PRE-MILLENNIAL, VETERAN TEACHER PERCEPTIONS OF IMPLEMENTING A DIGITAL 1:1 INITIATIVE INTO ELEMENTARY CLASSROOMS IN THREE PRIVATE, INDEPENDENT SCHOOLS IN THE SOUTHERN UNITED STATES: A TRANSCENDENTAL PHENOMENOLOGY

by

Pamela E. McKee

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

In an effort to improve educational experiences and provide differentiated instruction, both public and private schools alike are requiring the inclusion of 21st century digital technology in K-12 classrooms, and more specifically, 1:1 initiatives that provide a device for each student. Transitioning to a 1:1 classroom initiative presents unique challenges to pre-millennial, veteran teachers. There is limited research examining the experiences and perceptions of this unique group of teachers, especially those involved in private education. The purpose of this transcendental phenomenological study was to describe the perceptions of pre-millennial, veteran teachers in three private, independent schools as they integrated digital, 1:1 technology into their elementary classrooms. This study utilized the theoretical framework of Ely's Conditions of Change and Mezirow's Adult Transformative Learning. Research questions focused on pre-millennial, veteran teachers' perceptions of: (a) integrating 1:1 tablets and laptops; (b) how teaching has changed since the integration; and (c) the role professional development played throughout the process. Purposeful sampling was used to identify pre-millennial veteran teachers who were born prior to 1980 and who have taught for more than 10 years. Data collection included an online survey, personal interviews, and a focus group. All data were analyzed using Moustakas' phenomenological analysis. Provisional codes were identified using the interview and focus group data, and significant statements were clustered into themes. The study revealed the following four themes: (a) technology enhances instruction; (b) technology is supplemental to instruction; (c) teachers' role remains unchanged; and (d) pre-adoption, incremental, and on-site technical support is required.

Keywords: pre-millennial, experienced teachers, veteran teachers, 21st century technology, transcendental phenomenology, transformative learning theory, 1:1 technology.

Dedication

It is with love and heartfelt appreciation that I dedicate this dissertation to my loving husband, Jeff. Thank you for the numerous meals you have cooked, technical glitches you have repaired, and sacrifice of time you have made in my behalf. Also to Wallace and Sara McKee: I can't thank you enough for your vision and belief that I could undertake such a task, for your emotional, intellectual, and financial support, and for your countless words and notes of encouragement throughout this journey. May this work be worthy of your investment, dedication, and love so wonderfully demonstrated to me.

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many future years in which we will sit and visit for endless hours with no assignments, chores, or deadlines to meet. To my parents, James and Vera Watts, neither of who completed high school but devotedly raised five successful and well-educated children. To my mother: Thank you especially for inspiring me by your spirit of faithfulness, dedication, and rugged endurance, for loving your family more than yourself, for completing your GED during your 40s, and for demonstrating and instilling in me an enduring and strong work ethic. I have called upon these qualities many times to help "push though" the difficulties and challenges of this journey. I love you more than you can imagine. To Dr. Gale Colvert, you have been my greatest cheerleader. Your enduring enthusiasm, unlimited energy, and expert research abilities have meant the world to me. To Dr. Fred Milacci, thank you for inspiring a new generation of qualitative researchers. The world will be richer for your contributions. Finally, to the many others who have offered help, guidance, counsel, prayers, and loving support throughout this process: Sheri Garrett, Lori Thompson, Melissa Bell, Donna and Paul Moore, members of the ECCS and BCS faculty and Boards of Directors, members of my Dissertation Committee, and all my Covenant College and Liberty University colleagues and professors, thank you! I truly stand on the shoulders of giants.

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List of Abbreviations

Adult Transformative Learning (ATL)

Bring Your Own Device (BYOD)

Concerns Based Adoption (CBA)

Conditions of Change (COC)

Continuous Professional Development (CPD)

Department of Education (DOE)

Electronic Learning Aids (ELA)

Elementary and Secondary Education Act (ESEA)

Information and Communication Technology (ICT)

International Association for K–12 Online Learning (iNACOL)

International Reading Association (IRA)

Institutional Review Board (IRB)

International Society for Technology in Education (ISTE)

National Assessment of Educational Progress (NAEP)

National Association for the Education of Young Children (NAEYC)

National Council of Teachers of English (NCTE)

National Education Technology Plan (NETP)

National Educational Technology Standards (NETS)

No Child Left Behind (NCLB)

Professional Learning Community (PLC)

