) conducted a survey study of 318 university students majoring in education, often referenced as preservice teachers, and their knowledge of

and preparedness to teach C3 curriculum. Like the previously mentioned studies, the researchers identified study participants as digital natives because they have never known a time when the Internet did not exist. The researchers hypothesized that despite the population's exposure to the web and mobile devices over their lifetime, they might not possess the skills necessary to include C3 curriculum in their future instructional methods. Data accrued using a face-to-face administration of a quantitative survey—the *C3 Awareness and Instructional Preparedness Instrument*—to identify what preservice teachers knew about C3 curriculum and what topics they were prepared to teach in their future classrooms over a period of several semesters from 2008 to 2010 (Pusey & Sadera, 2012).

Pusey and Sadera (2012) used descriptive statistics of means of the topics of awareness and preparedness to determine a threshold for which an individual was prepared or unprepared to teach specific topics The results of the study revealed that a majority of participants were knowledgeable and felt prepared to teach four skills typically associated with digital literacy or digital communication: emailing with attachments, text messaging, cell-phone usage, and plagiarism. Other components related to a C3 curriculum more closely connected to digital elements such as digital law, digital rights and responsibilities, and digital security and safety, revealing low knowledge or preparedness for instructing students including topics such as disposal of technology, phishing, tracking cookies, and fair-use exceptions (Pusey & Sadera, 2012). Implications of this study revealed that although preservice teachers may have a lifetime of working with technology, they do not have knowledge or skills necessary to instruct future generations on issues of poor digital citizenship (Pusey & Sadera, 2012). In alignment

with the findings of Karal and Bakir (2016), Lindsey (2015), and Sincar (2011, 2013), the researchers recommended that university education programs develop their curriculum to better address knowledge competencies for digital citizenship to ensure teachers are ready to provide this type of curriculum.

Çiftci and Aladag (2018) conducted a descriptive survey study of elementary-level preservice teachers using two instruments: the Digital Citizenship Scale developed by Isman and Gungoren (2014) and the Attitude Scale for Digital Technology developed by Cabi (2016). Study results showed no connection between gender and attitudes toward technology digital citizenship. However, a significant difference emerged between the level of digital citizenship and Internet access (connection), but no significance in attitude and Internet access. The results also showed a significant difference in attitudes on technology and citizenship when considering years of experience using the Internet. Additionally, participants' years in the program) impacted the attitudes and citizenship scale. The implications of the study revealed that with more experience in Internet use, participants had a more positive attitude toward technology and an increased level of digital citizenship. These results are significant when considering future classrooms filled with digital natives because if educators who are responsible for their instruction have a positive attitude toward technology use, they are likely to support students in positively developing as digital citizens.

Teacher Practices for Digital Citizenship

Baumann (2016) conducted a qualitative case study using surveys, interviews, and artifact analysis with 20 administrators and teachers from public schools in Connecticut. Baumann aimed to examine the perceptions of K–5 faculty in addressing computer safety

and security in the curriculum. The administration did not recognize the need for additional instructional time to address computer safety and security. In contrast, teachers who were attempting to implement this concept into their instructional practices believed they lacked proper training. Researcher recommendations included up-to-date and ongoing training on relevant topics for computer-safety issues and instruction, professional development for computer use and integration, adoption of a new curriculum that emphasizes common core and 21st-century skills for technology use, and a need for administrators to reconsider policies to address and enforce consequences for inappropriate technology use. Additionally, Baumann recommended that further research address the effectiveness of AUP and enforcement of policies for student computer safety and security.

Similar to Baumann's (2016) study, Klinger's (2016) qualitative case study used teachers; however, Klinger used 12 private-school teachers from Grades 6–12 classrooms inquiring into the digital communication tool use for social collaborative and learning usage among students. Klinger interviewed participants using a semistructured, face-to-face, individual interview. Klinger recorded the interviews and coded them to identify themes. Participants revealed that although they believed their students possessed the necessary digital-literacy skills to use the tools, they did not possess the appropriate maturity level to engage successfully through the use of the tools. Implications of this study are that technology-device choice and training to support the mature and responsible use of collaborative social learning through a digital citizenship curriculum would better support this type of learning experience. Information about studies focusing specifically on student behavior follows.

K–12 Students and Digital Citizenship

Placing emphasis on student behavior instead of teacher action, Boyle (2010) and Lyons (2012) conducted quantitative studies and Davis and James (2013) conducted a qualitative study. Boyle used high school aged students (approximately 14–18 years old in Grades 9–12), Davis and James (2013) used preadolescents (11–13 year olds, approximately Grades 6–8), and Lyons used a span of students from fifth through 11th grade, crossing from preadolescents to adolescents.

Boyle (2010) used a quasiexperimental quantitative study to determine if high school students exposed to a digital citizenship curriculum would adopt digital citizenship behavioral elements into their technology-use practices. The researcher collected data from 150 high school student participants using a pre and posttest of Ribble and Bailey's (2007) Digital Driver's License instrument. Student participants were in two different curriculum paths or academies: the Academy of Arts and the Academy of Technology.

Half of the participants were exposed to a series of lessons on digital citizenship—the experimental group—and the other half were not: the control group. Boyle (2010) included students from both academies in the experimental and control groups. Both groups attended schoolwide oral presentations on digital citizenship behavior that was part of the regular school programming. Boyle analyzed data using a *t*-test to compare each individual group's pre- and posttest scores and conducted an ANCOVA between groups' posttests, using pretests as the covariant.

Boyle (2010) found that, with exposure to a digital citizenship curriculum, students exhibited strong digital citizenship behaviors in all elements except digital

access and digital security. Although these two elements did not have a significant impact on the students' technology use behavior, they did not have adverse consequences either. Boyle rationalized that the lack of impact on security and access may have resulted from the age of the students and their exposure to technology access throughout their lives. Additionally, Boyle proposed that the schools may have spent more time emphasizing digital security over other elements throughout the educational experience of the participants before their participation in the study.

Boyle (2010) recommended that school leaders monitor student technology-use behaviors to determine and tailor the type of programming needed to support students with learning-appropriate online behavior. Because Boyle used students in different curriculum programs, one recommendations was to ensure all students received the same type of curriculum in digital citizenship, regardless of their curriculum path, including schools that do not offer different curriculum paths. Finally, a suggestion for further research included finding out what teachers believe to be best practices for digital citizenship instruction. The study's findings align with those of Gazi (2016), Ohler (2011), Ribble et al. (2004), and Ribble and Miller's (2013) position about the importance of exposing students to a digital citizen curriculum to develop appropriate technology use skills.

Lyons (2012) conducted a study focusing on student digital use. Using an ex post facto quantitative study of the online behaviors of fifth- through 11th-grade students in a K–12 public school district in California, Lyons compared student gender and grade level to online behavior. Specific areas of focus included cyberbullying, parent involvement, personal safety, and digital citizenship abuse, based on historical data of district and

archived surveys. Lyons analyzed data using an ANOVA to determine if a causal relationship existed among gender, grade level, and misbehavior online. Research results revealed that differences existed between grade level and gender. As students aged, their parental involvement decreased but risks increased for the other three subscales. Additionally, young women had fewer issues with digital citizenship abuse and personal-safety concerns; however, the level of parental involvement stayed constant across genders. The implications of the study included the need to increase awareness of all issues among all stakeholders: parents, teachers, administrators, and students (Lyons 2012).

Using a similar population by age to Lyons (2012), Davis and James (2013) conducted a qualitative case study in which they interviewed 42 preadolescents (middle-school-aged students approximately 11–13 years old) about their behaviors and attitudes toward maintaining their online privacy in social-media environments and the impact educators play in developing these practices. Researchers included participants from different schools who had different racial and diverse socioeconomic backgrounds. Davis and James used surveys to identify the digital aptitude of participants and invited those with the greatest digital experience and engagement to participate in interviews. Each interview participant had two one-on-one interviews each lasting about 45 minutes.

The results revealed that participants did engage in practices in which they were aware of potential dangers of sharing private information in online public settings, and they also possessed a variety of strategies to ensure others were not accessing or using their private information (Davis & James, 2013). However, teachers provided a narrower perspective of online privacy issues, focusing only on what not to do or not to post and

rarely promoted positive interactions with others in online environments. Davis and James averred teachers should consider how their instruction directly and indirectly impacts what students do in their online privacy and interactions with others.

Teachers and Students Using Digital Citizenship

Focusing on teachers and students, Snyder (2016) conducted a qualitative case study of middle school students and teachers. The goal of the learning project was to provide students with technological experiences that helped them develop their understanding of digital citizenship. Students used social media to support their learning of different cultures, develop a worldlier view of other cultures, and compare their own digital footprints. Data accrued from interviews and data in the Wiki learning environment. Snyder analyzed both interactions using open coding to identify themes and patterns. Results from the case study revealed that students' knowledge increased, and they made greater effort to engage in making responsible, ethical, and appropriate choices in online collaborative environments. Additionally, teachers planned to continue to implement practices for responsible and ethical use of technology in their instruction. However, study implications were that if teachers had not participated in the study, they might not have considered incorporating digital citizenship elements into the curriculum. This study is significant to the body of knowledge because Snyder examined teachers and students working together to learn about digital citizenship and considered what teachers do professionally to integrate technology and what students learn as a result of teachers' implemented practices.

Research conducted in dissertations over the past 7 years, as well as scholarly studies, revealed a trend that a lack knowledge and understanding persists about what is

appropriate, responsible, and ethical use of technology among students and teachers at all levels. This implication aligns with the need for further study on knowledge of digital citizenship. However, greater emphasis may need to focus on what teachers and students do know and less on what they do not know.

Rationale for Digital Citizenship, a Component of 21st Century Learning

Citizenship is a "commitment to common good, public interest, and places the interest of the community ahead of personal interest...education is seen as enhancing the public and common good" (Oyedemi, 2015, p. 453). When people actively participate in an interconnected and interdependent world, they are acknowledging the existence of global citizenship (Andrzejewski & Alessio, 1999; Choi, 2016; Martens & Hobbs, 2015). Furthermore, digital citizenship is not solely a list of behaviors for using technology, but instead is concept that impacts all students, teachers, parents, school and community leaders, and the greater world by establishing norms or codes of behavior for how individuals learn to get along in an increasingly connected world (Snyder, 2016).

Technology has played a significant role in supporting globalization, allowing individuals to become members of online communities through social networking such as Facebook, Twitter, YouTube, and Google+. In the past, being able to read, write, and do basic mathematics was a symbol of being a knowledgeable, productive, and contributing member of society; one could make intelligent decisions based on the possession of these skills (Simsek & Simsek, 2013). However, in recent years, the literacy skills that mark an acceptable member of society are not as passive as in the past; they include reading, researching, understanding, interpreting, collaborating, and sharing (Martens & Hobbs, 2015; Simsek & Simsek, 2013). Trilling and Fadel (2009) and Kivunja (2014) believed

that an educated person needs to have skills for independent and efficient problem-solving and logical thinking. Furthermore, the capabilities of computers and the Internet have enhanced ethical dilemmas and raised new issues and moral choices that were nonexistent in the pre-Web 2.0 world (Mulka, 2014; Rice et al., 2015).

Ohler (2012) outlined the aspects of digital citizenship and advocated for community-based initiatives in educating children. Ohler suggested the use of curriculum programming that breaks the boundaries of the school's walls to include parents, community leaders, teachers, administrators, and students. Scholars have begun to recognize the benefit of digital etiquette in preventing perceived poor digital behavior (Baumann, 2016).

Education skills for the 21st century comprise key domains that included the traditional reading, writing, and arithmetic skills as well as "learning and innovation skills," "career and life skills," and "digital literacy skills" (Kivunja, 2014, p. 85; Trilling & Fadel, 2009, pp. 175–176). These more active literacy skills change the way individuals may interact with one another and contribute to the quality of the community with information flow that is dynamic and multidirectional (Simsek & Simsek, 2013). For people to engage in particular democracy and have appropriate citizenship behaviors, they need access to credible information that comes from the ability to use specific digital-literacy skills such as research and judgment (Simsek & Simsek, 2013).

Access to Internet and mass-media sources enables the development of citizenship in young adults by allowing them to participate in political, cultural, and educational purposes (Oyedemi, 2015). In concurrence, when students are exposed to media literacy education, they are more likely to become civically involved in community or societal

issues (Martens & Hobbs, 2015). Teachers instructing across subject areas and integrating civic engagement, such as researching, producing, and publishing products that support student learning about current political and social conditions, are promoting curiosity and self-efficacy as well as developing students' moral compass (Martens & Hobbs, 2015). Technology instruction should predominantly focus on helping this generation build a sense of responsibility related to technology use at personal, local, and global levels (Ohler, 2011).

Choi (2016) conducted a concept analysis of studies related to citizenship education and found a divide among scholars in studies related to citizenship and Internet use. Analysis revealed four major themes in research related to digital citizenship literature: media and information literacy, ethics, participation/engagement, and critical resistance. Choi postulated that digital citizenship is a complex concept that makes connections with interactions in the real world as well as in an online environment.

Educators have a moral obligation to prepare students to be citizens who can contribute to society productively and adapt to the changes and complexities of society (Fullan, 2001). Digital citizenship provides a backbone for teachers, school leaders, and parents to comprehend and model appropriate use of technology (Gazi, 2016). Learning that happens because of interactions between humans and technology forces individuals to consider their values (Williams et al., 2011). Because the goal of education is to prepare students for their future, it is essential that students learn to be responsible digital citizens while in their formative years, to better prepare them for their future roles working and living in an increasingly more digitally dependent society (Snyder, 2016).

Considering the impact of curriculum, van de Oudeweetering and Voogt (2018) conducted a secondary analysis of survey results from nearly 3000 K–12 teachers in the Netherlands about their perceptions of the frequency of classroom activities that promoted 21st-century learning skills. Their research focused on six specific competencies of 21st-century learning: "digital literacy, innovative thinking, critical thinking, and communication, (digital) citizenship, self-regulated learning, and (computer-supported) collaborative learning" (van de Oudeweetering & Voogt, 2018, p. 116). The analysis revealed teachers perceived themselves as spending less time on digital literacy and innovative-thinking activities compared to collaboration and self-regulated learning, inferring a result of the novelty of these types of learning activities. Therefore, digital literacy and innovative thinking have not been fully developed in the curriculum teachers are prepared to teach. The researchers recommended consideration of curriculum development, specifically in the areas of digital literacy and innovative thinking to support teachers' ability to integrate them into classroom-activities. Additionally, researchers recommended teacher and school leaders reflect on facilitating these competencies and their connection with digital citizenship.

On a related note, Hollandsworth, Dowdy, and Donovan (2011) raised questions about who is responsible for educating students on digital issues. They put out a call to action for educators to develop programs that do not solely rely on schools to support this learning but instead advocated for a community approach, including the use of students (Hollandsworth et al., 2011). In disseminating knowledge related to being a good digital citizen and protecting students from dangers of the Internet, Pruitt-Mentle (2008) identified parents as responsible for providing Internet-ethics learning and the

information (or instructional) technology department as responsible for the learning and maintenance of the Internet infrastructure. In agreement, Hobbs (2008, as cited in Davis et al., 2010) suggested that media-literacy education support critical thinking with a reciprocal dialogue between teachers and students about appropriate online behavior for academic purposes; however, these dialogues should also be taking place between children and parents (or other influential adult figures) to address a wide range of online interactions. Concurrently, Pusey and Sadera (2012) recognized that a combined effort of all stakeholders, especially teachers and teacher educators, is necessary to provide learning for ethics, safety, and security when using the Internet. Furthermore, Rice et al. (2015) asserted there should be a combined effort of the instructional technology department, teachers, and parents to maintain computer security and establish responsible and ethical practices when engaging in cyber activities.

To have a future that promotes humanity, educators need to help students find balance between having an avid online presence and having "a sense of personal, community, and global responsibility" in technology use (Ohler, 2011, para 4). Ohler (2011) proposed, "School is an excellent place to help kids become capable digital citizens who use technology not only effectively and creatively, but also responsibly and wisely" (para 4). Teachers play an important role in the evolution of society because teachers must consistently adapt to the development of innovations and change in knowledge and be open to these developments (Ozdamli & Ozdal, 2015). Furthermore, teachers should possess the necessary skills for using "new information-communication technologies" and be actively using them to enhance the learning in their classrooms to support the current and future educational needs of students (Ozdamli & Ozdal, 2015, p.

720). Finally, despite rapid changes in technology, teachers and preservice teachers need specific informational-technology skills to model the proper use of technology so students will develop as digital citizens (Greenhow, 2010; Karal & Bakir, 2016).

Teacher Beliefs, Knowledge and Professional Practices for ICT and Digital Citizenship

According to a considerable number of meta-analyses on teacher beliefs, results revealed that teachers are have the most important impact on learning and the level of pedagogy is essential in developing the quality of education (Acedo & Hughes, 2014; William, 2011). Educational ideals and fundamentals of the 21st century are more complex than in any previous century. Various curriculum content has a less direct cause and effect relationship; instead, greater emphasis rests on the influence of the multitude of information, data, and media sources. Individuals require greater skills to navigate, analyze, and evaluate to be successful problem solvers (Acedo & Hughes, 2014). Educators need instructional-technology-education curriculum design to support the changing demands of society and technology use (Patesan & Bumbuc, 2010). Graduates require a range of digital-literacy skills to enter the workforce; therefore, teachers have the added responsibility of ensuring students gain these skills in their formal education (Lowenthal et al., 2016).

Many researchers have shown that teachers have a positive perception of the use of technology in the classroom and believe mobile devices can significantly benefit the educational experience (Domingo & Gargante, 2016; Inan & Lowther, 2010). Additionally, teachers' attitudes toward computer usage in their classroom and their likelihood of incorporating technology into their implemented instructional practices

relates to their comfort level with ICT (Inan & Lowther, 2010; van Braak et al., 2004). Badia, Meneses, Sigalés, and Fábregues (2014) conducted a random participant-survey study in 356 schools with 702 K–12 teachers to determine factors that influence perceptions about digital technology effectiveness. Participants responded to Likert-type scale items about their level of agreement with ICT infrastructure, policy, and programming. The researchers found that school policies about ICT teaching practice controlled teachers' perceptions of effective training plans, access to devices, and personal levels of digital literacy (Badia et al., 2014).

Crichton, Pegler, and White (2012) deployed a mixed-methods study using online surveys, ongoing teacher professional development meetings, classroom observations, and analysis of lesson plans and student work samples to identify specific attributes or commonalities that needed to be in place to support this type of technology integration. The study used teacher participants who were tasked with trying out iPod touch and iPad handheld devices. The purpose of the study was to understand the necessary infrastructure to support the use of handheld devices for instruction in urban K–12 schools in Canada. Crichton et al. chose five classrooms from schools across the district, based on stakeholders' willingness and school population diversity. In Phase 1 of the study, the researchers gave classroom teachers a class set of iPod Touches, a laptop, syncing cart, and document camera. In Phase 2, the researchers selected three schools based on an application process that highlighted their experience with inquiry-based teaching and willingness to purchase the necessary hardware. Study findings indicated that participants believed educational reform for increased device use would be best supported with stronger distribution and management policies geared toward student

safety (Crichton et al., 2012). This study focused on policy reform for students' Internet security, but additional research would be needed to see if policies would be effective over time.

Furthering consideration of hardware and software use, Domingo and Gargante (2016) conducted a survey study in 12 primary schools in Spain using 102 teachers, asking participants about their perceptions of the influence of mobile technology on learning and their use of specific applications. The researchers analyzed the data using descriptive statistics to identify specific applications deemed relevant for use. Additionally, they analyzed survey items using the Whitney *U* nonparametric test to identify any differences between classroom and nonclassroom users of specific applications. Research results revealed that teacher knowledge about classroom technology use predominantly built on specific actions or plans; teachers' beliefs related to their willingness to dedicate time and their personal perceptions of technology's impact on learning. Additionally, Domingo and Gargante asserted that to promote technology use in meaningful ways for the classroom, it is vital to comprehend the perceptions of teachers. The development of society over time shapes students' futures; therefore, educators instructional planning for technology use should encompass not only dynamic and engaging but informative and valuable learning opportunities to benefit students' future (Kennedy, Judd, Churchward, Gray, & Krause, 2008, as cited in Snyder, 2016).

Shifting from student use to teacher perspectives and use of technology, Roach & Beck (2012) conducted a qualitative, inquiry-focused case study of one teacher's personal habits when using social-media sites like Facebook. Researchers coded and analyzed

status updates and public digital conversations to see what types of personas people developed or communicated in the Facebook public view. Findings revealed patterns in attitude or feelings in the teacher's posts on a personal news feed or by respondents or audience to the news feed. Common attitudes and feelings posted by the teacher or the audience consisted of lamenting, affirming, planning, challenging, confessing, and justifying (Roach & Beck, 2012, p. 248).