Program for the International Assessment of Adult Competencies (PIAAC)

Technological Pedagogical Content Knowledge (TPACK)

CHAPTER ONE: INTRODUCTION

Overview

Digital technology has become a significant and required addition to today's modern classroom. As students face a world shaped by ever-advancing technology and increasing globalization, the need for strong academic foundations that require technical competencies and problem-solving skills is greater than ever (Patrick & Sturgis, 2015). In an effort to improve educational experiences and increase technical skills, both public and private schools across the United States are investing millions of taxpayer and tuition dollars to outfit classrooms with the most updated 21st century technologies (Bebell, O'Dwyer, Russell, & Hoffmann, 2010; Clark, 2013; Padrón, Waxman, Yuan-Hsuan, Meng-Fen, & Michko, 2012). Over the last two decades, schools have sought to infuse technology into education through the use of interactive whiteboards, clicker-response systems, computer labs, and Web-enhanced activities. Continuing to enhance the infused education, schools now seek to ensure that each student has access to a personal digital device. Additionally, the inclusion of digital technology is now supported by the International Society for Technology in Education (ISTE), formerly the National Educational Technology Standards (2014) (NETS), and is currently being ushered into American public classrooms by the adoption of Common Core standards of instruction (Clark, 2013).

While unregulated by the department of education, private independent schools, parochial and non-parochial, also seek to provide a core foundation of knowledge as well as the skills that prepare students for 21st century citizenship. Private, independent schools believe the skills of creativity, critical thinking, problem solving, communication, and collaboration are in ever-increasing demand in a world that is digitally and globally connected. Therefore, they seek to

provide classroom technology as a tool for fostering these 21st century skills (see http://ilearn.jacksonacademy.org/).

Unfortunately, there are limited studies examining perceptions of teachers who did not grow up using digital technology but are now being called upon to integrate it into their classrooms (Orlando, 2014; Perrotta, 2012). The purpose of this transcendental phenomenological study is to describe the perceptions of pre-millennial, veteran teachers in private, independent schools as they integrate digital, 1:1 technology into their classrooms and adapt to new teaching techniques. This study examined how the participants' perceptions about teaching have changed as a result of 1:1 integrations, and the role professional development plays in fostering these changes prior to and during the integration process. The following chapter includes important background information, my personal interest in the study, the problem, the purpose, and the significance of the study, along with the research questions, plan, and limitations.

Background

Studies show that while many of today's students have constant access to and interaction with digital technologies, easily integrating them into the learning process, this is not always true of their classroom teachers (Badia, Meneses, & Sigales, 2013; Perrotta, 2012; Ramirez, Canedo, & Clemente, 2012; Sang, Valccke, Van Braak, Tondeur, & Zhu, 2011). Cultural values, external requirements, administrative support, and sufficient training have been identified as four main factors influencing teacher use of technology in the classroom (Badia, et al., 2013; Bradshaw, Twining, & Walsh, 2012; Petrie & McGee, 2012; Potter & Rockinson-Szapkiw, 2012). Yet, even when these factors are present, transitioning to a digital, 1:1 model of instruction presents unique challenges to and requires perceptual change among the largest and most experienced group of

classroom teachers: veteran teachers who have predominately taught using traditional methods throughout their careers (Fletcher, 2012; Kubiatko, 2013; Nikirk, 2012; Smith, 2013).

According to the United States Department of Education (2013), today's average classroom teacher has 14 years teaching experience and, therefore, has taught in the classroom both prior to and following the integration of digital, 1:1 technology initiatives. Studies show that the classroom teacher is the key decision maker with regard to how and when technology is integrated (Bebell & O'Dwyer, 2010; Clark & Zagarell, 2012; Hertzler, 2010, Liu, Jones, & Sadera, 2010). Other important research affirms that teacher buy-in is crucial for successful technology immersions (Shapley, Sheehan, Maloney, & Canarias-Walker, 2010). Additionally, studies have found that when experienced teachers perceive digital, 1:1 technologies as being beneficial to best practices, they are utilized in the classroom; conversely, when viewed as novelty items only, the devices eventually become stacked among other discards inside teachers' closets (Liu, et al., 2010; Zipke, 2013). Teacher beliefs and perceptions about technology are of great significance and have consistently been identified as related to the extent to which teachers integrate technology into instruction (Fresen, 2010; Howard, 2011; Hutchison & Reinking, 2011; Potter & Rockinson-Szapkiw, 2012; Song & Looi, 2012; Uzunboylu & Ozdamli, 2011).

Teachers that were born prior to 1980 have been identified as pre-millennials (Houck, 2011; Smith, 2013) and make up over 80% of today's teacher workforce in public and private education. The National Center for Educational Statistics (2013) identifies only 15.5% of U.S. teachers under the age of 30. More than 53% of today's educators are pre-millennials between the ages of 30 and 49, and more than 31% are over the age of 50. Therefore, approximately 84% of all classroom teachers are categorized as pre-millennial teachers that did not grow up surrounded by digital technology and yet are now required to integrate it into the classroom and

teach students who are more technologically savvy than the teacher. These statistics will remain high for the next seven to 10 years, enough time to educate one generation of students. Table 1.1 presents the percentages of age brackets among today's millennial and pre-millennial classroom teachers.

Table 1.1

Age Distinctions of Classroom Teachers

Age	Percentage in Teacher Population	Identified Category
22-29	15.5%	Millennials
30-49	53%	Pre-millennials
50 and above	31.5%	Pre-millennials

Many classrooms that were once equipped with several desktop computers that provided students with research options, reading programs and educational games, are now outfitted with 1:1 technology such as tablets and laptops. This digital integration necessitates pedagogical change among today's classroom teachers. Current research indicates that following two decades of general technology use, there remains reluctance on the part of pre-millennial teachers to include new digital genres in academic instruction and to adopt new teaching methods. (Abik, Ajhoun, & Ensias, 2012; Carr, 2012, Clarke & Zagarell, 2012; Drew, 2013; Duhaney, 2012; Lindsay & Davis, 2010; Williams, 2012). Teachers' cultural values, norms, perceptions, and beliefs concerning equity, social justice, and academic excellence are important factors to consider and examine when integrating and adopting classroom technology (Badia, et al., 2013; Bonilla, 2011). Yet, current educational standards leave no option but for today's classroom teachers of all ages to embrace change and move forward with the integration of digital technology. This study provides educational leaders with additional knowledge of how to better

understand, serve, and best meet the needs of the majority of teachers: the experienced veterans. Examining the perceptions and changes experienced by veteran teachers as they integrate technology offers important information to stakeholders and leads to improved professional development and digital, 1:1 initiative processes in the future (Badia, et al., 2013).

Situation to Self

My role in this research study is both personal and professional. As a veteran elementary classroom teacher, I taught many years using traditional methods of instruction. Working now as Head of School in a private, Christian academy, I have an epistemological curiosity of how today's veteran teachers embrace classroom technology and the change processes that occur as a result of implementing a digital, 1:1 initiative. This study is important to me as I lead both younger, millennial teachers and veteran, pre-millennial teachers. Additionally, the results are important as classroom technologies are selected, and as training programs are planned for both groups' continued professional growth.

School districts nationwide are now adopting Common Core standards, necessitating the integration of digital technologies into K-12 classrooms and receiving media praise for doing so. Local schools have supplied kindergarten through second grade students with 1:1 iPad tablets and students in third through 12th grade with 1:1 MacBook Air laptops. Additionally, along with the public schools in the area, some of the private, independent schools have adopted Common Core and ISTE standards for teaching and learning.

I am interested in hearing the stories of veteran teachers as they describe their experiences and perceptions of integrating 1:1 digital technology into their classrooms following their many years of teaching without it. More specifically, I am interested in giving voice to experienced teacher perceptions during this transitional process as they are crucial to the success

of new programs and newly proposed teaching strategies (Clark & Zagarell, 2012; Hertzler, 2010, Liu, et al., 2010). This study has grown out of a desire to understand participants' perceptions of implementing of a 1:1 technology initiative, the change in perceptions about teaching, and the role professional development has played in preparing them for and assisting them during this transition. A transcendental, phenomenological study was chosen to fill the gap in the empirical literature on pre-millennial teacher perceptions prior to and during 1:1 technology integrations (Moustakas, 1994). It is my desire to get as close as possible to the participants before assembling subjective evidence based on their individual perceptions and views (Creswell, 2013).

Problem Statement

To date, sustained, large-scale technology integration efforts in K–12 schools have been only minimally successful (Harris & Hofer, 2011). The problem this study sought to address is that public school districts and private, independent schools nationwide are moving forward in an unprecedented push to integrate 1:1 digital technology into elementary classrooms without a clear understanding of the perceptions, perceptional change about teaching, and the effectiveness of the professional development provided to veteran teachers. These factors directly affect the success of technology integration.