This inquiry attempted to identify certain trends and topics that might evoke more interest in writing independently and collaboratively in support of new literacy-based writing curriculums in classrooms. One recommendation of the researchers was for teachers to use broad questioning, especially around ethical or value-laden topics, as a way to spark written dialogue (Roach & Beck, 2012). Additionally, teachers should use social-media sites as sources of reading to support students' development of purposeful writing by examining and building an understanding of language use, context, and audience choice in public posts and status updates. Finally, using social media to support writing can help students develop their own norms for what they believe is acceptable and unacceptable communication in public and collaborative online environments (Roach & Beck, 2012).

Continuing the focus on teacher use of technology, Harshman and Augustine (2013) conducted a qualitative case study of 126 teachers from 30 countries working at International Baccalaureate schools that used asynchronous online discussion forums for professional development on global citizenship and international mindedness. The researchers conducted content analysis of online discussion forums, email exchanges, and interviews completed through Skype. As in transformative learning, Harshman and

Augustine noted that participants defined global citizenship as on a spectrum and being an aspect of habits of mind, where individuals are initially most comfortable with what they have always known, but through their interactions with other people, change their perspectives and become more open and globally minded (Harshman & Augustine, 2013). Digital learning enriches students, transforming their education to prepare them for future work that emphasizes global digital learning (Gazi, 2016).

Participants' exposure to multicultural perspectives, either from working with colleagues from different nations at their schools or participating in professional development helped them adapt their viewpoint on what global citizenship means (Harshman & Augustine, 2013). The study was a collaborative online, asynchronous discussion forum that allowed participants to interact in a meaningful way with other participants and to have time to compose thoughtful and meaningful responses. Additionally, teacher participants portrayed and elaborated on the behaviors they described and hoped their students would exhibit as global citizens. This type of interaction allowed the researchers to discern a more comprehensive sense of participants' understanding and perspectives on global citizenship. Participating in online activities where individuals are exposed to a diverse group of people can support aspects of citizenship education (Harshman & Augustine, 2013).

With respect to integration of technology, Zheng, Warschauer, Lin, and Chang (2016) conducted a meta-analysis of 96 research studies to determine the impact of 1:1 programs on student achievement. Studies included in the meta-analysis were K–12 schools using 1:1 laptop programs (no other technologies such tablets or iPads). The researchers did not describe the programs; instead, they provided an empirical

examination (Zheng et al., 2016). Although this study did not directly focus on teacher knowledge of ICT or digital citizenship, it did support understanding of how technology integration affects educators and their decisions in making instructional choices.

Zheng et al. (2016) identified how students' individual access to technology affects classroom instruction. Through a meta-analysis, Zheng et al. found 1:1 programs had a positive impact on student achievement, specifically in English language arts, after the first year of implementation. Teachers and students needed a year to adjust to the new instructional paradigm. Students in 1:1 programs also showed greater achievement on computer-based tests after the first year of implementation. Additionally, 1:1 programs helped bridge the gap in the digital divide by providing access to students who might not have technology access at home, thereby leveling the economic playing field.

More student-centered learning activities took place as well as increased digital-literacy-related tasks such as writing, editing, publishing, researching, and providing students with immediate feedback as a result of the program (Zheng et al., 2016). The researchers also analyzed results from studies on teacher perceptions, beliefs, and instructional approaches. Results indicated that when teachers did not feel they were supported with training or technical support, they felt negatively toward the integration of technology. Alternatively, when teachers received adequate support and training, they became confident and efficient in their use of technology. Professional development also played a major role in supporting teachers in willingness to integrate technology into their classrooms and adapt instructional practices (Benes, 2013; Baumann, 2016; Inan & Lowther, 2010; Ozdamli & Ozdal, 2015; Taylor, 2007; Tondeur, van Braak, Ertmer, & Ottenbreit-Leftwich, 2016).

Zheng et al. (2016) reported Longitudinal studies revealed a positive change in teacher attitudes past the first year of the laptop program (Zheng et al., 2016). Furthermore, studies showed some evidence that the use of a 1:1 laptop program supported the development of some 21st-century learning skills related to information, media, and technology, such as the components of the element of digital literacy (Zheng et al., 2016).

Teacher Beliefs and ICT

Tondeur et al. (2016) conducted a meta-aggregative review of 14 qualitative studies to determine a relationship between pedagogical beliefs of teachers and their use of technology in education. Findings revealed that teachers' beliefs about effective learning and good teaching practices influenced their professional practice (Tondeur et al., 2016). Additionally, teachers' pedagogical beliefs should be a good indicator of their implemented instructional practices for technology integration (Inan & Lowther, 2010; Miranda & Russell, 2012; Tondeur et al., 2016). Teachers were either teacher centered or student centered and not a mix of both; instructional practices indicated a range of beliefs and habits (Ertmer & Ottenbriet-Leftwich, 2010; Tondeur et al., 2016). Technological and social determinism are blockading educators' ability to view connections between technology education and society (Tillberg-Webb & Strobel, 2011).

In conjunction, a barrier to complete technology integration for public education contributed to teacher and administrator knowledge (Benes, 2013). Additionally, principals need adequate technology training to model appropriate actions and make disciplinary decisions that adequately address issues and prevent future problems (Baumann, 2016; Maxwell, Stobaugh, & Tassell, 2011; Persaud, 2010). However,

educational stakeholders are beginning to recognize the gap between technology knowledge and their organizations' preparation for digital literacy use (Ribble & Miller, 2013).

Along these lines, Tondeur et al. (2016) recognized this gap and further supported accountability of educational leadership by examining results revealed in a meta-analysis, averring that external and internal factors such as self-efficacy for technology use, administration policies, and parental pressures can influence teachers' beliefs compared to actual practice. In addition, teachers' core pedagogical beliefs are the hardest to change because they interrelate with many topics, actions, and understandings developed from professional experience (Tondeur et al., 2016). Under Mezirow's transformational-learning framework, Taylor (2007) identified the need for teachers to receive comprehensive training and leadership support to alter their teacher practices. To integrate technology that includes curriculum emphasizing ethical and responsible practices for technology use, teachers and administrators need the most current and relevant knowledge and skills for technology use (Ozdamli & Ozdal, 2015). Last, it is also important to understand what teachers know about aspects of technology use and what can influence their beliefs allowing leadership to address any gaps or make programming modifications to support teachers with technology use.

Digital Citizenship Curriculum for K–12 Education

Four aspects of curriculum and learning are intended, written, taught, and hidden (Acedo & Hughes, 2014). Intended curriculum is what teachers plan for their students to learn as a result of the instruction. Written curriculum is the way teachers lay out planned instruction over a school year(s). The taught curriculum is the actionable instruction that

happens in real time in the classroom. Finally, hidden curriculum subconsciously happens intentionally or unintentionally as a result of engagement with the other three aspects. Teachers have responsibility to cover these four areas in their instructional practices to provide a complete learning experience for students. The hidden curriculum occurs unintentionally but often aligns with the reality of everyday life (Acedo & Hughes, 2014). Although aspects of instruction occur without the predetermination of the teacher manual, this type of instruction should be covered, particularly in consideration of technology integration and use in the classroom. Digital citizenship is an example of a once-hidden curriculum that is now gaining attention and is pushed to be taught alongside traditional curriculum.

The development of a specific curriculum for digital citizenship would enable digital citizenship to become a taught curriculum (Acedo & Hughes, 2014). By the same token, knowing the basic functionalities of one's devices is invaluable; individuals should be knowledgeable about what protocols are necessary to protect their online profile and sensitive data (Pusey & Sadera, 2012). For instruction focused on technology security to take place, teachers need a well-developed knowledge of technology use and the potential hazards associated with improper use (Skutil, 2014). Educators have a professional responsibility to instruct on digital citizenship to ensure that everyone develops an understanding about poor technology use and learns required actions to counteract misuse of technology (Farmer, 2011). Similarly, elementary school teachers need specific professional development that helps them prepare for technology use in the classroom to ensure students have opportunities to learn the necessary safe practices for technology use (Baumann, 2016).

Because research remains sparse on the topic of digital citizenship, some researchers have attempted to develop instruments to facilitate scholarly understanding of digital citizenship knowledge and beliefs. Ribble (2015), Suppo (2013), Isman and Canan Gungoren (2014), and Choi et al. (2017) attempted to develop instrumentation to assess specific knowledge of digital citizenship definitions, components, and elements.

Adopting Ribble and Bailey's (2007) original survey, Suppo (2013) conducted a quantitative survey to determine knowledge and beliefs about digital citizenship instructional practices for superintendents, curriculum coordinators, and technology coordinators working in K–12 public schools in the State of Pennsylvania. With permission, Suppo used a formative-evaluation process to create a more comprehensive Likert-type scale instrument that assessed participants' knowledge of aspects related to Ribble's nine elements. Suppo used content-area experts, including Ribble, to evaluate the question and establish content validity. The survey consisted of 36 knowledge-based questions, 17 policy and professional practice questions, and two beliefs in instructional practices in participants' school-district questions.

Suppo (2013) analyzed data using descriptive statistics to compare the means of responses for each of the nine elements across the variables of age, gender, and district type (rural, urban, and suburban). Also, the researcher conducted a three-way ANOVA to determine if the variables affected digital citizenship beliefs and a chi-square test to determine if a connection existed between curriculum implementation and district type (Suppo. 2013). Suppo intended to reveal if a connection existed between beliefs about digital citizenship and the actual professional practice of implementing a digital

citizenship curriculum at various school levels. However, research results revealed a relatively small correlation between variables.

Alternatively, Isman and Canan Gungoren (2014) conducted a reliability and validity test for a 34-question scaled survey tool to be used in studying digital citizenship knowledge and the knowledge of responsible and ethical online behavior. Test participants were from a population of university members including professors from the college of education and perspective teachers from a range of disciplines and teaching levels. Results revealed that the survey would be a useful measurement tool that could be used in future studies connected to digital citizenship knowledge. Although this survey tool does not explicitly use Ribble's nine elements of digital citizenship, it does add to the field of study in helping to develop research instruments to determine digital citizenship knowledge (Isman & Canan Gungoren, 2014).

Continuing with instrument development, Jones and Mitchell (2015) conducted a self-report survey scale of 979 youths, aged 11–17, from New England. As part of a larger study on cyberbullying, the researchers developed a scale to measure the construct of respectful online behavior and online civic engagement, and to operationalize a definition of digital citizenship in educational curriculum. Results revealed a negative correlation between age and behavior in that, as the age of the participants increased, the level of online respect and online civic engagement decreased. When Jones and Mitchell analyzed items based on gender, girls showed higher levels of online respect and online civic engagement than male participants. For the larger study on cyberbullying and harassment, participants who reported having respectful online behavior and civic engagement also reported lower incidence of participation or victimization in the form of

cyberbullying. The results of Jones and Mitchell's study aligned with the view of Gazi (2016), Martens and Hobbs (2015), Ohler (2011, 2012), Oyedemi (2015), Ribble (2015), and Ribble and Miller (2013) that digital citizenship should be addressed at younger ages.

Quite recently, Choi et al. (2017) conducted a formative-evaluation process to develop a digital citizenship scale instrument that researchers could use to understand holistically to establish individuals' online behavior unique to digital citizenship criteria. In the instrument Choi et al. (2017) developed, they used four categories or themes specific to the concept of digital citizenship as subscales: Digital Ethics, Media and Information Literacy, Participation/Engagement, and Critical Resistance. The final product consisted of a 26-item, 5-point scale to self-assess one's Internet abilities, perceptions or self-efficacy, and participation in online communities, dubbed the Digital Citizenship Scale (Choi et al., 2017).

Choi et al. (2017) used a three-phase formative development and evaluation process involving an extensive literature review, content analysis by a panel of experts, and a sample test to establish content validity and instrument reliability. They sorted the questions developed to determine digital citizenship knowledge into four factors: Internet Political Activism, Technical Skills, Local/Global Awareness, Critical Perspective and Network Agency, based on themes determined from a literature review (Choi et al., 2017, p. 18). In addition to content-based questions about Internet knowledge and digital citizenship, Choi et al. (2017) adopted the State-Trait Anxiety Inventory to discern the stress levels of participants toward web-based activities. The researchers conducted formal research using 508 participants ranging in age from 18 to 35, categorized as either undergraduate or graduate university students from two different educational institutions.

Study results revealed Internet self-efficacy positively correlated with digital citizenship competency, and Internet insecurity or anxiety negatively correlated with digital citizenship competency. The identified themes and factors in the Choi et al. (2017) survey tool were labeled differently from Ribble's nine elements of digital citizenship; however, educators can draw similarities between the Choi et al. themes and factors and Ribble's nine elements.

Digital ethics are a user's ethical, safe, responsible behavior when interacting online (Choi et al., 2017; Hollandsworth et al., 2011; Ribble et al., 2004; Winn, 2012), and provide the basis on which Ribble's nine elements developed. The theme of Media and Information Literacy, identified by Choi et al. (2017), along with the factor labeled "technical skills" closely relate to Ribble's elements of digital communication and digital literacy because they describes how users search, access, and evaluate content on the Internet as well as the communication and collaborative nature of many Web 2.0 tools. One can view the theme of Participation/Engagement and Critical Perspective and Network Agency as indicating how one interacts with different media to participate in "political, economic, social, and cultural … activities" (Choi et al., 2017, p. 10; see also Citron & Norton, 2011; Ohler, 2012) through actions such as posting, sharing, saving, and buying and selling, which relate to Ribble's elements of digital etiquette, digital law, and digital commerce. Finally, Critical Resistance and Local/Global Awareness indicate participation in activities that promote social justice (Choi et al., 2017; Coleman, 2006; Herrera, 2012) relating to elements of digital access, digital law, and digital rights and responsibilities.

Choi et al. (2017) showed that researchers are starting to devote time to developing reliable and valid instruments that can be used to support studies about digital citizenship knowledge and personal practice. The research study by Choi et al. (2017) is specifically important to the present study, as the formative evaluation process that was used to determine the validity and reliability of the instrument was also used for this study. Choi et al. (2017) did not specifically address all the variables under investigation, so using the Digital Citizenship Scale is not an appropriate choice for this study; therefore, I developed a different instrument.

The above-mentioned studies indicated the current state of available literature connected to Ribble's nine elements or digital citizenship in general. These studies revealed that Ribble's elements provide a backbone for establishing a curriculum that integrates with ethical and responsible use of technology as well as time and interest in developing valuable tools to assess competencies for digital citizenship. However, insufficient research persists about what current in-service teachers specifically know or believe about digital citizenship or what they are already doing to address digital citizenship in their classrooms.

Summary

The focus of this literature review was to determine what knowledge has already been found on the topic of digital citizenship with emphasis on elementary teachers' beliefs, knowledge, planned, and implemented instructional practices. The body of knowledge for the topic of digital citizenship has shown that researchers predominantly studied higher education, preservice teachers, or the middle and high school years, with students. Research results showed that despite being identified as digital natives, growing

up not ever knowing a time when the Internet and mobile devices were not readily available, these groups of middle school aged to university students still lack a complete understanding of what constitutes acceptable, ethical, and responsible use of technology (Boyle, 2010; Davis et al., 2010; James et al., 2010; Karal & Bakir, 2016; Lindsey, 2015; Pusey & Sadera, 2012; Sincar, 2011, 2013). Additionally, research on poor student behavior with an emphasis on social media and cyberbullying (Davis & James, 2013; Jones & Mitchell, 2015; Park et al., 2014; Ribble & Miller, 2013) showed that although cyberbullying is a recognized problem in a more networked and technology-dependent society and deserves to be studied deeply, it is not the only aspect of digital citizenship.

Scholars such as Hobbs and Jensen (2009), Ribble et al. (2004), Ohler (2011, 2012), Ribble (2012), Ribble and Miller (2013), and Curran, Ribble, and Ohler as cited in Impero Software (2016) focused on digital citizenship and wrote articles proposing the implementation of curriculum to support teachers and students in learning to make appropriate, responsible, and ethical decisions when accessing and using the wide range of media that comprises Web 2.0. However, specific research on what teachers and students know or believe about digital citizenship, especially at the elementary level, remains dramatically understudied.

With regard to teacher planned and implemented instructional practices, many studies conducted on teacher efficacy and beliefs about the use of technology in the classroom showed that teachers believe technology can enhance the learning environment (Inan & Lowther, 2010); however, researchers also showed that training, infrastructure, and leadership are barriers (Baumann, 2016; Benes, 2013; Ozdamli & Ozdal, 2015; Taylor, 2007; Tondeur et al., 2016). Of all the studies reviewed on ICT use in the

classroom, no study identified digital citizenship as a component of ICT integration. Most studies focused on digital literacy, a single component of digital citizenship.

Despite some research on instrumentation developed to fully assess individuals' knowledge of digital citizenship or cyber ethics behavior (Choi et al., 2017; Isman & Canan Gungoren, 2014; Jones & Mitchell, 2015), research is minimal and quite recent. In contrast, discussions on digital citizenship, including definitions and concept development, has been ongoing since the early 2000s. This literature review revealed that a gap persists in the literature about what teachers specifically know or believe about digital citizenship and what teachers are doing to implement digital citizenship elements into their instructional practices and curriculum with students, especially at the elementary level.

Chapter 3: Research Methods

The purpose of this quantitative nonexperimental survey study was to describe patterns of Hawaii public school elementary educators' knowledge and beliefs about digital citizenship and their planned and implemented practices for a digital citizenship instruction. Hawaii is made up of a single unified public-school district, HIDOE, spread among seven islands. Limited research has been done using elementary educators when examining the phenomenon of digital citizenship. Results from this study were intended to help educational leaders in making decisions about training and programming for educators that would ultimately support Hawaii in meeting the goals of the Future Ready plan and 2017–2020 Strategic plan. In the sections that follow, I discuss the research design with my rationale and provide an in-depth description of the methodology including participant pool, sample size, data collection, and the use of a formative-evaluation process to ensure content and response process validity of the instrument. Additionally, I define operational variables and detail the data-analysis plan. Finally, I provide a thorough discussion of how I addressed threats to validity and ethical issues.

Context of Study

As stated in Chapter 1, the context for this study derived from a pledge HIDOE made in 2014 to the U.S. Secretary of Education to become a Future Ready state and school district. Within this pledge, HIDOE specifically identified digital citizenship as an important asset to being future ready. In addition, a strategic learning plan was created which focused on the importance of supporting technology integration by ensuring all schools are 1:1 with technology devices throughout K–12. Finally, the learning plan

emphasized providing necessary training to educators to ensure student learning would meet the tenets of the pledge.

Research Design and Rationale

This quantitative, nonexperimental survey was a descriptive study in which the variables were not dependent upon one another. Results of the data were used to look for patterns among the individual variables: educator knowledge of digital citizenship, educator beliefs about digital citizenship, educator planning for digital citizenship instruction, educator implemented instruction of digital citizenship, and factors impeding or supporting educators' use of digital citizenship instruction. For this study, I used a quantitative online, self-administered survey questionnaire involving Likert scale questions and limited open-ended response questions.

Survey research is often used as an orderly way to collect data about people in order to get accurate generalizations about a large population. Researchers use survey tools when attempting to explain, describe, or explore characteristics, attitudes or behaviors about specific populations (Leedy & Ormrod, 2005). Additionally, when researchers want to get direct information from people about the way they act or what they know, believe, or think then a survey can assist in gathering information. The survey design is efficient for explanatory and descriptive research (Singleton & Straits, 2004).

Information collected from a survey can include demographic information and may assist in describing characteristics of the targeted population, especially when a sample may be widely dispersed (Pinsonneault & Kraemer, 1993), as in this current research study with participants spread throughout schools across seven different islands. Furthermore, besides being able to reach members of the population that are

geographically spread out, online surveys have additional advantages. Advantages include things likes being able to easily send reminders, providing skip logic for directing participants to specific locations based on answers to previous questions, quicker turnaround time with retrieving responses, and combining all data including downloadable or transferable files for data analysis (Gunn, 2002).

Methodology

The primary reason I chose this research method was the geographic constraints of the population. To reach individuals in the population who live on seven different islands, it was most convenient to use an online survey. Additionally, the population comprised a large number of individuals, so the use of the state-issued email system ensured a greater number of people being invited to participate in the study. The necessary resources for participation in this study was an Internet-enabled device and access to the survey link. I provided the link to educators through email. I collected educator email addresses from publicly accessible data on the HIDOE website with permission from the HIDOE Data Governance and Analysis (DGA) Branch. I sent invitations to participate as emails to a list of principals, technology coordinators, and curriculum coordinators using publicly accessible information, and then forwarded the survey to teachers and other coordinators through Listservs by the original recipients of the initial email invitations. Additionally, participants may have learned of the study through their membership in the HSTE, which shared the study with their membership Listserv in their monthly newsletter. All procedures for recruitment were approved by the Institutional Review Board (IRB) at Walden University (approval # 07-20-17-0510658) and HIDOE DGA (approval # RES201720).

Population

The population for this quantitative study consisted of K–5 or K–6/ elementary classroom teachers, elementary school curriculum coordinators, and elementary school technology coordinators in the HIDOE public school system, including charter schools and schools of choice but not private or parochial. The term educator is used throughout the remainder of the chapter to refer to any participant who is an elementary teacher, curriculum coordinator, or technology coordinator. The HIDOE is one unified school system consisting of schools located on seven different islands. There are 209 schools with elementary student populations. Schools have anywhere from one to five (or more) teachers per grade level, as well as one curriculum coordinator and one technology coordinator per school, making up an estimate of approximately 2000 teachers, curriculum coordinators, and technology coordinators who made up the target population. Because it was unreasonable to expect a 100% response rate for an online survey, with a population of 2000, a large effect size of d =0.5, the sample population was 38 or 115 if there was a medium effect size, d= 0.3 (Heinrich-Heine-Universität Dusseldorf, 2018).

Participant Inclusion and Sampling Procedures

In this study, I did not draw a sample but instead attempted to include the entire population of educators matching the above-mentioned criteria. This population was an accessible population due to my connection with the HIDOE school system at the start of the initial proposal. The criteria for individuals to be invited to participate in this study aligned with their role in planning and implementing curriculum at the elementary level through the traditional 3Rs (reading, writing, and arithmetic) or ICT; therefore, they could provide the greatest knowledge and understanding to answer the research questions

under investigation (Patton, 2014). All educators in HIDOE who met the demographic criteria of working at the elementary level as a teacher, curriculum coordinator, or technology coordinator were welcome to participate in the study. The study was voluntary.

Procedures for Recruitment, Participation, and Data Collection

I solicited educators through an email sent using the state's secure email system, Lotus Notes. I notified principals of the research study and asked them to share the study with educators by sharing/forwarding the request for participation invitation email (see Appendix B). In some cases, I invited the curriculum coordinator and technology coordinator directly, who may have shared the study with the curriculum coordinator communication portal and the technology coordinator, the Tech Cadre Listserv, and their classroom teachers (see Appendix B).

Demographic information included gender, age (in a range), years of professional teaching (in a range), island location, complex-area location, description of professional responsibility (I am primary a classroom teacher, I am a Technology Coordinator with teaching responsibilities, I am a Technology Coordinator with no teaching responsibilities, I am a Curriculum Coordinator with some teaching responsibilities, I am a Curriculum Coordinator with no teaching responsibilities), and schools' level of adoption for the 1:1 device whole-state Future Ready adoption plan. The survey questions included response choice about the ratio of students to devices and the piloted plan in the schools.

The email included a link to an introduction video and transcript of the video (see Appendix B for the video transcript), a link to the online survey with informed-consent

information, additional details about how to participate, the voluntary nature of the study, and an attached copy of the superintendent-signed approval letter from HIDOE (see Appendix H). The link to the survey led participants to the start page, which again reviewed the informed consent and included a checkbox they had to mark to acknowledge their willingness to participate to proceed with the survey.

Data accrued in the form of an online survey that included Likert-type scale questions that determined their beliefs about digital citizenship, specific knowledge, and skill-based questions about the elements of digital citizenship. Additionally, open-response questions gave participants the opportunity to provide information about their planning and instructional practices and describe any factors that either supported or impeded their ability to plan or implement digital citizenship instruction. Due to the nature of this quantitative study, I conducted no follow-up procedures such as interviews.

Survey Software

SurveyMonkey is a web-based software program that allows users to develop surveys that can easily be shared with many individuals. Although this program has a free version, I used the paid version to ensure additional securities were put in place such as anonymous collection of respondents, privacy-policy disclosure, number of survey items, email delivery, and skip logic. I established anonymity by providing a web link that did not track respondents, regardless of whether they received the link in an email invitation or as a public link (SurveyMonkey, 2017). SurveyMonkey includes a feature that can be turned on and off to collect participant names or identify specific IP addresses of the survey respondent. For this study, had the feature turned off to ensure anonymity of respondents. I outlined privacy policies on the first page of the survey that included the

participant informed consent. SurveyMonkey has their own privacy policies separate from organization policies; however, these are merely to reassure the user that the use of SurveyMonkey to disseminate the survey is safe and secure. Skip logic is an automated rerouting process that directs respondents to specific locations based on how they respond to certain questions. In Appendix C, the first screen shown is the informed consent; if the respondent selects they do not agree to participate, they would have been rerouted out of the survey. However, if they agreed to participate, they were routed to the first set of questions. Finally, SurveyMonkey used Secure Sockets Layer encryption to ensure responses were sent through a secure connection (SurveyMonkey, 2017).

Survey Development and Operationalization of Constructs

Although researchers have used similar instruments in studies intending to determine the beliefs or knowledge of school educators related to digital citizenship, no single instrument was sufficient for this study. The literature review referenced survey instruments such as the Choi et al. (2017) Digital Citizenship Scale, Isman and Canan Gungoren's (2014) Digital Citizenship Scale, Ribble and Bailey's (2004) Digital Driver's License, Ribble's (2015) Digital Citizenship Audit, and Suppo's (2013) Digital Citizenship Survey. However, no one tool encapsulated all the variables examined in this study. Suppo's Digital Citizenship Survey, developed as a modification of Ribble and Bailey's (2004) instrument, was the closest instrument to the purpose of this study; however, because Suppo only collected data from district administrators, questions specific to professional practice were not specific enough for this study. Therefore, a new instrument needed to be created, the SDC.

I used the Standards for Educational and Psychological Testing (American Educational Research Association et al., 1999) to guide instrument development. The standards serve as criteria for demonstrating the creation of a quality instrument. I considered test design and development, test validity in the form of content and response process, and test fairness to be key standards in the creation of the SDC.

Test development and design require a researcher to determine the constructs to measure; identify the target population; examine preexisting tests; develop, evaluate, and revise the instrument; and engage in procedures to ensure validity (Gall, Gall, & Borg, 2007). I developed the SDC after a thorough examination of the literature (see Table 1) and an examination of existing instruments previously described. I created a draft of the instrument, reviewed by a survey expert and content-area experts who included scholarly researchers in the field of digital citizenship. Educators meeting the participant criteria reviewed the draft instrument to ensure validity.

In original instrument development, content and response-process validity are of high importance. In content validity, the researcher attempts to do more than merely casually examine what the instrument proposes to address (Gall et al., 2007). Instead, the researcher uses content-area experts to examine the entire scope of the instrument by carefully evaluating each item individually and holistically (Gall et al., 2007). I developed the SDC after a review of literature, including the instruments mentioned above, and wrote questions to align with the framework. I then shared the SDC with content-area experts for a thorough review.

Alternatively, response-process validity is about determining if the test takers interpret the test content in the same way as the developer of a test intended the items to

be interpreted (Gall et al., 2007). For the SDC, a small sample of the population reviewed the survey to determine response-process validity. In the sections that follow, I more thoroughly explain these types of validity.

With regard to test fairness, the standards outline that the developer of the instrument is responsible for minimizing any barriers a respondent may face, and the developer and the survey taker are responsible for providing needed accommodations (Doğan, 2016). In the case of the SDC, the survey questionnaire was self-administered online with access provided through a publicly accessible secure link. Any accommodations the participant may have needed, such as enlarging the print on the screen or needing items to be read aloud, were at the discretion of the participant and not known by the researcher if they took place. Following the review by content-area experts, items were reviewed by members fitting the criteria of the population. All question items remained as written. However, I altered two questions after the technology pilot to ensure clarity and response validity. Examples of supports or impairments were added to Items 3 and 4 in Part 2 of the survey.

As previously stated, this was a descriptive statistics study, so the operational definitions of the variables were determined by the response pattern of each set of questions in the survey that directly related to the specific variable. Educator knowledge of digital citizenship was determined based on participant responses to the survey on the questions identified as knowledge-specific questions. The same was true for educator beliefs and planned and implemented professional practices. The variable was measured by specific questions on the survey. For each question, I calculated and evaluated frequencies and percentages and interpreted response patterns and trends.

Survey Development

I used a matrix as a design tool to establish evidence of content validity for the survey questionnaire (see Table 1). The matrix is a bridge between the research questions and the review of literature in Chapter 2 for the development of the survey items. I divided the matrix into five columns: research questions, variables, definitions, references, and survey item numbers. The survey-item-numbers column provides a complete list of items in the survey, divided by element or section, that address that specific research question. The completed survey appears in Appendix C.

Table 1

Survey Matrix for Survey Item Development

Research questions	Variables	Definition	References	Survey item numbers
RQ—What are elementary educators' knowledge and skill levels of digital citizenship?	Knowledge of digital citizenship elements Specific skills for using technology	Appropriate, ethical, and responsible use of technologies related to a wide range of topics including digital communication, digital laws, digital literacy, digital rights and responsibilities, and digital etiquette. Skills relate more specifically to digital literacy but still encompass other elements of digital citizenship.	Choi (2016); Choi et al. (2017); Curran & Ribble (2017); Greenhow (2010); Isman & Canan Gungoren (2014); ISTE (2017); Jagasia et al. (2015); Karal & Bakir (2016); Ozdamli & Ozdal (2015); Pusey & Sadera (2012); Simsek & Simsek (2013); Sincar (2013); Skutil (2014); Ribble (2015); Wilson et al. (2014)	Element 1: 1 Element 2: 1-6 Element 3: 2 &3 Element 4: 1-3 Element 5: 1-4 Element 6: 1 & 2 Element 7: 4 Element 8: 3 Element 9: 1, 2,5
RQ 2—What level of beliefs about digital citizenship do elementary teachers have with regards to their instructional practices?	Pedagogical beliefs of teachers	Moral choices about what to do online, Ideas about what is developmentally appropriate for students and meets the learning needs at a specific grade level.	Domingo & Gargante (2016); Uzunboylu & Hursen (2011); Klinger (2016); Suppo (2013); Tondeur et al. (2016)	Element 1: 4-8 Element 2: 8 Element 3: 7 Element 5: 8 Element 6: 5-7 Element 7: 1 & 2 Part 2: 5

Table 1 continued

Research questions	Variables	Definition	References	Survey item numbers
RQ3—To what degree do elementary educators plan to implement digital citizenship into their curriculum?	Planned instructional practices for digital citizenship	What teachers consider when making instructional plans for their lessons. Either directly addressing digital citizenship elements or indirectly addressing through general technology integration	Acedo & Hughes (2014); Lindsey (2015); Ribble (2015); Snyder (2016)	Element 2: 7 Element 4: 4 Element 8: 2 Part 2: 1, 2, 6
RQ4—To what degree do elementary educators implement digital citizenship into their instructional practices?	Implemented instructional practices related to digital citizenship	What teachers specifically do or teach in their classroom related to technology integration with and without digital citizenship incorporated	Chou et al. (2015); Curran & Ribble (2017); Inan & Lowther (2010); Karal & Bakir (2016); Martens & Hobbs (2015); Snyder (2016)	Element 1: 2 & 3 Element 3: 1, 4-6 Element 4: 5-7 Element 5: 5- 7 Element 6: 3 & 4 Element 7: 3 Element 8: 1 Element 9: 3 &4 Part 2:7
RQ5—What factors support or impede elementary educators' ability to plan and implement digital citizenship?	Planning or implementing	The policies, protocols, infrastructure, training, time, pressures, or expectations that could impact why a teacher does or does not implement digital citizenship	Badia et al. (2014); Baumann (2016); Benes (2013); Lindsey (2015)	Part 2: 3 & 4

Formative Evaluation Process

The formative evaluation consisted of three parts. First was a formative-evaluation process to construct the survey instrument and to ensure evidence of content validity. Additionally, a sample population reviewed survey items to determine evidence of response-process validity and reviewed the technical aspects of the survey to ensure they had no difficulty that might impact end users' ability to successfully complete the survey. The formative evaluation started with a review by a survey expert to consider wording of survey questions to determine the clarity of questions.

The second phase of the formative evaluation was a review of the content of the survey questions by content-area experts to ensure that aspects of educator knowledge, educator belief, educator planning, and educator implementation practices were represented correctly in the lens of digital citizenship. A face-to-face review took place with experts in the field of educational technology and digital citizenship, Internet security, curriculum, and teacher education. I asked content-area experts to identify any question items that could have been unclear, identify any questions that were irrelevant, provide recommendations for additions of any questions, and provide general feedback on the overall survey. They suggested minimal revisions. I revised some items based on wording, but overall content remained the same. With the feedback from the experts, I made revisions and sent a second version to the panel to review by email. No further meeting was necessary as all members of the panel agreed the instrument was sufficient.

A face-to-face review took place with a sample of educators from HIDOE. The face-to-face interview consisted of reading the questions aloud and the educators providing feedback as to what they thought the question was intending to ask. Because the educators' responses were concurrent with the intended purpose of the question, this provided evidence of response-process validity. Finally, I asked volunteers to complete the online survey from different devices and different web browsers to determine any technical issues that might have arisen during the official administration of the survey. The practice survey administration took place individually by the volunteers from their various locations and devices. The volunteers provided feedback via email and I adjusted the technical workings of the survey, as needed, before sending the first email invitations to all participants (Dick et al., 2014).

Data Collection

As stated previously, participating in this survey was entirely voluntary. I made a dissemination agreement with HIDOE, included sharing the survey with elementary school principals through email with an introductory video that explained who I was and what I wanted to do with this study. HIDOE agreed to encourage staff to participate in the survey study. Principals and coordinators could share the email with faculty, but no specific protocol was specified. Further efforts to increase awareness of this study involved the HSTE sharing the video and link for the study in their monthly newsletter (see Appendix I). Because I had no way to know exactly who completed the survey, I was unable to target any individual or receive any negative repercussions as a result of their participation in the study.

The survey was open for approximately 40 days. I sent the first email on the first day the survey was open. After one week, I sent a reminder email and on Day 11 sent another reminder email. Last, I sent a third email reminder on Day 22 to increase participant-response numbers after teachers had been out of school for a week on spring break. The HSTE newsletter was sent on Day 28. I locked the survey at the end of 40 days, ran reports, and analyzed the data. At the completion of the study, the only data that remained were those that appear in the final write up of the study. I destroyed any data that included any personal information, such as email addresses used to share the study.

Data-Analysis Plan

SurveyMonkey provides features to view and analyze data in a variety of ways, including Excel spreadsheets that calculate the percentage of all respondents' responses per question. I used this document to determine frequencies and percentages. I calculated

frequencies and percentage for the questions in each section of the survey. I examined patterns based on the overall response in the element to see if patterns portrayed a high, medium, or low level of teacher knowledge or belief that they planned or implemented. With regards to data cleaning or screening procedures, I reviewed data entries to determine that respondents answered questions completely. With forced-choice responses of the online survey, respondents could select only one of the Likert-type scale items. Because the majority of the test items were Likert-type scale items with a choice of 1–4, little to no input error was possible by users. However, simple open-ended questions might have had errors in the form of typographical issues. I analyzed the items and made changes only to wording to interpret the overall meaning of the sentence; I noted these in the analysis procedures described in Chapter 4. I only changed wording if it was obvious that auto correct or homophones were used in place of the intended word or words.

I used IBM's Statistical Package for Social Science (SPSS) software (version 24) for analysis of data for an internal-consistency test to establish reliability of the instrument. I manually inputted participants' responses to each question into SPSS and gave a numerical value to each response. A zero input indicated the participant skipped the questions; 1 indicated a response "not true of me"; 2 indicated "sometimes true of me"; 3 represented "always true of me"; and 4 indicated "always true of me." At the completion of data input, I ran a Cronbach's alpha test. The details of the analysis appear in detail in Chapter 4.

Research Questions

Because the purpose of this quantitative survey study was to describe patterns of Hawaii public school elementary educators' knowledge and beliefs about digital

citizenship and their planned and implemented practices for digital citizenship instruction, I tested no hypotheses; rather, I presented research questions. Chapter 4 provides answers to the research questions based on the information analyzed from the descriptive-statistics output.

RQ1—What are elementary educators' knowledge and skill levels of digital citizenship?

RQ2—What level of beliefs about digital citizenship do elementary educators use in their instructional practices?

RQ3—To what degree do elementary educators plan to implement digital citizenship in their curriculum?

RQ4—To what degree do elementary educators implement digital citizenship in their instructional practices?

RQ5—What factors support or impede elementary educators' ability to plan and implement digital citizenship?

Threats to Validity

According to the *Standards for Educational and Psychological Testing*, validity is "the degree to which evidence and theory support the interpretation of test scores for proposed uses of tests" (American Educational Research Association et al., 1999, p. 11). Threats to validity can happen in a variety of ways such as internally, externally, with content, and in the response process. The use of a survey matrix tool provided satisfactory evidence of content validity based on scholarly literature and is the primary source of validity in the construction of a questionnaire. In addition, I further

substantiated evidence of content validity during the formative-evaluation process explained earlier in this chapter.

Due to the nature of this study, no threats to internal validity existed because this study did not examine a relationship between independent and dependent variables. Internal validity is the degree to which outside factors affect the variables of the study. For example, because I used no pretest, no issues of prior knowledge could impact the results. In fact, the knowledge the educators possess was one variable to be determined. Because I used no posttest, no issues could arise of educators learning from the pretest to impact posttest results. Maturation was not a concern as educators could not age out of the study and I only used their physical age to attempt to group educators generationally to see if a connection arose among individuals in that age group. The survey was only conducted once, so no concern emerged that educators would not be able to complete the study.

The primary threat to this study was external or population threat. Because participation in the survey was voluntary, the sample accrued based on the response rate. I included demographic questions in the survey to assist in comparing characteristics among educators in specific groups such as age, gender, years of professional teaching experience, island of residence, complex-area location, or professional role. Although the population was rather large, the response rate was small with a medium-high effect size. The total number of participants was 75; also, demographic information was distributed fairly evenly among some demographic groups, making it possible to provide inferences based on patterns for educators in HIDOE. Chapter 4 provides specific analysis.

Ethical Procedures

All participation in this study was voluntary and anonymous. No physical harm was brought to educators and the only access they needed to participate in the study was the use of computer or mobile device and an Internet connection. Educators provided informed consent prior to the start of the survey.

I accessed participants through snowball sampling with the use of publicly accessible email addresses and Listservs in the HIDOE secure email system and HSTE membership. I requested use of this type of data from HIDOE's DGA through a three-part application process that only occurred at certain times of a year. DGA initially denied the application because DGA needed additional information and requested revisions to certain aspects of the initial application (see Appendix G). After DGA approved and the Superintendent for HIDOE signed the application (see Appendix H), the IRB provided final approval and data collection commenced.

I made initial contact with HIDOE DGA in January 2017 to introduce the intent to submit an application for a proposed study and to obtain clarification regarding school numbers and acceptable ways to access educator contact information. This initial email in maintained the IRB policy of conducting research following proposal approval (see Appendix A). HIDOE DGA highly encourages perspective researchers to contact them in advance to prepare them for the application process and to help them differentiate between proposals that may be accepted at the researcher's institutional IRB but would not be approved by the HIDOE.

HIDOE (2015) required the submission of an application through a three-phase process. Phase 1 required the submission of a research application, an excel spreadsheet

that included lists of targeted offices and schools, and an Advisor Support Form, if applicable to the study. After submission of the initial paperwork, the DGA of HIDOE preliminarily screened the application. Because the study was not deemed excessively intrusive or inappropriate, I was invited to participate in Phase 2, the submission of a full application. A full application included an Affirmation Form for Researchers, documentation of approval from my institution's IRB, copies of necessary consent forms, and copies of all research instruments/documents including survey tool and research questions. Finally, Phrase 3 consisted of a committee review of all materials submitted in Phase 2, when permission was either granted or the applicant was requested to make changes and resubmit at a later date. My initial application received committee review but was not approved because DGA needed further clarification about how the study would support and connect with HIDOE's (2016) strategic plan. Additionally, HIDOE DGA requested I revise my method of contacting participants. I had initially requested access to all employees meeting my population criteria's email addresses, and DGA would not provide that information.

DGA invited me to resubmit my application in October 2017, providing more detailed information about how the study related to the HIDOE strategic plan and outlining the idea of using snowball sampling through publicly accessible email addresses, using contacts made through my former employer to share through Listservs, and using a professional organization, HSTE, to share with members. In December 2017, DGA granted conditional approval with a request to alter two demographic questions (see

Appendix G) and granted final approval, with a signature from the superintendent, granted in January 2018 (see Appendix H).

Even though I was previously employed at a school in HIDOE, the teachers, the curriculum coordinator, and the technology coordinator of the school where I worked were invited to participate. The anonymous nature of the survey prevented me from ever knowing which members of staff participated and which did not, nor did I ever know how they specifically responded. I provided no incentives for participation in this study; however, if principals believed this was an important study and encouraged staff to take the survey, I could not stop them from incentivizing their staff. I also was not privy to this information.

Summary

Chapter 3 provided an overview of this quantitative descriptive survey study that included the research design and rationale, overview of the methodology, procedures for recruiting, participation, and data collection, including a description of the population and sample size, methods for conducting a formative evaluation, a pilot study for instrument development, threats to validity, and ethical procedures. Chapter 3 also outlined procedures for gaining permission from the governing organization, HIDOE, and an explanation about how educators could preserve their anonymity without fear of repercussions if they participated. Chapter 4 provides details about the exact data collection, data analysis, and results overview. Chapter 5 includes details about finding interpretations, any limitations experienced during the study, implications of the study, and recommendations for future research.

Chapter 4: Results

The purpose of the quantitative research study, using an online survey tool, was to determine the knowledge, beliefs, planned, and implemented practices of elementary educators for digital citizenship instruction. For my study, I attempted to survey educators in public and charter elementary schools across the State of Hawaii, consisting of approximately 209 schools on seven islands. This study had five research questions:

RQ1—What are elementary educators' knowledge and skill levels of digital citizenship?

RQ 2—What level of beliefs about digital citizenship do elementary educators use in their instructional practices?

RQ3—To what degree do elementary educators plan to implement digital citizenship in their curriculum?

RQ4—To what degree do elementary educators implement digital citizenship in their instructional practices?

RQ5—What factors support or impede elementary educators' ability to plan and implement digital citizenship?

The data collection and analysis that follows includes information regarding the frequencies and percentages for each research question based on the specific survey items in addition to describing any patterns that existed among participants based on demographic responses.

Data Collection

I recruited participants through the use of publicly accessible email addresses for administrators and the monthly electronic newsletter for the HSTE. I emailed a request

for participation along with an introduction video, link to the live survey, and a copy of HIDOE superintendent's letter of approval on Day 1 of the survey, March 5, 2018. I sent three additional reminders approximately every week the survey was open, not including the week educators were on spring break. In addition to my main recruitment technique, HSTE included information about the survey in their newsletter distributed on March 30, 2018. The survey stayed open through the following week. The majority of survey responses accrued between Weeks 2 and 3 and closed after the fifth week due to lack of participation.

The only required survey item was the informed consent at the start of the survey. Although 82 individuals accessed the survey, only 74 consented to participate and completed the survey. Those agreeing to participate in the survey were able to skip items in the actual survey, resulting in the lowest number of participants for any single survey item at 62; however, for some demographic questions, only 60 participants responded. Although the numbers were lower than intended and put forth in the plan in Chapter 3, the numbers were still sufficient for the sample.

Descriptive and Demographic Characteristics of the Study Sample

The information provided in Table 2 shows the demographic data of participants. These questions helped create a profile of the educator participants. All answers to the questions were voluntary, and some participants who completed the specific survey items chose to skip the demographic questions, resulting in the data for these questions having lower numbers than the overall survey information.

Table 2

Percentages and Frequencies, Study Variables

	Frequency	Percent
Q 66. Gender		
Male	9	15.00
Female	50	83.33
Prefer not to Answer	1	1.67
Q67. Age		
20–25	4	6.67
26–30	6	10
31–40	11	18.33
40–50	16	26.67
51+	19	31.67
Prefer not to Answer	4	6.67
Q. 68 Including this year, how many years have you been teaching?		
This is my first year	4	6.67
2–5 years	9	15.00
6–10 years	8	13.33
11–15 years	8	13.33
16–20 years	13	21.67
21+ years	15	25.00
Prefer not to Answer	3	5.00
Q71. What is the level of adoption of 1:1 device program at your school?		
Not 1:1 at all	0	0.00
I have a quarter of the number of devices as I have students in my classroom (ex, I have 5 devices and 20 students	4	6.56
I have half the number of devices as I have students in my classroom (Ex, I have 10 devices and 20 students)	5	8.20
Some grade levels/classrooms are 1:1 and other grade levels/classrooms are 2:1 or less for device access	11	18.03
Piloting 1:1 in some classrooms in the school by not mine	0	0.00
Piloting 1:1 in some classrooms in the school including mine	0	0.00
1:1 at certain grade levels but not mine	3	4.92
1:1 at certain grade levels including mine	13	21.31
Fully adopted 1:1 at all planned grade levels	23	37.70
Prefer not to answer	2	3.28

Table 2 continued

	Frequency	Percent
Q 72. Description of Professional Responsibility: Please pick the statement that most closely describes your professional role at the school.		
Grades K–2 classroom teacher	15	25.00
Grades 3–6 classroom teacher	24	40.00
Technology Coordinator with teaching responsibilities	4	6.67
Technology Coordinator with no teaching responsibilities	2	3.33
Curriculum Coordinator with some teaching responsibilities	6	10.00
Curriculum Coordinator with no teaching responsibilities	3	5.00
Prefer not to answer	6	10.00

Demographically, nearly five times as many women as men participated with only one person choosing not to share their gender. The age of participants was more widespread throughout the ranges, with the majority of participants being over 40 years of age and the least number of participants being in the youngest age range. When compared to years of professional experience, the numbers reasonably aligned, as those with more years of experience as an educator typically aligned with their age; however, it is not unreasonable for an individual to be older with less than a year of experience, as teaching is often a second career for professionals.

The dissemination of professionals aligned with the number of individuals in these roles. Because most schools only have one technology coordinator and one curriculum coordinator, the results are representative of this distribution. More teachers participated than coordinators by nearly three times. Of educators who participated, more Grades 3 to 6 teachers participated than those teaching Grades K to 2.

The background for this study comes from a pledge HIDOE made to have schools and students future ready. As part of the HIDOE's strategic plan, schools are moving

toward 1:1 technology devices in all classrooms. Therefore, I asked participants about how they viewed their school in the adoption process. The highest percentage of participants reported that their schools "Fully adopted 1:1 in planned grade levels" followed by 1:1 at the participants' respective grade level, then 1:1 or 2:1 throughout the school.

Appendix J provides the percentage breakdown of participants by island and school-complex area. An examination of the island location of participants showed the percentage is comparable to the population size of each island. The majority of participants came from Oahu, which is the most populated island of all the inhabited islands. Only two islands did not have any individuals reporting as participating, and these islands have only one K–12 school each; population numbers are comparatively smaller. Molokai, the third lowest population, had one participant, whereas Maui and Hawaii had the next highest populations and participants in the study. In examining the demographic information from complex-area demographic information, a relatively even distribution emerged throughout the state with only one complex area having at least double the number of participants of any other complex area.

Data Preparation and Internal Reliability

I used an original survey instrument tool that I developed using a formative evaluation process. Chapter 3 provided a full explanation of the development process. Upon the completion of data collection, I ran a Cronbach's Alpha test of interitem reliability of the Likert-type scale items, using all participants' responses to determine the internal consistency of the survey. I ran an internal instrument reliability test only on the survey items in which respondent choices were *Not true of me, Sometimes true of me,*

Usually true of me, or *Always true of me,* as it is not typical to run reliability on open-ended or multiple-choice response questions. I assigned numerical value to responses: 0 = *skipped*, 1 = *Not true of me*, 2 = *Sometimes true of me*, 3 = *Usually true of me*, and 4 = *Always true of me*. I inputted each participant's answers to all items into SPSS and ran an interitem reliability test. The information provided in Tables 3 to 5 revealed that $\alpha = .986$; when α is greater than or equal to .9, internal consistency is excellent (Statistics How To, 2018). This result indicated that the Likert-type scale items were independent of one another and were not gathering the same information. Instead, the survey items were able to create a complete profile of educators because similar responses emerged in the overall construct.

Table 3

Case Processing Summary

		N	
Cases	Valid	74	98.7
	Excluded[a]	1	1.3
	Total	75	100.0

a. Listwise deletion based on all variables in the procedure.

Table 4

Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	*N* of items
.986	.987	57

Table 5

Scale Statistics

Mean	Variance	Std. deviation	*N* of Items
165.99	2430.835	49.304	57

Data Analysis and Results Based on Research Questions

In the sections that follow, I provide a detailed description of the results collected through the survey. The tables provide survey responses based on individual research questions and provide a connection to the theoretical and conceptual frameworks that grounded this study.

Research Question 1

With RQ1, I intended to create a profile of educator knowledge and skills related to digital citizenship. Concerning Mezirow's (1994) transformative learning framework, autonomous thinking derives from an individual's frames of reference. An educator's knowledge and skills of digital citizenship create their frame of reference. Table 6 provides a breakdown of each question in the SDC that relates to knowledge and skill level. The survey scale for these questions were *Not true of me, Sometimes true of me, Usually true of me,* or *Always true of me.* When examining all survey items related to educator knowledge and skill level with digital citizenship elements, most participants reported each question to be usually or always true of them, with a combined percentage ranging from 60 to over 90 participants identifying their knowledge and skill level to be usually or always true of them. Most questions had less than five participants indicating *Not true of me*. Collectively speaking, educator knowledge and skill level were rather

high with the majority of the participants selecting *Usually true of me* or *Always true of me*.

Table 6

Research Question 1: Educator Level of Knowledge and Skills for Digital Citizenship, by Percentage

Element	Survey question	Not true of me	Sometimes true of me	Usually true of me	Always true of me
Digital Access	Knowledge of types of technology for differentiated instruction	2.90	18.84	52.17	26.09
Digital Commerce	Knowledge of electronic transactions	0.00	7.14	25.71	67.14
Digital Commerce	Skill of buying from online stores	0.00	18.57	12.86	68.57
Digital Commerce	Making secure online purchases	2.86	5.71	40.00	51.43
Digital Commerce	Skill of selling in the online market	55.71	27.14	7.14	10.00
Digital Commerce	Mobile banking use	10.00	11.43	18.57	60.00
Digital Commerce	Informed consumer by reviewing product	2.86	12.86	38.57	45.71
Digital Communication	Knowledge of using classroom technology devices	0.00	5.71	31.43	62.86
Digital Communication	Knowledge of which tool is appropriate for situation	0.00	21.43	47.14	31.43
Digital Literacy	Making judgements of online material	0.00	11.43	51.43	37.14
Digital Literacy	Knowledge and use of web-based tools	0.00	4.29	34.29	61.43
Digital Literacy	Using Internet to locate range of media sources	0.00	4.29	40.00	55.71
Digital Etiquette	Sharing opinion online in a respectful way	4.35	4.35	26.09	65.22
Digital Etiquette	Read and engage with others online constructively	2.90	7.25	30.43	59.42
Digital Etiquette	Knowledge of appropriate and inappropriate times to use digital tools	0.00	4.41	29.41	66.18
Digital Etiquette	Recognize times when others are being mistreated in social online environments	2.94	8.82	35.29	52.94
Digital Law	Knowledge of different sharing and usage rights of material online	14.93	19.40	31.34	34.33
Digital Law	Knowledge of digital laws interpreted globally	13.24	25.00	35.29	26.47

Table 6 continued

Element	Survey question	Not true of me	Sometimes true of me	Usually true of me	Always true of me
Digital Rights and Responsibilities	Knowledge of global and social issues because of the Internet	2.90	15.94	37.68	43.48
Digital Health and Well-being	Recognize how Internet effect students behavior	2.90	8.96	55.22	32.84
Digital Safety and Security	Use of different passwords for accounts	4.48	17.91	50.75	26.87
Digital Safety and Security	Knowledge of creating secure passwords	1.47	5.88	36.76	55.88
Digital Safety and Security	Skill of following school media policy	0.00	3.03	18.18	78.79

In contrast to the other questions, where nearly all participants selected *Usually true of me* or *Always true of me,* more participants stated that these specific survey questions were *Not true of me* and *Sometimes true of me.* These two survey questions were "I know there are differences between 1) free to use or share, 2) free to use, share or modify, 3) free to use or share commercially, and 4) free to use, share, or modify commercially" and "I know that digital laws can be interpreted globally." In these questions, 13.49% and 14.93% of participants marked *Not true of me* and 19.4% and 25% marked *Sometimes true of me,* respectively.

The only exception to this spread was the two questions related to digital laws and the sharing of resources accessed on the Internet. Also, in responses to these questions, the distribution among the four choices was much more evenly dispersed. This could possibly indicate educator knowledge about digital laws is not high.

Research Question 2

Research question 2 intended to create a profile of educators' beliefs about digital citizenship instruction. Again, relating to Mezirow's (1994) theory of transformative learning, one's beliefs also impact one's frames of reference. Table 7 provides a breakdown of each survey item related to beliefs and the percentage of participants who believed that item to be *Not true of me, Sometimes true of me, Usually true of me,* and *Always true of me.* The survey items that addressed Research Question 2 revealed that most participants indicated *Usually true of me* or *Always true of me* concerning their beliefs regarding instruction of digital citizenship. The only question that had a contrasting response was the question about the educators being responsible for teaching students to make online purchases, in this case, 64.59% identified this item as not true of them, and 15.71% identified *Sometimes true of me* (see Table 3). Less than 20% identified this item as usually or always true of them. An interesting observation and connection with the element of digital law revealed that a third of the participants viewed teaching students about the digital law as *Not true of me* or *Sometimes true of me.* It appears that because they do not possess the knowledge, they may not feel they are responsible for instructing students in the law.

Shown in Table 7, results demonstrated that educators view digital citizenship as a vital learning concept for students. Specifically, more than 90% of participants identified *Usually true of me* or *Always true of me* concerning belief in incorporating digital citizenship concepts into their instructional practices.

Table 7

Research Question 2: Educator Beliefs About Digital Citizenship Instruction, by Percentage

Element	Survey question	Not true of me	Sometimes true of me	Usually true of me	Always true of me
Digital Access	Belief all students should have access to technology for learning	0.00	2.86	17.14	80.00
Digital Access	Responsibility to model the use of technology	0.00	2.90	27.54	69.57
Digital Access	Responsibility to support students with extended access to technology	8.57	11.43	34.29	45.71
Digital Access	Belief technology supports students with disabilities	0.00	5.71	22.86	71.43
Digital Access	Belief accommodations should be made for students with disabilities	0.00	2.86	20.00	77.14
Digital Commerce	Teach students to make online purchases	64.29	15.71	11.43	8.57
Digital Communication	Responsible for teaching appropriate digital communication	5.71	11.43	31.43	51.43
Digital Etiquette	Belief it is important to address negative online actions with students	2.94	10.29	13.24	73.53
Digital Law	Responsible for teaching digital laws	10.29	22.06	30.88	36.76
Digital law	Responsibility to organization to discuss ethical digital practices.	1.47	17.65	36.76	44.12
Digital Rights and Responsibilities	Believe students should opportunities to work in online interactive environments	2.90	14.49	40.58	42.03
Digital Rights and Responsibilities	Believe students can contribute to a global discussion using technology	2.94	16.18	35.29	45.59
N/A	Believe digital citizenship concepts should be incorporated into instructional practices	0.00	9.68	29.03	61.29

Furthermore, Survey Question 62 asked participants to identify their level of belief in the importance of incorporating digital citizenship into their instructional practices. Participant response choices included *Not at all, Somewhat important, Important,* and *Very important.* No participant answered, *Not at all;* however, 9.68%

responded as *Somewhat important,* 29.03% responded *Important,* and 61.29% responded as *Very important.* These responses reflect that educators value digital citizenship as a necessary component to their instructional practices.

Research Question 3

Research Question 3 changed emphasis from educators' internal frames of reference to examination of their actions. Siemens' (2005) theory of connectivism emphasizes educators' actions in the educational setting; specifically, what the educator intends or plans to do impacts the overall learning environment. Tables 8 through 11 show the survey items that specifically related to the planned implementation of educators. Although not all digital citizenship elements are connected to planned implementation, the elements that did connect revealed that the majority of educators felt that planning for digital citizenship instruction is essential (see Table 8). For example, 25.71% of participants indicated it was *Usually true of me,* and 38.57% of participants stated that it was *Always true of me* to pay for educational resources found online. With regards to digital literacy, educators are preparing for instruction by planning for the potential for mishaps in technology use; 44.29% of participants stated this is *Usually true of me* and 32.86% responded as *Always true of me.*

Table 8

Research Question 3: Planned Implementation of Digital Citizenship Instruction, by Percentage

Element	Survey question	Not True of me	Sometimes true of me	Usually true of me	Always true of me
Digital commerce	Pay for educational and professional resources found online	11.43	24.29	25.71	38.57
Digital Literacy	Use of technology planned for mishaps	2.86	10	44.29	32.86
Digital Health and Well-being	Plan for instructional time not using technology	5.88	16.18	36.76	41.18

Table 9 shows whether participants viewed planning for digital citizenship implementation as a priority. Of participants, 83% indicated planning was a priority.

Table 9

Research Question 3: Planned Implementation of Digital Citizenship Instruction, Likert-Type Response Item, by Percentage

Planning for digital citizenship is a priority	Yes	No
	83.08	16.92

Additionally, Survey Question 64 asked participants to identify the frequency, in an instructional year, in which they emphasize digital citizenship concepts in their planning. Response choices ranged from *Not at all* to *Multiple times a week.* Table 10 shows the responses. Aligning with the data that 83.08% of participants indicated planning for digital citizenship is a priority, results revealed that participants not only believed planning for digital citizenship concepts is important but they consider it regularly.

Table 10

Frequency of Planning for Digital Citizenship Concepts

Frequency	Percentage
Not at all	6.35
Once a quarter	19.05
Once a month	20.63
Twice a month	3.17
Once a week	19.05
Multiple times a week	31.75

Furthermore, I asked participants were a follow-up question about why they selected *yes* or *no* and to provide up to three reasons why it was or was not a priority to plan for digital citizenship. Answers for why it was a priority included "technology is the future," "to ensure students grow to be digitally responsible citizens & don't abuse technology," and "proactive to prevent technology mishaps." Table 11 shows percentages based on common responses for reasons why planning is a priority.

Table 11

Participants Reasons Why Planning is a Priority

Reasons	Percentage
Students need to be digital citizens	6
Proactive to prevent technology mishaps	17
Keep students safe	14
Ensuring students are responsible for using electronic devices/interactions	6
Student awareness of technology use	7
Students will regularly use technology throughout their life	12.7
Teach student appropriate and ethical use	22
To be prepared	6
Differentiation	5

Table 12 provides responses as to why planning for digital citizenship is not a priority. Participants who responded it was not a priority identified reasons such as, "Too many other things to cover," "lower grade students at my school only use selected educational apps," and "not enough time." The main reason for not planning related to other priorities or lack of time. An interesting observation is that participants who did not view planning for digital citizenship as a priority identified institutional restrictions or selected applications as a reason to not have to plan.

Table 12

Participants Reasons Why Planning is Not a Priority

Reasons	Percentage
Other priorities/Not enough time	40
Students access is highly managed/monitored	10
not necessary for my grade level	10
Lack of functioning technology	10
Students need to be real life citizens first	10
Lack of knowledge	10
No clear rules for digital etiquette	10

Research Question 4

Research Question 4 focused on what educators implemented into their instructional practices. This question also related to Siemens' (2005) theory of connectivism. What the educator is doing instructionally with students creates a profile of the classroom experience of students and helps identify areas of instruction that may need more attention. Table 13 provides a complete breakdown of how participants answered the specific survey items.

Table 13

Research Question 4: Educators Implementation of Digital Citizenship Instruction, by Percentage

Element	Survey question	Not true of me	Sometimes true of me	Usually true of me	Always true of me
Digital Access	Use different technologies to support differentiated instruction	4.29	25.71	42.86	27.14
Digital Access	Share with families about free Internet access	21.43	27.14	32.86	18.57
Digital Communication	Communicate with students and families digitally	12.86	20.00	30.00	37.14
Digital Communication	Teach the difference between text and academic lingo	21.43	22.86	25.71	30.00
Digital Communication	Incorporate digital media and devices into learning experiences	0.00	20.00	27.14	52.86
Digital Communication	Provide opportunities to work collaboratively in online environments	24.29	32.86	18.57	24.29
Digital Literacy	Provide opportunities to research and evaluate sources using Internet	10.00	34.29	28.57	27.14
Digital Literacy	Teach how to use Internet to search for information	8.57	28.57	34.29	28.57
Digital Literacy	Teach how to cite information from the Internet	24.29	31.43	25.71	18.57
Digital Etiquette	Teach appropriate language use in online discourse	19.40	11.94	29.85	38.81
Digital Etiquette	Teach when it is appropriate to use devices	5.97	11.94	29.85	52.24
Digital Etiquette	Teach students to report inappropriate online behavior	8.82	10.29	23.53	57.35
Digital Law	Teach about plagiarism	4.41	16.18	29.41	50.00
Digital Law	Teach students the difference in usage rights for online resources	34.33	20.90	28.36	16.42
Digital Rights and Responsibilities	Provide opportunities for to students to interact in safe online environments	22.39	22.39	29.85	25.37
Digital Health and Well-being	Help parent/guardians to learn about appropriate screen time	32.25	29.41	27.94	10.29
Digital Safety and Security	Teach students importance of keeping passwords secret	10.45	10.45	34.33	44.78
Digital Safety and Security	Secure student passwords in the classroom so that others don't have access	7.35	4.41	39.71	48.53

Concerning digital etiquette, more than 50% of participants identified that they always teach students when it is appropriate to use devices and to report incidents of inappropriate online behavior. These responses align with participants' responses to digital-etiquette questions for Research Questions 1 and 2 in which more than half of participants responded they had knowledge of digital etiquette and believed it was important to address negative online actions. It would appear educators are consistent in knowledge, beliefs, and planned practices for digital etiquette.

Much like responses to survey items in answering Research Questions 1 and 2, educator instructional practices related to digital law also indicated higher percentages among the *Not true of me* and *Sometimes true of me* choices, compared to some other elements. Teaching students about usage rights for online resources had 34.33% of participants identifying this as *Not true of me* compared to 16.42% who identified this as *Always true of me.* Alternatively, under the element of digital health and well-being, the majority of participants identified that it is *Not true of me* or *Sometimes true of me* in helping parents and guardians learn about screen time for the students they teach.

Furthermore, I asked educators to identify the amount of time they spend integrating digital citizenship concepts into their instruction. Results indicated that the majority of participants integrate these concepts *Multiple times a week* (30.16%) followed by *Once a month* (23.81%), *Once a quarter* (17.46%), *Once a week* (17.46%) , *Twice a month* (7.94%), and *Not at all* (3.17%). It appears, the majority of educators are addressing digital citizenship concepts throughout the school year.

Research Question 5

Survey items related to Research Question 5 were open-ended short-response questions instead of Likert-type scale items. I asked participants to identify up to three factors that supported their implementation of digital citizenship instruction and three factors that impeded their implementation of digital citizenship instruction. I sorted answers to these questions based on their responses to generate percentages of common responses (see Tables 14 and 15).

Table 14

Factors Supporting Implementation of Digital Citizenship

Factors	Frequency	Percentage
Curriculum	11	8.39
Device Access for Students	8	6.10
Knowledge	9	6.87
Resources (including hardware or software)	23	17.55
Professional Development	4	3.05
School Culture and Environment	8	6.10
Skills	7	5.34
Support (Instructional and Administrative)	13	9.92
Students' skills and knowledge	4	3.05
Time	12	9.16
Training	22	16.79
Other	10	7.63

Some factors educators identified as supporting their implementation of digital citizenship included "Tech teacher comes in does a lesson on digital citizenship," "Focused time," "Cooperative professional learning opportunities," "school and complex providing 1:1 devices," and "admin support." According to Table 14, participants most commonly cited training and resources as supporting factors. It would appear that

educators find training to be helpful and resources to be plentiful enough to influence their decisions to implement digital citizenship.

Table 15

Factors Impeding Implementation of Digital Citizenship

Factors	Frequency	Percentage
Curriculum	9	7.82
Knowledge/Comfort Level	15	13.04
Not grade appropriate	1	0.86
Resources	13	11.30
Skills	7	6.08
Support, Lack of	2	1.73
Student home environment influences	2	1.73
Students' knowledge and skills	2	1.73
Time, Lack of	36	31.30
Training, Lack of or not specific enough	11	9.56
Technological difficulties (hardware, software, and firewalls)	8	6.95
Other	9	7.82

Some factors identified as impeding the implementation of digital citizenship instruction included "Knowledge comfort level," "Time," "Training," "Lack of support," "Depth of knowledge," "Resources," "Technology at school is not up to date and does not work ," "Inappropriate web content not blocked," "Blocked websites by Department of Education," "Lack of proper use of Internet at home," "Waste of time," and "Overwhelmed with so many other things."

Additional Statistical Analyses

Because the background for this study came from HIDOE's participation in the Future Ready Pledge and their strategic plan that included making K–12 schools 1:1, I ran additional statistical analysis to determine if a correlation existed between

participants' school level of adoption of 1:1 devices and educators' knowledge and skill levels, beliefs, and planned and implemented practices. Researchers can conduct statistical correlation analysis using either Pearson product-moment correlation (Pearson's correlation) or Spearman's rank-order (Spearman's correlation) test. I chose Spearman's correlation to analyze the data because Likert-type scale items are ordinal, whereas a Pearson's correlation requires interval or ratio data. Additionally, a Pearson's correlation assumes a linear relationship between variables, whereas a Spearman's correlation assumes a monotonic relationship, meaning "the variables increase in value together" or one value increases and the other value decreases at the same time (Laerd Statistics, 2018, para 5). Therefore, using SPSS, I ran a Spearman's correlation comparing Question 71, educators' school's level of adoption as the central variable for correlation. It would appear that if educators are at schools that are further along in the adoption and implementation of 1:1 devices, educators would have greater knowledge, beliefs, and planned and implemented practices in relationship to digital citizenship because these skills directly relate to HIDOE's GLO 6, ethical and responsible use of technology (HIDOE, 2017). For the analysis, I assigned each participant's answer to Question 71 a numeric code and then analyzed results against other survey items, with variables also given a numerical code (see Table 16).

Table 16

Variable Code for Spearman Correlation Analysis

Numeric code	Participant response
0	skipped/preferred not to answer
1	Not at all 1:1
2	quarter of the devices to students
3	half of the devices to students
4	Some grades 1:1 and others 2:1 or less
5	Piloting 1:1 in some classrooms but not mine
6	Piloting 1:1 in some classrooms including mine
7	1:1 at some grade levels but not mine
8	1:1 at some grade levels including mine
9	Fully adopted 1:1 at all planned grade levels

For Likert-type scale questions, the response code was 0 = *skipped,* 1 = *Not true of me,* 2 = *sometimes true of me,* 3 = *Usually true of me,* and 4 = *Always true of me.* Additionally, for any survey items used for correlation analysis that were not the Likert-type scale questions, the ranking code was roughly the same, where zero indicated the participant either skipped the question or preferred not to answer; then the order went from one upward, based on the number of choices in the question. One always represented the *None, Not, No,* or lowest possible option response and the highest rank number represented the *Always, Multiple, Fully, Yes,* or the highest possible option response with the other responses between these choices increasing in value by one in their progression. Results of the correlation analysis appear in Tables 17 and 18.

Table 17

Level of Adoption and Age of Participants Correlation

			Q71 adoption level	Q67 demographic age
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.426**
		Sig. (2-tailed)	.	.000
		N	74	74
	Q67 demographic age	Correlation Coefficient	.426**	1.000
		Sig. (2-tailed)	.000	.
		N	74	74

**. Correlation is significant at the 0.01 level (2-tailed).

Table 18

Level of Adoption and Educators' Years of Teaching Correlation

			Q71 adoption level	Q68 years of teaching
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.371**
		Sig. (2-tailed)	.	.001
		N	74	74
	Q68 years of teaching	Correlation Coefficient	.371**	1.000
		Sig. (2-tailed)	.001	.
		N	74	74

**. Correlation is significant at the 0.01 level (2-tailed).

Table 17 shows a high degree of correlation between participants' age and the school's level adoption, $\rho = 0.426$ and a significance level of 99%. In contrast, Table 18 shows a moderate correlation between adoption level and years of teaching experience, $\rho = .371$, and a 99% significance level. I explore the results shown in Table 17 with regards to scholarly literature further in Chapter 5.

Table 19 shows the correlation between adoption level and the participant's frequency of implementing digital citizenship into instructional time. The correlation

between these two variables indicates a moderate relationship with ρ about 0.3 and 95% significance level. Based on this result, it appears that participants in schools where the adoption level is higher or further along integrate digital citizenship concepts more frequently.

Table 19

Level of Adoption and Digital Citizenship Implementation into Instructional Time Correlation

			Q71 adoption level	Q65 Implement into instructional time
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.272*
		Sig. (2-tailed)	.	.019
		N	74	74
	Q65 Implement into instructional time	Correlation Coefficient	.272*	1.000
		Sig. (2-tailed)	.019	.
		N	74	74

*. Correlation is significant at the 0.05 level (2-tailed).

Table 20 reveals the correlation between participants' school's adoption level and their skill of using online tools to engage in electronic transactions, a component of the digital citizenship element, digital commerce. Although the correlation is moderately weak (ρ = .234), it has a 95% significance level. It appears that if a participant is at a school with a greater level of adoption, they may have increased their knowledge and skills of digital actions and are applying it to their personal life.

Table 20

Level of Adoption and Skill of Digital Transactions Correlation

			Adoption level	Q10 doing electronic transactions
Spearman's rho	Adoption Level	Correlation Coefficient	1.000	.234*
		Sig. (2-tailed)	.	.044
		N	74	74
	Q10 doing electronic transactions	Correlation Coefficient	.234*	1.000
		Sig. (2-tailed)	.044	.
		N	74	74

*. Correlation is significant at the 0.05 level (2-tailed).

Table 21 shows evidence of a moderate correlation with 99% significance level between the adoption level and educator belief in providing students with opportunities to learn with technology. Because HIDOE intends to provide all K–12 students with 1:1 devices, this data would support this initiative by indicating that when educators have access of 1:1 for their students, it is essential to give students the opportunity to use the provided technology. As district leaders consider budgetary plans for the coming years, this evidence may sway them in assisting the schools that have not been able to purchase the devices to enhance their adoption of 1:1 devices.

Adoption level and educator belief in accommodating students with disabilities using instructional technologies had a moderate correlation ($\rho = .282$) and a significance level of 95% (see Table 22). I discuss this correlation further in Chapter 5.

Table 21

Level of Adoptions and Belief in Students Opportunities to Learn with Technology Correlation

			Q71 adoption level	Q5 believe students opportunity to learn with tech
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.299**
		Sig. (2-tailed)	.	.010
		N	74	74
	Q5 believe students opportunity to learn with tech	Correlation Coefficient	.299**	1.000
		Sig. (2-tailed)	.010	.
		N	74	74

**. Correlation is significant at the 0.01 level (2-tailed).

Table 22

Level of Adoption and Belief in Accommodations for Students Correlation

			Q71 adoption level	Q9 believe in accommodations for students with disabilities
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.282*
		Sig. (2-tailed)	.	.015
		N	74	74
	Q9 believe in accommodations for students with disabilities	Correlation Coefficient	.282*	1.000
		Sig. (2-tailed)	.015	.
		N	74	74

*. Correlation is significant at the 0.05 level (2-tailed).

Alternatively, Table 23 indicates a weak correlation ($\rho = 0.173$) between the use of different types of technology for differentiated instruction. Similarly, Table 24 reveals a weak correlation ($\rho = .112$) between school adoption level and the incorporation of digital media tools and technology devices. Because the variable resources were a factor

that supports and a factor that impedes educators' implementation of digital citizenship, it would appear educators are making use of what they have available, regardless of how far along the a school is in adopting 1:1 devices. Educators cannot use what they do not have. Alternatively, this does not help to understand if educators in schools with complete 1:1 device adoption are making the most effective use of all the technology they have, providing a topic for further research.

Table 23

Level of Adoption and Use of Technology to Support Differentiation Correlation

			Q71 adoption level	Q3 use diff types of tech support
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.173
		Sig. (2-tailed)	.	.140
		N	74	74
	Q3 use diff types of tech support differentiation	Correlation Coefficient	.173	1.000
		Sig. (2-tailed)	.140	.
		N	74	74

Table 24

Level of Adoption and the Incorporation of Digital Media Tools/Technology into Student Learning Correlation

			Adoption level	Q22 digital tool usage
Spearman's rho	Adoption Level	Correlation Coefficient	1.000	.112
		Sig. (2-tailed)	.	.342
		N	74	74
	Q22 incorporate digital media tools and technology devices into student learning	Correlation Coefficient	.112	1.000
		Sig. (2-tailed)	.342	.
		N	74	74

Table 25 reveals a moderate correlation and a significance level of 95% between adoption level and instructional practices, specifically educators implementing opportunities for students to work collaboratively in online environments.

Table 25

Level of Adoption and Providing Students with Opportunities to Work Collaboratively Online Correlation

			Q71 adoption level	Q23 opportunities to work collaboratively online
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.262*
		Sig. (2-tailed)	.	.024
		N	74	74
	Q23 opportunities to work collaboratively online	Correlation Coefficient	.262*	1.000
		Sig. (2-tailed)	.024	.
		N	74	74

*. Correlation is significant at the 0.05 level (2-tailed).

Table 26 provides an interesting connection to ensuring educators are knowledgeable about policies in place to protect students. Schools in HIDOE require families to sign media release forms at the start of each school year that gives the school permission to publish photographs, videos, and documents with students' images and names to their websites. Based on the moderate correlation with a significance level of 95% between adoption level and sharing students' pictures following the school media policy, it would appear that if an educator is at a school that is further along or has fully adopted 1:1 devices, they are more likely to be knowledgeable of the policy and be skillful in engaging in this practice.

Table 26

Level of Adoption and Sharing Student Pictures Online Following the School Media Policy Correlation

			Q71 adoption level	Q58 share pictures of student online following school media policy
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.236*
		Sig. (2-tailed)	.	.043
		N	74	74
	Q58 share pictures of student online following school media policy	Correlation Coefficient	.236*	1.000
		Sig. (2-tailed)	.043	.
		N	74	74

*. Correlation is significant at the 0.05 level (2-tailed).

Question 59 asked educators simply if planning for digital citizenship was a priority. Table 27 indicates a moderately high correlation, $\rho = .415$ with a 99% significance level between adoption level and planning for digital citizenship. Additionally, Table 28 reveals a moderate correlation, $\rho = .340$, and a significance level of 99% between adoption level and educators' belief in the importance of incorporating digital citizenship practices.

Table 27

Level of Adoption and Educators Making Planning for Digital Citizenship a Priority Correlation

			Q71 adoption level	Q59 planning for digital citizenship is a priority
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.415**
		Sig. (2-tailed)	.	.000
		N	74	74
	Q59 planning for digital citizenship is a priority	Correlation Coefficient	.415**	1.000
		Sig. (2-tailed)	.000	.
		N	74	74

**. Correlation is significant at the 0.01 level (2-tailed).

Table 28

Level of Adoption and Educators' Importance Level for Incorporation Digital Citizenship Correlation

			Q71 Adoption Level	Q63 level of importance incorporating digital citizenship into instructional practices
Spearman's rho	Q71 Adoption Level	Correlation Coefficient	1.000	.340**
		Sig. (2-tailed)	.	.003
		N	74	74
	Q63 level of importance incorporating digital citizenship into instructional practices	Correlation Coefficient	.340**	1.000
		Sig. (2-tailed)	.003	.
		N	74	74

**. Correlation is significant at the 0.01 level (2-tailed).

Summary

In this chapter, I provided the descriptive statistics results, data analysis, and results from a correlation analysis for the study *Elementary Educators' Knowledge,*

Beliefs, Planned and Implemented Practices for Digital Citizenship: The Development and Implementation of the Survey of Digital Citizenship. Results from this study answered five research questions. RQ1 focused on educator knowledge and skill level of digital citizenship concepts. Results revealed that the majority of participants possessed a reasonably high knowledge and skill level by self-reporting *Usually true of me* and *Always true of me* to the majority of survey items overall. However, the survey items that connected to the element of digital law reported less favorable responses indicating that this may be an area of knowledge that needs to be addressed for educators.

With regard to RQ2, educators' beliefs about digital citizenship, results revealed similar outcomes to those on educators' knowledge. However, questions related to digital commerce revealed more educators did not believe they were responsible for teaching students about making purchases online. Reasons behind educators' beliefs on this topic were not provided and only inferences can be made; however, this may be an area that may need further research.

RQ3 focused on educators' planned instructional practices for digital citizenship. Results for this research question revealed that the majority of educators do plan for digital citizenship, or at least feel that it is important. Results showed that educators thought it was important that students learn to be digital citizens and that they will be using technology throughout their lives. Alternatively, those who expressed that planning was not a priority emphasized lack of time and institutional safeguards as reasons not to plan.

RQ4 investigated educators' implemented practices for digital citizenship. The majority of participants do implement digital citizenship into their instructional practices.

This information is valuable with regard to the district initiative to be 1:1 throughout K–12. Furthermore, RQ5 revealed that many factors support and impede educators' implementation of digital citizenship. Training and resources were cited most frequently among participants as factors of support compared to time and knowledge or comfort level as the most frequent reasons impeding implementation.

I conducted additional statistical analysis in the form of a Spearman's rank-order correlation test to determine if the adoption level of 1:1 devices in educators' schools impacted variables in the other survey questions. Although not all questions revealed a high correlation or significance level, nine survey items had a moderate to high correlation with significance levels of 95 or 99. The content of these questions predominately emphasized the professional practice of planned or implemented instruction of digital citizenship concepts. Additionally, age and years of experience also possessed significance in the correlation, which aligns with research and theory about digital natives.

Items mentioned in this chapter with a weak correlation and no specific significance level do not provide value to understanding the impact of 1:1 device adoption, but instead provide evidence about an overall effect on educator implementation of digital citizenship. These topics may not be areas of high significance for school and district leaders to invest training or time but may need to be considered when resourcing and supporting educators.

In Chapter 5, I provide a more comprehensive discussion of the implications of the analysis. Additionally, I consider the results in the scope of the theoretical and conceptual frameworks on which this study was grounded. Furthermore, I provide

limitations to the study and recommendations for further research along with an understanding of how this study supports positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This study was about elementary educators' knowledge, beliefs, and planned and implemented practices for digital citizenship; additionally, the study included development and implementation of an original survey instrument, the Survey of Digital Citizenship (SDC). The purpose of this quantitative survey study was to describe patterns of Hawaii public school elementary educators' knowledge and beliefs about digital citizenship and their planned and implemented practices for digital citizenship instruction. The secondary purpose of this study was to develop the survey tool, the SDC, to assess educators' knowledge, beliefs, and professional practices for digital citizenship. For this quantitative research study, I collected data from Hawaii public and charter school elementary teachers, curriculum coordinators, and technology coordinators. I attempted to describe patterns of educators' knowledge and beliefs about digital citizenship and their planned and implemented practices for digital citizenship.

I contacted the HIDOE and obtained permission to recruit educators working for HIDOE to be participants in the current study. I received permission following a three-step application process. Participation in this study was entirely voluntary. I notified educators about the survey through email communication either shared with them by their administration or through a newsletter from HSTE. The participant pool comprised elementary school teachers, curriculum coordinators, and technology coordinators across the State of Hawaii working at public or charter schools. I used a researcher-developed original online survey tool as the instrument to collect data and descriptive statistics to

analyze the data. Additionally, I conducted a Spearman's rho correlation analysis to determine significance levels between specific variables.

To develop the survey, I used a formative-evaluation process with a review by a survey-design expert and content-area experts. I conducted response process validity using a small sample of participants as well as a technical review to ensure the survey would function adequately online. I used a post-hoc Cronbach's alpha test to determine the interitem reliability of Likert-type scale items. Results from the Cronbach's alpha confirmed excellent internal consistency and reliability ($\alpha = .986$). The survey consisted of questions about educators' knowledge and skill level for digital citizenship actions, their beliefs about digital citizenship instruction, their planned and implemented practices for the instruction of digital citizenship, and factors supporting or impeding their implementation of digital citizenship.

Additionally, I included a series of demographic questions to assist in comparing characteristics among educators in the specific groups of age, gender, years of professional teaching experience, island of residence, complex-area location, and professional role. I included some demographic items as part of the analysis for correlational comparison. Furthermore, as part of the agreement with HIDOE to use this population for research, I added a demographic question about participants' complex areas and edited the question about schools' adoption levels to include more options. Results from the demographic section provided information about the progress made by participants' schools in their adoption of 1:1 technology-device access and Future Ready Pledge initiative. Data analysis revealed many schools across the state are making strides to meet the pledge and plan for 1:1 device access for all students, K–12.

Overall, results generally indicated educators perceived themselves as having high levels of knowledge and skills related to digital citizenship and high levels of beliefs about digital citizenship instruction by selecting *Usually true of me* or *Always true of me* in response to questions related to knowledge and beliefs. Additionally, the majority of participants regularly plan and implement digital citizenship concepts into their instructional practices. This chapter provides an interpretation of the findings aligned with scholarly literature along with recommendations for future research, limitations to the study, implications for positive social change, and a conclusion for the study as a whole.

Interpretations of the Findings

In this section, an interpretation of the findings from Chapter 4 will be presented in alignment with scholarly literature.

Research Question 1: Knowledge and Skill Level of Digital Citizenship

RQ1 connects to the theoretical framework of Mezirow's theory of transformational learning and the conceptual framework of Ribble's nine elements of digital citizenship. Ribble (2015) identified digital citizenship as meant to assist individuals of all ages in understanding how "to use digital technologies effectively and appropriately" (p. 15), whereas Mezirow (1997) identified autonomous thinking as showing citizenship and moral decision making. I used survey items related to this research question to asked about what educators know or do related to technology use. Participant responses helped establish a profile of educators and identify specific areas in which knowledge and skill may be perceived as weak/low or high/strong to show what educators are capable of modeling for technology use. Researchers identified the value of

educators modeling appropriate online behaviors in their technology use to support students own use of technology (Foroughi, 2015; ISTE, 2017; Lowenthal et al. 2016).

Results from the data analysis revealed the majority of participants viewed themselves as having relatively high to high levels of knowledge and skills related to elements of digital citizenship with one exception: the element of digital law. Sincar (2011) identified that participants possess adequate knowledge of digital literacy and digital communication, but not of the other seven elements, including digital law. Results of the present study showed educator knowledge and skill level for digital citizenship is increasing, but an area of weakness in digital law persists.

How people acquire knowledge has changed to include aspects of how to find, use, and precisely apply the knowledge using technology (Siemens, 2005). For digital literacy, a combined 95.71% of participants identified themselves as usually or always being able to use the Internet to locate a range of media sources. Additionally, 34.29 % of participants selected *Usually true of me* and 61.43% of participants selected *Always true of me* in knowing how to use web-based tools. Researchers found increased knowledge and skill of digital literacy improves users' self-efficacy in technology use (Aesaert et al., 2014; Choi et al., 2017; Çiftci &Aladag, 2018; Livingstone & Helsper, 2009; Moeller et al., 2011; Simsek & Simsek, 2013). Curran and Ribble (2017) maintained that opportunities educators provide to students related to digital literacy will support students who are 21st-century learners and future workers. Therefore, if educators have high levels of knowledge and skill in digital literacy, they can model appropriate behavior for this element.

Under the element of digital communication, a combined 94.29% of participants indicated they usually or always know about using classroom technology, and a combined 78.57% responded they usually or always know which technology tool is most appropriate for specific situations. For digital etiquette, less than 5% of participants indicated they did not or sometimes did not know of appropriate and inappropriate times to use digital tools. These results indicated participants possess high levels of knowledge for appropriate technology use, related to the findings of Pusey and Sadera (2012) that knowing how to use devices and how to protect oneself in online environments are essential aspects of being a digital citizen.

Concerning digital safety and security, a combined 96.97% responded they usually or always had skill in following the school media policy of sharing student photographs online. The results substantiated the moderate correlation shown in Table 26 between schools' levels of 1:1 adoption and skills in using the school's media-sharing policy. Schools and educators have many reasons to put pictures of students online such as promoting events at the school and deepening the relationship between home and school by allowing parents/guardians to see what their children are doing at school. Participation or engagement in social and cultural activities is one of the four factors of digital citizenship (Choi et al., 2017).

With regards to digital commerce, the results of a correlation analysis shown in Table 20 of Chapter 4 revealed a moderately weak correlation but high significance level ($\rho = .234$, 95%) between educators' knowledge and skill in using online tools for electronic transactions and their schools' level of 1:1 adoption. Although personal use of technology, especially for electronic buying and selling purposes, may not seem

important to the educational setting, it does provide a connection to Mezirow's theory of transformational learning. Specifically, through ethnocentrism, what an individual knows and believes to be right is based on culture, network, society, and the world substantiating an individual's habits of mind (Mezirow, 1997).

With regards to digital access, a combined 78.26% of participants indicated *Usually true of me* or *Always true of me* in knowing different types of technology that could be used for instructional differentiation. In conjunction with Burton (2003) as referenced by Paolini (2015), instructional differentiation is "an aspect of teachers' professional pedagogical" (p. 23). Additionally, these results relate to Research Question 3 because participants identified differentiation of instruction as a reason planning for digital citizenship was a priority. Research findings relate to Foroughi (2015), who identified the value of consistent digital access in developing necessary tools for future success. Additionally, "effective instructors utilize a variety of learning modalities to differentiate instruction for an array of student learning styles" (Paolini, 2015, p. 23). In considering differentiation, this research supports that knowledge of different types of technology for instructional differentiation would be helpful in providing a learning environment that best supports the generation in the classroom. Findings align with Keengwe and Georgina (2013), who identified that the millennial generation prefers working in collaborative environments that are supportive, flexible, and customizable.

The only element for which educators did not perceive themselves as having high levels of knowledge or skill was the element of digital law. Results revealed nearly 40% of participants indicated they did not or sometimes did not have knowledge of different sharing and usage rights of online materials or knowledge of global digital laws. These

results align with results from Pusey and Sadera (2012), who found low levels of knowledge in areas related to digital law among preservice-teacher participants. Additionally, these results align with findings by Sincar (2011). Therefore, digital law may be an area in which school and district leaders may want to better support educators with professional development or shared information to increase knowledge in this area.

Overall, results from data analyzed for Research Question 1 showed educators possess high levels of knowledge and skills related to specific actions in digital citizenship. Findings for this question aligned favorably with those of other scholarly research. Therefore, as educators adopt more technology-savvy digital practices into their personal lives, they may, in turn, instill those practices into their instruction, elaborating and expanding their points of view and enhancing their abilities in two of the four processes associated with a change in an individual's frame of reference (Mezirow, 1997). Alternatively, the increased expectation for technology use in the professional setting may inadvertently affect their personal lives, increasing their level of citizenship in the digital world and strengthening their points of view (Mezirow, 1997).

Research Question 2: Educators Beliefs about Digital Citizenship

As with RQ1, RQ2 also relates to the theoretical framework of Mezirow's theory of transformative learning and Ribble's nine elements of digital citizenship. As stated previously, in creating the survey instrument, I did not address all digital elements in every research question. This research question aimed to discern the beliefs of educators and directly related to the digital elements of digital access, digital commerce, digital communication, digital law, and digital rights and responsibilities. As reported in Chapter 4, on average, more than 75% of educators viewed themselves as having relatively high

to high level of beliefs related to these aspects of digital citizenship in providing instruction. According to Mezirow (1997), knowledge essential for the 21st century includes opportunities to develop skills for flexibility, collaboration, and socially responsible thinking. Educator beliefs from this study align with Mezirow's theory because more the 80% of educators reported *Usually true of me* or *Always true of me* when providing students with digital access and experiences with digital communication. Because such a high percentage of educators believe students should have digital access and experiences with digital communication, they recognized what knowledge is essential for 21st-century learning.

According to Boyle (2010), further research should find out what teachers believe to be the best practices for digital citizenship instruction. Although my study did not specifically identify teachers' best practices, it did identify educators' levels of belief in incorporating digital citizenship concepts into their instructional practices. As explained in Chapter 4, all participants believed in some level of importance for incorporating digital citizenship into their instructional practices, with a combined 90.32% believing it is *Important* or *Very important*. Concerning Mezirow's theory of transformative learning, data from this study related to beliefs discerned educators' frames of reference in establishing a sense of obligation for instruction (Mezirow, 1997). Furthermore, emphasizing digital citizenship in the educational setting would result in students making appropriate online decisions (Chou et al., 2015). Additionally, nearly 90% of participants responded *Usually true of me* or *Always true of me* about a belief that participants should incorporate digital citizenship concepts into instructional practices. In general, educators find value in including digital citizenship in student education, substantiating previous

scholarly work related to the incorporation of digital citizenship in education (Acedo & Hughes, 2014; Boyle, 2010; Chou et al., 2015; Ribble, 2015; Suppo, 2013).

For digital commerce, 11.43% of participants responded *Usually true of me* and 8.57% responded *Always true of me* that educators believed they have a responsibility to teach students to make online purchases. In contrast, 64.29% of participants responded *Not true of me* and 15.71% responding *Sometimes true of me*. The ability to make online purchases often requires access to accounts people can use to pay for services. Because student school accounts do not typically allow for the ability to purchase items, I infer that educators do not believe teaching students to make online purchases is their responsibility and is an issue better addressed by parents. This belief aligns with the development of a habit of mind, based on a person's background (Mezirow, 1997). Pruitt-Mentle (2008) suggested parents have an obligation to provide learning related to Internet ethics, whereas Hobbs (2008, as cited by Davis et al., 2010) suggested teachers should instruct students about appropriate online behavior for academic purposes; parents/guardians should address a wider range of online interactions. Additionally, Rice et al. (2015) recognized the combined efforts of teachers, parents, and other stakeholders to address ethical and responsible practices for cyber activities. Therefore, the findings of my study align with literature suggesting parental involvement in the development of students as digital citizens.

In reference to Table 22 in Chapter 4, a moderate correlation ($\rho = .282$) emerged between educators at schools further along in the adoption of 1:1 devices and educator beliefs in providing accommodations for students with disabilities. A component of digital access is the accommodation of students with disabilities accessing curriculum

using technology for accommodation, as needed (Ribble, 2015). Aligned with Siemen's theory of connectivism, the teacher provides a learning environment that is accessible to all students (Foroughi, 2015). Based on the correlation in Table 22, it appears that educators who teach in schools further along in adoption of 1:1 technology devices have a higher chance of finding ways for all students to access technology and be more inclusive of students with disabilities, compared to teachers in less advanced schools.

Overall, Research Question 2 provided insight about educators' beliefs related to instruction with digital citizenship. Data analysis provided evidence that educators have high beliefs in the use of digital citizenship in education but also recognize areas that may require a shared partnership between home and school. The consistent goal is to provide students with an understanding of ethical practices for technology use.

Research Question 3: Planned Implementation for Digital Citizenship Instruction

Research Question 3 emphasizes the professional practices of educators. In the theory of connectivism, actionable knowledge (Siemens, 2005) is the "feeding of information into a learning community" (Kop & Hill, 2008, p. 2). Planning for instruction could be actionable knowledge for teachers. Thus, planning, a required component of an educator's preparation for classroom instruction, was included in this study to develop a full understanding of educators' professional practices, aiming to discern what they intended to do in their learning community as a result of their professional responsibilities.

Of participants, 83% identified planning for digital citizenship instruction was a priority, compared to 17% of participants who did not feel it was a priority to plan for digital citizenship instruction. Concerning the theoretical framework of Siemen's (2005)

theory of connectivism, learning environments should promote legally, socially, and ethically acceptable behaviors in developing participants in a digitally global world (Thota, 2015). Participants in this study who selected *Yes* to making planning a priority for digital citizenship instruction demonstrated planning for digital citizenship is equally important to planning for subject-specific content. Knowledge and perception of tasks guides professional action among educators (van de Oudeweetering & Voogt, 2018). Educators may be learning to integrate planning for instruction with planning for digital citizenship; the majority of teachers identified plan for digital citizenship as a priority, in part supported by training. Furthermore, participants can integrate digital citizenship into other subject-matter lessons. Concerning Siemens' theory of connectivism, educators taking time to plan for implementation of these concepts are creating a learning environment that supports appropriate, responsible, and ethical use of technology.

For those participants who identified *No* to making digital citizenship a priority in their planning, it is important to understand their reasons for not making it a priority. These reasons identified in Table 12 in Chapter 4 included lack of knowledge, no clear rules for digital etiquette, and organizational management of student technology use. Similarly, Lindsey (2015) noted a lack of knowledge and rules for digital etiquette and found that training emphasizing digital citizenship behavior positively impacted participants' plans to implement concepts in future instruction. Researchers showed exposure and training can support the planning and implementation of digital citizenship into classroom instruction (Karal & Bakir, 2016; Lindsey, 2015; Sincar, 2011, 2013).

One reason for not planning for digital citizenship instruction was the organizational management of student technology use. Based on those data, I inferred

that educators felt district firewalls and predetermined applications protect the online content students can access, which creates a safe enough online environment that the educators do not have to put in additional time planning to prevent irresponsible or unethical use of technology. In connection with these results, school leaders must monitor student technology to identify the necessary programming for appropriate online learning (Boyle, 2010). However, this reliance on school and district monitoring may create a false sense of security and allow educators to ignore a topic that needs to be addressed as students increase their use of technology, specifically concerning digital communication, digital literacy, digital rights and responsibilities, and digital law. School policies on technology misuse include putting in place firewalls and blockades that prevent students from accessing specific online content but does not support students in learning to use technology in responsible ways (Ohler, 2011). Furthermore, digital citizenship curriculum is valuable for developing appropriate use of technology (Gazi, 2016; Ohler, 2011; Ribble et al., 2004; Ribble & Miller, 2013).

Because planning is an aspect of professional responsibility for educators, I asked participants to identify the frequency with which they plan for the incorporation of digital citizenship concepts. Options ranged from *Not at all* to *Multiple times a week;* the highest percentage was *Multiple times a week* at 31.75%, followed up by *Once a month* at 20.63% (see Table 10). Teachers can prepare and plan in a variety of ways; however, as identified in Chapter 4, more than 50% of participants responded they usually or always pay for educational resources online. Implications of these findings support previous research that educators are finding resources shared digitally and are willing to pay for

resources to prepare for instruction that may provide valuable learning opportunities for students (Kennedy et al., 2008, as cited in Snyder, 2016).

Overall, results related to Question 3 indicated educators recognize the need to prepare for digital citizenship instruction. The majority of educators make efforts to plan on a regular basis and seek additional resources, as needed. Those not making planning a priority rely on the safeguards the school or district have in place to protect students.

Research Question 4: Implemented Instructional Practices for Digital Citizenship Instruction

The results and analysis for Research Question 4 continued to contribute to an understanding of the professional practices of educators by requesting specific information about what educators are implementing for instructional practices for digital citizenship. From a connectivist perspective, educators will model responsible and appropriate use of technology and address unethical uses (Thota, 2015). Results from this study supported this ideal when considering participants responses to the digital-etiquette questions. For example, more than 50% of participants responded they always teach students when it is appropriate for them to use devices. Furthermore, 57.35% of participants answered they always teach students to report inappropriate online behavior. These findings align with Davis et al. (2010), who identified that adults such as teachers and parents play a significant role in modeling good digital citizenship for children and adolescents. Results also confirmed the recommendations of scholarly research that for students to recognize appropriate and ethical behavior in the digital world, they need to have instructional experiences that reinforce 21st-century skills. Additionally, the findings of the study supported the idea that planning and integration of digital

citizenship by educators can model acceptable behavior for students (Davis et al., 2010; Farmer, 2011; Konrath et al., 2011; Ribble & Miller, 2013; Snyder, 2016; Wilson et al., 2014).

Snyder (2016) recognized the impact of not properly educating students about interacting with people online and in person and the impact these interactions have on the development of a moral and ethical code. Curran and Ribble (2017) identified that, with respect to digital etiquette, educators can support students by having them learn how to communicate with a variety of people in positive and constructive ways rather than poorly articulated, aggressive, or negative ways. Because technology is advancing to be more collaborative through online and virtual platforms, connections and networking support good citizenship (Dalgarno & Lee, 2012; Foroughi, 2015; Kivunja, 2013). Based on Principle 2 of Siemens' (2005) theory of connectivism, connections facilitate learning, and the use of digital etiquette and digital communication can facilitate contact with the larger world with increased media resources (Foroughi, 2015; Kivunja, 2014).

Along these same lines regarding communication, 52.24% of participants reported they always incorporate digital media and devices into their learning experiences. These results align with those of Ozdamli and Ozdal (2015), who identified the lifelong-learning benefit of developing digital communication skills such as information retrieval or learning how to communicate in an intelligent, appropriate, and efficient manner. Therefore, if more than 50% of educators are incorporating digital media and devices into the learning experiences they are providing to their students, students will continue to benefit from this incorporation throughout their lives (Christie et al., 2015; Kivunja, 2013, 2014; Siemens, 2005).

Table 25 shows a moderate correlation ($\rho = .262$) between adoption level and opportunities for students to work collaboratively in online environments. Additionally, descriptive statistical analysis revealed that when I asked educators to provide "opportunities to work in collaborative online environments," 18.57% selected *Usually true of me* and 24.29% selected *Always true of me*. These results support 21st-century learning and working skills as well as HIDOE's (n.d.a) performance-based assessment indicators for career and technical education: a component of their Career and College-ready initiative for students. Roach and Beck (2012) proposed When teachers have access to new literacy practices for the 21st century (such as working in collaborative online environments), they will apply their personal experiences to adapt these practices for their classrooms (Roach & Beck, 2012). With higher adoption levels, the instructional opportunities change, and educators can consider more interactive learning opportunities for students.

Much like outcomes from survey items for Research Question 1, instruction in topics related to digital law revealed lowered percentages among the usually-true and always-true responses specifically related to usage and sharing rights. Curran and Ribble (2017) identified educating students in digital law includes having students conduct Internet research and learn how to properly cite from a range of media sources. Many of these actions also align with best practices for digital literacy as well. As indicated in the data analysis in Chapter 4, a combined 66.86% of participants responded they usually or always teach students how to use the Internet to search for information (digital literacy), a combined 44.28% teach students how to cite information from the Internet (digital literacy), and a combined 44.78% usually or always teach students the difference in usage

rights for online resources (digital law). Furthermore, proper citation of resources and understanding usage rights may be areas of development and learning for educators and students, preventing issues in the future from misuse of content accessed on the Internet. Therefore, it may be beneficial for educational leaders to consider training in this area, specifically for elementary educators.

Table 19 shows a moderate correlation ($\rho = .272$) and 95% significance level between implementation of digital citizenship concepts into instructional time and educators' school level of 1:1 adoption. Factors that support teachers' implementation of digital citizenship concepts include training, support, and resourcing (see Table 14). With an increase in the access to digital tools, I inferred educators believed digital citizenship concepts need to be implemented in instruction because students are using technology more often. Additionally, I inferred that educators with higher levels of integration of digital citizenship concepts in instructional time were also at schools that were further along in the 1:1 adoption process. Educators' professional perceptions impact their implementation of curriculum (van de Oudeweetering & Voogt, 2018). More focused training and support on instructional integration will better support the overall adoption and integration of 1:1 technology use. The results of this study align with findings from Snyder (2016), who found teachers participating in programming emphasizing the incorporation of digital citizenship elements implemented the elements into their professional practice, which ultimately impacted what students learned.

Overall, the results from Question 4 revealed that the majority of educators are implementing digital citizenship into their instructional practice. They are making strides to provide students with learning opportunities that align with 21st-century learning

standards. However, they may need additional support to integrate aspects of digital law, digital communication, and digital literacy.

Research Question 5: Factors Supporting or Impeding Educators' Ability to Plan and Implement Digital Citizenship

I designed this research question to provide more information on the perceptions of educators regarding their ability to implement digital citizenship. I asked educators to identify up to three supports and three hindrances when implementing digital citizenship. The factors most supportive of implementation were *Resources (including hardware and software), Training, Support (Instructional and Administrative), Time,* and *Curriculum*. In contrast, among factors impeding implementation, the highest percentage factors were *Lack of time, Knowledge/comfort level, Resources,* and *Training, lack of or not*. These reasons supporting, and impeding implementation align with scholarly research that exposure and training support planning and implementation for digital citizenship in the classroom (Karal & Bakir, 2016; Lindsey, 2015; Roach & Beck, 2012; Sincar, 2011, 2013). Additionally, Tables 26 through 28 in Chapter 4, provided a correlation between adoption level and planned or implemented instructional practices. If an educator is at a school that has a greater level of adoption with 1:1 devices, then planning is a priority because the expectation to use technology, especially in an appropriate, ethical, and responsible way, is higher.

Demographics

Table 17 shows the results of the correlation between adoption level of schools and educators' age. Although a participant may not have a choice in their school's adoption plan for technology integration, the results shown in Table 17 align with

research that identifies individuals under 40 years of age as digital natives and participants over 40 as digital immigrants (Joy, 2012; Prensky, 2001). It appears participants who are younger are more likely to have higher knowledge and beliefs and implement digital citizenship concepts into their instruction more regularly; however, adaptation of one's work environment will create digital fluency, creating a spectrum instead of a straight divide between the native and the immigrant (Wang, Meyers, & Sundaram, 2013).

One demographic question asked participants to identify the complex area in which their school was located. Results revealed a relatively even distribution among complex areas with the exception that one was more than double all other complex areas. Implications of this data may have been a result of how I elicited participants. Because participants learned about this study through principals, it is possible that principals of participants in the Kailua-Kalaheo and Nanakuli-Waianae Complex Areas may have shared the study more often or put greater emphasis on participating; however, this is only speculation and cannot be confirmed.

Limitations of the Study

This study was limited to elementary educators at public and charter schools in the State of Hawaii. Limitations to this study included the method of recruiting participants. I was only allowed to share this study through access to publicly accessible email address of principals and through an eNewsletter of HSTE. A snowball effect was used to recruit participants rather than direct contact with the population which impacted the number of participants. Despite multiple efforts, sending three reminders to principals to recruit study participants, participation was at the discretion of principals who may not

have shared study recruitment or may only have shared it one time. Additionally, despite the time consideration of administering the survey in the third quarter, before state testing, spring break fell during the third week the survey was open and HSTE's newsletter not going out until the last day of the month, at the end of spring break, which may have had an impact on number of responses and the potential to recruit additional participants. I considered the limitation of research bias in preparing this study; however, the anonymity and voluntary nature of the survey prevented any bias in the analysis to take place because it was not possible for me to know anything specific about the participants; also, the demographic information collected only provided a general overview of participants' backgrounds.

Recommendations

This study filled a gap in the literature by focusing on elementary educators and digital citizenship. In the section that follows, I make recommendations for further research that stem from the findings of this study.

Vertical Alignment of K–12 educators, Comparison Study

Because this study focused on only elementary-level educators, one recommendation is to conduct a comparison study between the perceptions of elementary educators to middle and high school educators with respect to the elements of digital citizenship, specifically emphasizing digital literacy and digital law. Other studies such as Sincar (2011) and Pusey and Sadera (2012) also found participants in their studies to possess a deficit in knowledge related to digital laws. Digital literacy "specifically relates to digital citizenship by encompassing life skills that focus on finding, using, summarizing, evaluating, creating, and communicating information while using a variety

of digital technologies" (Curran & Ribble, 2017; p. 37; see also Ribble, 2015); therefore, researchers should explore this element across the K–12 education span. It would be interesting to see if educators serving students from the youngest to the oldest years of K–12 education possess similar knowledge, beliefs, and professional practices in this element. Additionally, such knowledge would also support districts that are 1:1 technology integrated for K–12 in understanding if their professional-development plans are efficient and effective in providing educators in their district with equitable vertical-alignment training that supports knowledge and integration.

Increase Population for Generalization

This research study included a geographically diverse sample by reaching participants across the islands of Hawaii and in a range of complex areas. However, access to the educator population was impacted by the way I recruited participants; therefore, it may be beneficial to repeat this study with more direct access to participants to further validate the generalizations. This study could be repeated in other districts, states, or regions that made a Future Ready Pledge and have been actively implementing 1:1 technology integration over the past several years.

Qualitative Study from Quantitative Results

The factors supporting, or impeding implementation of digital citizenship were open-ended responses, but participants had limited response space. It may be worth considering a qualitative study to explore these factors in greater detail, especially because some factors that supported implementation also impeded implementation; gaining greater detail of factors could provide better understanding. It may also be worth

considering demographic information in relationship to these factors, such as complex area, island, professional role, or level of 1:1 adoption.

Examining and Comparing Beliefs of Other Stakeholders

My study only emphasized the knowledge and beliefs of the educator. Some results; however, revealed a lowered perception of action (selection *Not true of me* or *Sometimes true of me*) on areas that might stem from parental influence such as making technological purchases and appropriate amounts of screen time for students. I recommend conducting a comparative study of what parent/guardians believe compared to educators' beliefs about supporting children in developing as digital citizens. This notion aligns with Davis et al. (2010) and Rice et al. (2015), who promoted the shared responsibility of stakeholders in supporting children developing as digital citizens.

Poverty and Digital Access

Poverty was not addressed in this study. Digital access raises issues of the digital divide (Mossberger et al., 2008). Researchers should consider demographic and poverty levels of student populations because even though schools may be giving 1:1 access to students when they are in the buildings, this may not transfer into the home environment and access may not be equitable, causing learning opportunities to stop when the school day stops. The gap between those consistently having reliable and easy access to technology continues to be an issue of concern in support of developing digital citizens (Choi, 2016; Mossberger, 2009; Mossberger et al., 2008).

Implications

My study is significant because it adds to the body of knowledge by filling in a gap in the literature focused on elementary educators and digital citizenship. Limited

research exists that combines these two phenomena. Results from this study can positively impact social change by providing evidence that educators are recognizing their professional responsibility to support students in developing into appropriate, responsible, and ethical users of technology: digital citizens.

My study contributes to social change by bringing to light some educator efforts educators as well as what educators need to support and develop students in developing as citizens digitally and globally through appropriate, responsible, and ethical use of technology. Such understanding will shape the future of the world. My study supports other research aligned with the idea that education can provide students with the necessary tools to shape and change the world for the better. Results of my study revealed educators possessed a high level of knowledge and beliefs about digital citizenship. Additionally, many educators are making planning a priority and regularly implementing digital citizenship in their instructional practice. Moreover, results of my study revealed educators are willing to purchase instructional materials to supplement their planning and implementation of digital instruction. Results showed areas where educators perceived they might need additional support with digital citizenship, such as in the areas of digital law and digital literacy. With recognition of areas of support, school and district leaders can provide the necessary support for educators and students in areas of less knowledge or skill, increasing any gaps in instruction.

Implications at an Educator Level

Although educators are making strides to support students in younger grades to develop digital citizenship, results of this study also revealed some educators rely on district support and infrastructure to prevent technology mishaps and misuse. This avenue

of district support could be viewed as a crutch that does not really prepare students for appropriate, responsible, and ethical technology use in the future or outside of the school hours. Therefore, educators should continue to plan and implement instruction that addresses digital citizenship elements.

Implications at schools or district level

Based on the results revealed in the correlation analysis, if schools have more fully adopted technology, educators are more likely to plan and implement digital citizenship in their professional practices, as their exposure to technology resources have shaped their knowledge and beliefs. If districts wish to cultivate a culture of digital citizenship, they should support schools not as far along in the process to expedite their adoption. Although supporting full acquisition and adoption is important in ensuring students have technology access and educators are able to provide students with 21st-century learning opportunities, a need persists for continual training focused on ensuring digital citizenship is an integral part of educators' instructional planning and implementation.

As schools continue to integrate technology, it is important to consider the necessary training for specific elements of digital citizenship, such as digital law, digital etiquette, and digital literacy. As schools progress in ensuring schools are 1:1 in technology access, they must also consider how the emphasis on these elements will ultimately support the development of students as digital citizens who will use technology in appropriate, responsible, and ethical ways, thereby promoting a globally positive and respectful society in the future. Additionally, researchers found 1:1 laptop environments have a positive effect on reading, writing, and mathematics skills among

students in K–12, identified in the meta-analysis by Zheng et al. (2016). Therefore, academics and citizenship can both be supported with 1:1 technology integration throughout K–12.

Additionally, training should not only focus on educators but cater toward students, especially at the elementary level. With the adoption of 1:1 technology access in K–12 schools, along with educators' willingness to implement technology, equality of access increases for students regardless of background and family income. Data from my study revealed many educators believed in providing students with opportunities to use technology. Additionally, educators identified themselves as possessing knowledge of ways to use differentiated instruction through technology.

Furthermore, because many public schools have educators working with low-income/impoverished children, providing digital access to students helps support the closing of the digital divide between those who have access and those who do not. If the pledge to provide 1:1 technology access across K–12 ensures teachers and students throughout the state have the same resources and training, then it is necessary to support schools not as far along in resourcing devices and training staff on integration.

Conclusion

The purpose of my study was to determine the knowledge, beliefs, planned, and implemented practices for digital citizenship among elementary educators. In my study, I surveyed elementary educators throughout the State of Hawaii. Results showed the majority of educators possessed high levels of knowledge and skills in all digital citizenship elements except digital law. Results also revealed the majority of educators possessed high levels of beliefs about their role in providing instruction to students

related to digital citizenship. Many educators believed planning and implementing digital citizenship into their instruction was important.

The background of my study came from HIDOE's pledge to be future ready and provide K–12 students with 1:1 technology access. Because school districts have made commitments to bring technology access to students, educators are expected to use technology from kindergarten on. This policy signifies a generational shift, as student populations are largely considered digital natives, despite educators being digital-immigrant or digital-transient generations. Educators have a responsibility to support digital citizenship in their learning environments from the earliest years of education.

Results from this study revealed educators are more practical about integrating and using technology, based on findings about planning for digital citizenship instruction. The high percentage of educators who identified planning for digital citizenship is a priority indicated reasons for planning, such as "Students need to be digital citizens," "Proactive to prevent technology mishap," "Students will regularly use technology throughout their lives," "Teach student appropriate and ethical use," and "To be prepared" (see Table 11).

Additionally, results demonstrate agreement on what educators believe are their responsibility regarding students and technology use. Analysis of data showed educators believe parents/guardians should instruct students on certain topics. Also, certain factors impeded their ability to implement digital citizenship instruction such as lack of knowledge or training. Educators were either not or minimally addressing certain elements such as aspects of digital law or digital etiquette. Finally, educators who do not

make planning a priority relied on organizational safeguards, restrictions, and firewalls to protect students and themselves from situations of technology misuse at school.

For my study, I investigated the knowledge and skill levels of elementary educators in relationship to digital citizenship. I attempted to determine educators' beliefs, planned, and implemented practices related to digital citizenship instruction and to discern what supported and impeded educators in providing digital citizenship education. The majority of participants self-identified with high levels of knowledge and skills on most of the nine elements of digital citizenship; the exception was digital law. Additionally, results revealed similar results for participants' beliefs and implemented practices including less efficacy in the area of digital law. Finally, my study revealed a moderately positive correlation between participants in schools where full adoption of 1:1 technology integration has taken place and many aspects of digital citizenship in their knowledge, beliefs, planned, and implemented practices. Ultimately my study contributes to positive social change by helping educational leaders identify best practices and what is needed to support educators in teaching digital citizenship, regardless of their stage in adopting 1:1 technology integration.

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Appendix A: E-mail Communication with HIDOE, Research Department

(newest to oldest)

Re: Questions about conducting a research study with HDOE
[redacted] 01/25/2017 03:06 PM
This message is encrypted.

From: [redacted]
To: [redacted]

Follow Up: Normal Priority.
History: This message has been replied to.

Hi Meghan,

I'm working on that as we speak. I can tell you that the next application deadline will be April 14 for first round and the committee is tentatively scheduled to meet on May 5th.

Aloha,
[redacted]
Institutional Analyst
Hawaii State Department of Education
Office of Strategy, Innovation and Performance
Data Governance and Analysis Branch
Research related emails: [redacted]
Data sharing/request emails: [redacted]

Meghan Walters | From: Meghan Walters/POPE/HID... | 01/25/2017 03:03:14 PM

From: Meghan Walters/[redacted]
To: [redacted]
Date: 01/25/2017 03:03 PM
Subject: Re: Questions about conducting a research study with HDOE

Thank you Ke'ala for the information. Do you happen to have the updated meeting schedule for the Research Review committee meetings? The website only has the dates for 2016 and only show one date in January for 2017. I am trying to plan out submitting paperwork accordingly so it would be beneficial to know what the deadlines are for this year. Thank you again.

Kind Regards,

Meghan Walters
[redacted]

DOEresearch | From: DOEresearch/HIDOE To: M... | 01/25/2017 02:35:56 PM

From: DOEresearch/[redacted]
To: Meghan Walters/[redacted]
Date: 01/25/2017 02:35 PM
Subject: Re: Questions about conducting a research study with HDOE

Sent by: [redacted]

Hi Meghan,

Thank you so much for your inquiry! I'm attaching a list of schools and their grade ranges. You'll note that some (like Anuenue) are listed as an Elementary, Middle and High. Feel free to use the list to meet your needs. With regards to the educator data, I don't have that readily available, you may need to check directly with the schools, and finally, it is up to the researchers to coordinate obtaining emails and distribution of instruments.

Aloha,

Ke'ala

Hawaii State Department of Education
Data Governance and Analysis Branch
Phone: [redacted]
Fax: [redacted]
DOEr[redacted]

Visit our NEW Research Website.

[attachment "School EMH.xlsx" deleted by Meghan Walters/POPE/HIDOE]

Meghan Walters	Hello, My name is Meghan Walte...	01/18/2017 09:58:42 AM

From: Meghan Walters/[redacted]
To: [redacted]
Date: 01/18/2017 09:58 AM
Subject: Questions about conducting a research study with HDOE

Hello,
My name is Meghan Walters and I am a teacher at [redacted]ol. I am also a PhD student at Walden University. I am in the beginning stages of developing my proposal for my dissertation study which will look at teacher beliefs and knowledge compared to planned and implemented practices for digital citizenship curriculum (GLO#6- ethical and responsible use of Technology). I am not yet ready to submit Phase 1 of the application to conduct a research study but I am in need of some information about employee numbers and knowledge about access to data. I have looked all over the website and have not been able to locate this information. Could you please tell me:

1. How many elementary schools are in HDOE including charter and schools that go higher then 5/6 grade but include elementary divisions across all islands?
2. How many teachers, technology coordinators and curriculum coordinators are employed in the elementary division across all schools meeting the above criteria?
3. of the data that a researcher can obtain access to, does that include email addresses of the above mentioned employees as well as the principals of these schools so that an online survey could be conducted?

3a. If this data is not obtainable, how can an online survey be conducted that could be administered, voluntarily, to elementary teachers, technology coordinators and curriculum coordinators?

Appendix B: Video Transcript, Request for Participation

Hello, my name is Meghan Walters, and I am PhD candidate at Walden University. I am also an elementary school teacher. I worked for Hawaii Department of Education for over two years. I was a classroom teacher and technology integration support staff at Blanche Pope Elementary School in Waimanalo, on the island of Oahu. The title of my research study is *Elementary Educators Knowledge, Beliefs, Planned and Implemented Practices for Digital Citizenship: The Development and Implementation of the Survey of Digital Citizenship (SDC).* I received approval to conduct a research study through Hawaii DOE in December 2017.

If you are an elementary teacher, technology coordinator, or curriculum coordinator at a public or charter school on one of the islands of Hawaii, I would like to personally invite you to participate in my study by completing the survey that is linked to the end of the video and at the bottom of the email.

Even though you may have found out about this survey from a supervisor such as your school principal or a coordinator, I want to ensure you that participation in this study is completely voluntary, the sharing of this study is not a direct endorsement of your administration and is not specifically connected to any program at your school. All information in the survey is completely anonymous and no identifiable information can be used to specifically identify participants. Any confidential or identifiable information will be destroyed after the data has been collected and analyzed and will not be released to any governing body, leadership, or written report.

If you choose to participate, please visit the provided link. The first page you will come to is the "participant informed consent." If, at that point, you choose to no longer participate, you can either "x" out of the window or click "I do not agree to participate in this study" and then click "Next" where you will be directed to *Thank You for Your Consideration* page. If you choose to participate, you will select "I agree to participate in this study" and then click "Next" and you will be routed to the start of the survey questions which will be followed by general demographic questions. There are 64 questions and it should take you approximately 20 minutes to complete. At the completion of the survey, if you would like a copy of your responses, please feel free to print or save a copy. Unfortunately, individual responses cannot be provided after clicking Done as there is no personal information being collected. The provided survey link will be live for the next month; however, I encourage you to complete the survey at your earliest convenience.

Finally, as my intention is to get as many participants meeting the criteria of elementary public school teacher, curriculum coordinator, or technology coordinator in Hawaii, please feel free to share this email, video, and link to the

Appendix B (continued)

survey with any colleagues, peers at other schools, or communication boards in which you participate. With more participants, I am able to develop a more thorough picture of the general knowledge, beliefs, planned, and implemented practices of the elementary teachers, technology coordinators, and curriculum coordinators in order to write the most relevant information as possible.

I truly appreciate your consideration to participate by taking your time to complete the survey.
Thank you again.

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

----------New Screen----------
URL for survey will appear on the screen for 5 seconds

Below the video attachment will be a live link to the survey

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

survey.
Thank you again.

Appendix C: Survey tool

----------Screen 1 ----------

Elementary Educators' Knowledge, Beliefs, Planned, and Implemented Practices for Digital Citizenship

Welcome to the survey for the research study entitled, *Elementary Educators Knowledge, Beliefs, Planned, and Implemented Practices for Digital Citizenship.* The purpose of this survey is to determine what educators know and believe about digital citizenship as well to determine what professional practices educators plan and implement related to digital citizenship.

I received approval to conduct this research study through HIDOE Office of Data Governance in December 2017. If you are an elementary teacher, technology coordinator, or curriculum coordinator at a public or charter school on one of the islands of Hawaii, I would like to personally invite you to participate in my study by completing this survey. This survey will be March- April 2018.

Participation in this survey is completely voluntary. All information in the survey is completely anonymous and confidential, no information can be used to specifically identify participants. All confidential and identifiable information will be destroyed after data has been collected and analyzed and will not be released to any governing body, leadership, or written report.

This survey should take you no longer than 20 minutes to complete. If you do not wish to participate, please select that you do not agree. If you wish to participate, please select that you agree, at which time the rest of the survey will load. If at any time you decide that you longer wish to participate, you may simply close the window. No data will be recorded until you click "submit" at the conclusion of the survey. Thank you again for your time and consideration. If you have any questions, please feel free to contact me directly by email at [redacted]

I have read the informed consent statement above and (please select one):

- ❑ I agree to participate in this study.
- ❑ I do not agree to participate in this study

Appendix C (continued)

----------Screen 2----------

Element 1: Digital literacy	Not true of me	Sometimes true of me	Usually true of me	Always true of me
1.I know the Internet can be used to find information.	o	o	o	o
2. I can use the Internet to find information.	o	o	o	o
3. I can share information using the Internet.	o	o	o	o
4. I can decipher the quality of material located on the Internet.	o	o	o	o
5. I can share reputable information that can be referenced in a collegiate manner using web based tools.	o	o	o	o
6. I can use the Internet to locate different media sources to support my intended purpose.	o	o	o	o
7. I provide opportunities for my students to research and evaluate sources using the Internet	o	o	o	o
8. When I plan to use technology with my students, I plan and prepare for potential mishaps (e.g., technology not working properly, etc.).	o	o	o	o
9. I teach my students how to use the Internet to search for answers to questions.	o	o	o	o
10. I teach students how to collect, organize, and cite information for later use.	o	o	o	o

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Appendix C (continued)

----------Screen 3 ----------

Element 2: Digital commerce	Not true of me	Sometimes true of me	Usually true of me	Always true of me
1. I know how to use web technologies to purchase goods and make electronic transactions.	o	o	o	o
2. I buy items from online stores using electronic transactions.	o	o	o	o
3. I know how to recognize legitimate websites for purchasing goods and services online.	o	o	o	o
4. I use online auction sites.	o	o	o	o
5. I sell items using websites or digital community pages.	o	o	o	o
6. I use the Internet or a phone based app for banking.	o	o	o	o
7. When making purchases online, I read reviews posted by others to inform my purchasing.	o	o	o	o
8. When using resource sharing websites such as teachers-pay-teachers, I pay for and follow the sharing reproducing rules provided by the original author.	o	o	o	o
9. I believe it is appropriate to teach my students how to make online purchases.	o	o	o	o
10. I teach my students the difference between free to use online resources, free to modify resources, free but must be cited to use, paid to use resources.	o	o	o	o

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Appendix C (continued)

----------Screen 4 ----------

Element 3: Digital etiquette	Not true of me	Sometimes true of me	Usually true of me	Always true of me
1. When engaging in a collaborative environment, I can share an opinion without belittling or harassing others.	o	o	o	o
2. I can read others opinions in collaborative environment and engage with them in a constructive way.	o	o	o	o
3. I can recognize acceptable and unacceptable times to use mobile phones, tablet devices or computers.	o	o	o	o
4. I can recognize situations in which individuals are being harassed, bullied or treated inappropriately in online social environments.	o	o	o	o
5. I use appropriate or constructive language when commenting on blogs, product reviews, news and social articles, and social media status as a form of online discourse.	o	o	o	o
6. I teach my students when it is acceptable and unacceptable for them to be using their devices.	o	o	o	o
7. I teach my students to recognize and report situations in which individuals are being harassed, bullied or treated inappropriately in online social environments only after a situation has occurred.	o	o	o	o
8. It is important to acknowledge and address negative online actions with my students.	o	o	o	o

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Appendix C (continued)

----------Screen 5 ----------

Element 4: Digital access	Not true of me	Sometimes true of me	Usually true of me	Always true of me
1. I know about different types of technologies or software that can support differentiated instruction for varied learning needs.	o	o	o	o
2. I use different types of technologies or software that can support differentiated instruction for varied learning needs.	o	o	o	o
3. I believe that all students should have opportunities to learn with technology.	o	o	o	o
4. It is my responsibility to provide instruction on how to use the technology/software/applications before expecting my students to use the technology.	o	o	o	o
5. If I expect my students to use technology outside of my classroom instructional time, it is my responsibility to ensure they have access to technology either through extended classroom time or access in the school lab or library if they do not have access at home.	o	o	o	o
6. I share information with students and families about free Internet access options at the school or within the community.	o	o	o	o
7. I believe accommodations should be made for students with disabilities to ensure equality in digital learning.	o	o	o	o
8. I believe that technology can be used to support students with disabilities accessing traditional classroom curriculum.	o	o	o	o
9. My students all have access to Internet and mobile devices at home.	o	o	o	o

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Appendix C (continued)

----------Screen 6 ----------

Element 5: Digital communication	Not true of me	Sometimes true of me	Usually true of me	Always true of me
1. I use the Internet to communicate with students and/or families online (e.g., through email, text, classroom website or application, etc.).	o	o	o	o
2. I use digital tools to assist me with supporting home-to-school communication.	o	o	o	o
3. I know how to use the technology devices in my classroom.	o	o	o	o
4. I have a working knowledge of email, text/instant messaging, and social networking sites.	o	o	o	o
5. I can use digital media tools to communicate efficiently and effectively in personal and professional settings.	o	o	o	o
6. I can use cloud based collaborative and office-based tools.	o	o	o	o
7. I engage in online discourse by commenting on blogs, product reviews, news and social articles, and social media status.	o	o	o	o
8. I teach my students the difference between text language and academic language, students are knowledgeable about the expectations of language choice when completing digital based work.	o	o	o	o
9. I use online collaborative tools with students.	o	o	o	o
10. I incorporate digital media tools and technology devices into the learning experiences with students.	o	o	o	o
11. I provide opportunities for my students to work collaboratively with one another in online environments (e.g., social media sites, Google apps, etc.).	o	o	o	o
12. I am responsible for teaching my students what appropriate digital communication is and is not.	o	o	o	o
13. I am responsible for teaching my students about inappropriate digital communication like sexting.	o	o	o	o
14. I am responsible for teaching my students the difference between texting language and academic language and when it is appropriate to use these dialogues.	o	o	o	o
15. I have my students use a range of Web 2.0 tools to share and communicate with others online.	o	o	o	o

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Appendix C (continued)

----------Screen 7 ----------

Element 6: Digital law	Not true of me	Sometimes true of me	Usually true of me	Always true of me
1. I use the Internet to as my primary source of news.	o	o	o	o
2. I know the difference between free to use, free to share, free to modify.	o	o	o	o
3. I teach my students what plagiarism is.	o	o	o	o
4. When I get teaching materials from websites, I follow the sites policy and regulations for using and sharing.	o	o	o	o
5. It is my responsibility to teach my students about digital laws.	o	o	o	o

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Appendix C (continued)

----------Screen 8 ----------

Element 7: Digital rights and responsibilities	Not true of me	Sometimes true of me	Usually true of me	Always true of me
1. I believe I have a right to express my opinion in collaborative online environments.	o	o	o	o
2. I believe students should be given opportunities to work in collaborative online environments.	o	o	o	o
3. I believe students have a responsibility to use technology in ways that promote contributing to the online world in globally responsive way.	o	o	o	o
4. I am aware of global and social issues as a result of the Internet.	o	o	o	o

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Appendix C (continued)

----------Screen 9 ----------

Element 8: Digital health and well-being	Not true of me	Sometimes true of me	Usually true of me	Always true of me
1. I help parents/guardians to learn about appropriate screen time for the age of students I teach.	o	o	o	o
2. I break up my lessons to provide students with instructional time away from the computer or tablet screen.	o	o	o	o
3. I recognize how students Internet use is affecting their health either behaviorally or socially-emotionally.	o	o	o	o

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Appendix C (continued)

----------Screen 10 ----------

Element 9: Digital safety and security	Not true of me	Sometimes true of me	Usually true of me	Always true of me
1. I use different passwords for my online accounts.	o	o	o	o
2. I know how to create secure passwords.	o	o	o	o
3. I teach my students the importance of keeping passwords a secret.	o	o	o	o
4. I keep my students' account passwords in a place in the classroom where anyone could access anyone else's account information.	o	o	o	o
5. When I share pictures of my students through digital means (such as on a class website or through a class messaging system) I am ensure that I am following the school's media release policy and I do not include any specific identifiable information about individual students.	o	o	o	o

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Appendix C (continued)

----------Screen 11 ----------

Part 2: Planning and Implementation practices To the best of your abilities, please read and respond to the following questions.		
1. Is planning for Digital Citizenship (appropriate, responsible, and ethical use of technology) a priority to you?	Yes ○	No ○
2. Consider your response to the previous question, if you answered yes, identify at most, three reasons why planning is a priority. If you answered no, identify at most, three reasons why planning is not a priority.	1. 2. 3.	
3. Identify up to three factors (such as training, time, resources, knowledge, curriculum, skills, etc.) that support your implementation of Digital Citizenship (appropriate, responsible, and ethical use of technology)?	1. 2. 3.	
4. Identify up to three factors (such as training, time, resources, knowledge, curriculum, skills, etc.) that impede your implementation of Digital Citizenship (appropriate, responsible, and ethical use of technology)?	1. 2. 3.	

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Appendix C (continued)

----------Screen 12 ----------

5.How important do you believe it is to incorporate appropriate, responsible, and ethical use of technology (Digital Citizenship concepts) into your instructional practices?	**Not important at all**	**Somewhat important**	**Important**	**Very Important**	
	o	o	o	o	
6.In a typical planning period (weekly, monthly, or quarterly), to what extent do you emphasize Digital Citizenship concepts into your planning?	**Not at all**	**Once a month**	**Twice a month**	**Once a Week**	**Multiple times a week**
	o	o	o	o	o
7.In a typical instructional period (weekly, monthly, or quarterly), to what extent do integrate Digital Citizenship concepts into your instruction?	o	o	o	o	o

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Appendix C (continued)

----------Screen 13 ----------

Part 3: Demographic Information All questions are optional.	
Gender	❑ Male ❑ Female ❑ Prefer not to answer
Age	❑ 20-25 ❑ 26-30 ❑ 31-40 ❑ 40-50 ❑ 51+ ❑ Prefer not to answer
Including this year, how many years have you been teaching in your entire career?	❑ This is my first year ❑ 2-5 years ❑ 6-10 years ❑ 11-15 years ❑ 16-20 years ❑ 21+ ❑ prefer not to answer
On what island is your current school located?	❑ Oahu ❑ Kauai ❑ Hawaii ❑ Molokai ❑ Lanai ❑ Maui ❑ Niihau ❑ prefer not to answer

Appendix C (continued)

Please identify what complex area your school belongs to.	❑ Aiea-Moanalua-Radford Complex Area ❑ Leilehua-Mililani-Waialua Complex Area ❑ Farrington-Kaiser-Kalani Complex Area ❑ Kaimuki-McKinley-Roosevelt Complex Area ❑ Campbell-Kapolei Complex Area ❑ Nanakuli-Waianae Complex Area ❑ Pearl City-Waipahu Complex Area ❑ Castle-Kahuku Complex Area ❑ Kailua-Kalaheo Complex Area ❑ Hilo-Waiakea Complex Area ❑ Honokaa-Kealakehe-Kohala-Konaweena Complex Area ❑ Kau-Keaau-Pahoa Complex Area ❑ Baldwin-Kekaulike-Maui Complex Area ❑ Hana-Lahainalua-Lani-Molokai Complex area ❑ Kapaa-Kauai-Waimea Complex Area ❑ None of the above, my school is a charter school ❑ Prefer not to answer
What is the level of adoption of a 1:1 device program at your current school?	❑ Not 1:1 at all ❑ I have a quarter of the number of devices as I have students in my classroom (ex, I have 5 devices and 20 students). ❑ I have half the number of devices as I have students in my classroom (ex, I have 10 devices and 20 students). ❑ Some grade levels/classrooms are 1:1 and other grade levels/classrooms are 2:1 or less for device access ❑ Piloting 1:1 in some classrooms in the school but not mine. ❑ Piloting 1:1 in some classrooms in the school including mine. ❑ 1:1 at certain grade levels but not mine. ❑ 1:1 at certain grade levels including mine. ❑ Fully adopted 1:1 at all planned grade levels ❑ Prefer not to answer

Appendix C (continued)

Description of Professional Responsibility: Please pick the statement that most closely describes your professional role at the school	❑ Grades K–2 classroom teacher ❑ Grades 3–6 classroom teacher ❑ Technology Coordinator with teaching responsibilities ❑ Technology Coordinator no teaching responsibilities ❑ Curriculum Coordinator with some teaching responsibilities ❑ Curriculum Coordinator with no teaching responsibilities ❑ I prefer not to answer

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Appendix C (continued)

----------Screen 14 ----------

You have now reached the end of the survey. If you are satisfied with your responses you may click “submit.” If you would like to revise your answers, please click “Previous”. If you would like to receive a copy of your responses, please check the box next to “send me a copy of my responses” and enter your email address when prompt. Please remember that all information will be kept confidential and destroyed after the data collection period has closed. Thank you again for your participation.

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----------Screen 15----------

Your responses have been recorded. Thank you for your participation. You may now exit the survey.

Appendix D: Initial Request for Participation, Administrator Email

Dear Principals, Academic/Curriculum Coordinators, Technology Coordinators, and Educators,

My name is Meghan Walters, and I am PhD candidate at Walden University. I am also an elementary school teacher. I worked for Hawaii Department of Education for over two years. I was a classroom teacher and technology integration support staff at Blanche Pope Elementary School in Waimanalo, on the island of Oahu.

I am in the process of completing my dissertation and need to recruit participants. I received approval to conduct a research study through Hawaii DOE in December 2017 and was granted permission to contact you directly to assist in recruiting participants for my study. I would like to ask you to please share this study with elementary teachers, elementary curriculum coordinators, and technology coordinators at public or charter schools throughout all islands of Hawaii. The attached transcript and video supplies more detail about my study and provides instruction on how to complete the online survey. This study is completely anonymous and no participant should feel pressured to complete the survey. If you are a school leader, could you please forward this email with the video and link to teachers, the technology coordinator, and the curriculum coordinator so that they may complete the survey on their own time between March 5th and April 5th 2018? Please feel free to contact me if you have any questions,
[redacted]

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

https://youtu.be/AAjMWzGA9d4

Kind Regards,

Meghan G. Walters
Ph.D. Candidate, Walden University
Educational Technology Specialization
As an attachment:*<<Link to YouTube location of video incase the attachment does not load>>* V*ideo transcript, request for participation*

Appendix E: Email Reminders

Dear Principals, Academic/Curriculum Coordinators, Technology Coordinators, and Educators,

Please remember that the **Survey of Digital Citizenship** for the research study entitled *Elementary Educators' Knowledge, Beliefs, Planned, and Implemented Practices for Digital Citizenship: The Development and Implementation of the Survey of Digital Citizenship (SDC)* is open and accepting responses. If you are a school leader, could you please forward this email with the video and link to teachers, the technology coordinator, and the curriculum coordinator so that they may participate by completing the survey on their own time before April 5th, 2018 in order to be included in the study.

Your participation is very much appreciated. Please follow the link below to access the survey.
https://www.surveymonkey.com/r/surveyofdigitalcitizenship_WaltersM

Kind Regards,

Meghan G. Walters
Ph.D. Candidate, Walden University
Educational Technology Specialization

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

https://youtu.be/AAjMWzGA9d4

Appendix F: Organizational Request for Participation

Dear Hawaii Society for Technology in Education (HSTE),

My name is Meghan Walters, and I am PhD candidate at Walden University. I am also an elementary school teacher. I worked for Hawaii Department of Education for over two years. I was a classroom teacher and technology integration support staff at Blanche Pope Elementary School in Waimanalo, on the island of Oahu.

I am in the process of completing my dissertation and need to recruit participants. I received approval to conduct a research study through Hawaii DOE in December 2017 and was granted permission to contact you directly to assist in recruiting participants for my study. I am trying to contact elementary teachers, elementary curriculum coordinators, and technology coordinators at public or charter schools throughout all islands of Hawaii. I would like to request to have you share the following video and the link to my online survey in your next newsletter. The survey will be open throughout March 2018.

The attached video provides more detail about my study and provides instruction on how to complete the online survey. The video and link to the survey can be placed directly into your newsletters or I can provide you with specific information to fit your newsletter format.

I greatly appreciate your help in getting the word out about this study in order to recruit as many participants as possible. Please feel free to contact me with any questions, [redacted]
Kind Regards,

Meghan G. Walters
Ph.D. Candidate, Walden University
Educational Technology Specialization
[redacted]

As an attachment: *<<Link to YouTube location of video incase the attachment does not load>> Video transcript, request for participation*

Appendix G: HIDOE Conditional Approval

DAVID Y. IGE
GOVERNOR

DR. CHRISTINA M. KISHIMOTO
SUPERINTENDENT

STATE OF HAWAI`I
DEPARTMENT OF EDUCATION
[redacted]
H[redacted]04

OFFICE OF STRATEGY, INNOVATION, AND PERFORMANCE

December 20, 2017

Ms. Meghan Walters
[redacted]

Re: Research Application Conditional Decision

Dear Ms. Walters:

I am pleased to give my conditional approval of your Hawaii State Department of Education (HIDOE) research application for the study "Elementary Educators Knowledge, Beliefs, Planned, and Implemented Practices for Digital Citizenship: The Development and Implementation of the Survey of Digital Citizenship (SDC) (RES201720)", which seeks to describe patterns of Hawaii elementary educators' knowledge and beliefs about digital citizenship, planned and currently implemented digital citizenship curricula.

Before your proposal is approved by the Superintendent, we request you address the following items:

1. Please reword or create a spectrum or range for device use and access (e.g. rather than a 1:1 for access to technology, perhaps include a range such as "I have XX computers in my room, but XX students."
2. Include an additional question for demographic information that asks participants for complex area.

Approval of your project is conditional on these modifications and must be addressed before your approval can be confirmed.

One or more of the modifications may require direct collaboration with staff at the HIDOE Data Governance and Analysis Branch. You may contact Ke'ala Fukuda at DOEresearch@notes.k12.hi.us or (808) 784-6061. Other questions about this conditional approval or the general research application process may also be directed to this same email address or phone number.

Sincerely,

Jan Fukada, Director
Data Governance and Analysis Branch

JF:ds

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

Appendix H: HIDOE Approval Letter with Super Intendent Signature

DAVID Y. IGE
GOVERNOR

DR. CHRISTINA M. KISHIMOTO
SUPERINTENDENT

STATE OF HAWAI`I
DEPARTMENT OF EDUCATION
[redacted]

OFFICE OF THE SUPERINTENDENT

January 30, 2018

Ms. Meghan Walters
[redacted]

Re: Research Application Decision

Dear Ms. Walters:

I am pleased to approve your Hawaii State Department of Education (HIDOE) research application for the study "Elementary Educators Knowledge, Beliefs, Planned, and Implemented Practices for Digital Citizenship: The Development and Implementation of the Survey of Digital Citizenship (SDC) (RES201720)."

This approval will expire December 31, 2018. If you require additional time to complete your study, you must submit a request for an extension or another application before this approval expires. If you intend to make changes to your project you must submit the change request to the Data Governance and Analysis Branch prior to implementing the change. These changes include but are not limited to (1) any changes that require approval from your Institutional Review Board and (2) any changes that are in conflict with or not included in this approval letter. Significant changes may need to be reviewed by the Research Review Committee at their next scheduled meeting. If changes are approved, a modified approval letter will issued to the researcher, the targeted schools, and affiliated state/district office staff.

As described in your application, the objective of your study is:

- Describe patterns of Hawaii elementary educators' knowledge and beliefs about digital citizenship, planned and currently implemented digial citizenship curricula.

You have indicated that you will be inviting 209 HIDOE schools to participate in your study (see Attachment 1).

You have also indicated that you will be inviting Hawaii Public Charter Schools to participate. We encourage you to contact the State Public Charter School Commission directly about Hawaii Charter School participation.

You must present this letter to the appropriate HIDOE administrator(s) upon invitation to participate in your research.

Appendix H (continued)

Ms. Meghan Walters
January 30, 2018
Page 2

You have also indicated that you will be inviting the following individuals at these targeted schools to participate in your study:

- Elementary school teachers, Curriculum Coordinators and Technology Coordinators

Elementary school teachers, Curriculum Coordinators and Technology Coordinators who participate in your study will be involved in the following activities:

1. One survey of approximately 20 minutes

As you proceed with your study, please consider the following:

- The participation of HIDOE schools, offices, students, and personnel in your study is strictly voluntary.
- All study activities must take place at dates, times, and locations agreed upon by the administrators of the participating HIDOE schools and offices.
- Any compensation provided to HIDOE personnel for participation in your study must be for activities completed outside of instructional and work hours and must be in compliance with the Hawaii State Ethics Code. Any questions about this topic should be referred to the Data Governance and Analysis Branch.
- You are required to conduct your study in accordance with both the conditions of approval described in this letter and the document "Affirmation and Acknowledgement of the Processes, Procedures, and Conditions for Conducting Research in the Hawaii State Department of Education.
- You are responsible for ensuring that all individuals involved in this study — both those affiliated with your organization and those contracted by your organization and affiliated with external entities or vendors — adhere to all of the conditions of my approval, including those detailed in this letter and those stipulated by the Affirmation Form for Researchers.

Should you have any questions about the above, please contact Ke'ala Fukuda, HIDOE Data Governance and Analysis Branch, a[redacted]

Best wishes for a successful study. We look forward to receiving your findings and recommendations.

Very truly yours,

Rodney Luke
Interim Assistant Superintendent

RL:ds

Attachment 1: School List

c: Office of the Superintendent
Data Governance and Analysis Branch

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

Appendix I: HSTE Communication

Gmail **Meghan Walters** [redacted]

Sharing my PhD Study with memebers

[redacted] wrote:

Hey, Meghan!

We can include your research study in our next newsletter. Send me all the information and links.

You can also submit it for the HAIS newsletter here.

How controlled do you want the responses? We could also blast it out through our hste social media accounts.

[redacted]

Top Contributor - Google for Education Forum

~ Children need our presence more than our presents. ~

[Quoted text hidden]

Appendix I (continued)

CALL FOR PROPOSALS	EDTECH JOBS BOARDS	SURVEYS & RESEARCH
None at this time. Share your CFPs with [redacted]	None at this time. Share your edtech jobs with [redacted]	Meghan Walters dissertation research study on Digital Citizenship Watch the video introduction Take the survey! Share your surveys & research with [redacted]

Forward the newsletter to a friend or colleague and help them become a HSTE member!

Become a HSTE Member for FREE!

Page Group Page Community

WWW.HSTE.ORG

Contact email: [redacted]
You are receiving this message because you opted in at HSTE.

Unsubscribe

Appendix J: Demographic Information of Participant Location by Island and School Complex Area

	Frequency	Percent
Q69. On what island is your current school located?		
Oahu	42	70.00
Kauai	5	8.33
Hawaii	7	11.67
Molokai	1	1.67
Lanai	0	0.00
Maui	5	8.33
Niihau	0	0.00
Prefer not to answer	0	0.00
Q70. Please identify the complex area your school belongs to.		
Aiea-Moanalua-Radford Complex Area	2	3.33
Leilehua-Mililani-Waialua Complex Area	2	3.33
Farrington-Kaiser-Kalani Complex Area	3	5.00
Kaimuki-McKinley-Rosevelt Complex Area	4	6.67
Campbell-Kapolei Complex Area	5	8.33
Nankuli-Waianae Complex Area	16	26.67
Peral City-Waipahu Complex Area	0	0.00
Castle- Kahuku Complex Area	1	1.67
Kailua-Kalaheo Complex Area	8	13.33
Hilo-Waiakea Complex Area	1	1.67
Honokaa-Kealakehe-Kohala-Konaweena Complex Area	4	6.67
Kau-Keaau-Pahoa Complex Area	1	1.67
Baldwin-Kekaulike-Maui Complex Area	0	0.00
Hana-Lahainalua-Lani-Molokai Complex Area	6	10.00
Kapaa-Kauai-Waimea Complex Area	5	8.33
None of the Above, my school is a charter school	0	0.00
Prefer not to answer	2	3.33