While some studies have reported successful academic advancements with the use of 1:1 classroom technology, warnings also exist against the indiscriminate use of technology to enhance pedagogy (Alvi, 2011; Hertzler, 2010), making veteran classroom teachers reluctant participants requiring ongoing training that will assist them in adopting new pedagogical practices. Teachers' knowledge, beliefs, and perceptions have consistently been identified as being related to the extent that teachers integrate technology into instruction (Howard, 2011;

Hutchison & Reinking, 2011; Liu, 2010; Potter & Rockinson-Szapkiw, 2012; Ramirez, et al., 2012). Ertmer and Ottenbreit-Leftwich (2010) propose that teachers' mindsets and pedagogical perceptions must change in order to effectively appropriate new classroom technologies.

Multiple studies have focused on teacher perceptions of integrating technology at the high-school level (Pegler, Kollewyn, & Crichton, 2010; Rockinson-Szapkiw & Holder, 2011; Williams, 2012), the usefulness of technology in teaching students with disabilities (Lundberg & Reichenberg, 2013; Madden, 2012; Stetter & Hughes, 2011), and of teachers' perceived intent to use technologies (Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010; Sadaf, Newby, & Ertmer, 2012). While these studies provide valuable information, there has been no widespread, systematic effort to describe veteran teachers' perceptions during a digital, 1:1 initiative (Hutchison & Reinking, 2011), the perceptual changes about teaching that occur, and the professional development processes that best meet this group's unique transitional needs.

Purpose Statement

The purpose of this transcendental phenomenological study was to describe the perceptions of veteran teachers that had recently integrated digital, 1:1 technologies into their elementary classrooms in three private, independent schools located in the southern U.S., one in southern Alabama, one in central Mississippi, and the third in southern Louisiana. The study focused on pre-millennial, veteran teachers' perceptions, changes to their perceptions about teaching, training opportunities provided, and learning networks associated with integrating digital, 1:1 technology into elementary level classrooms. For this study, pre-millennial, veteran teachers are described as those teachers who were born prior to 1980 and who have at least 10 years of classroom experience.

Significance of the Study

Supported by Core Curriculum standards, student technology such as tablets and laptops have been integrated into classrooms nationwide in the hope of promoting learning, enhancing teacher–student interaction, encouraging class attendance, and fostering positive student-peer communication (Buchanan, 2011; Clark, 2013; Drew, 2013; Ejiwale, 2012; Martinez-Caro & Campuzano-Bolarin, 2011; U.S. Department of Education, 2010). A rapidly evolving educational landscape increasingly requires schools to incorporate technology into the classroom in order to customize student learning and to create student-centered classrooms (Tucker, 2013). Multiple studies reveal that while veteran teachers believe that digital technologies are marvelous tools that kids love and that hold their attention, they also believe that after the novelty wears off, teachers continue to face the challenge of providing authentic teaching and learning (Clarke & Zagarell, 2012; Davis, 2012; Hu, 2011). Additionally, Sang, et al. (2011) and Tshabalala, Ndeya-Ndereya, & van der Merwe, (2014) found the primary motivation among teachers to use technology is its perceived usefulness, yet there are few qualitative studies examining veteran teacher perceptions prior to and during the integration of digital, 1:1 technology. Orlando (2014) notes the limited understanding of how teaching and learning change with the adoption of digital technology in classrooms and of the need to identify the factors that inhibit change and what support is needed to move forward.

Using Ely's (1990) Conditions of Change and Mezirow's (2000) Adult Transformative Learning theories, this study provides an understanding of the conditions under which perceptional change about teaching occurs among veteran teachers. Additionally, these theories help to explain how teacher perceptions about digital, 1:1 technology transform over time and with use. Similar to Orlando's (2014) longitudinal study on the scholarly practices of primary

teachers using digital technology, this study leads to a greater understanding of the complexity of teacher's changing perceptions. Furthermore, it identifies the professional development required to facilitate change to pedagogical practices when teaching with technology.

This study also identifies effective professional development processes that lead and inform experienced classroom teachers as they integrate digital technology. Knowing the perceptions of veteran educators can provide insight to educational leaders. This knowledge can also inform leaders as they select professional development programs and provide future improvements in educational standards. Additionally, understanding veteran educators' perceptions can help leaders provide enhanced training that could benefit more than 80% of classroom teachers (Bebell, et al., 2010; Badia, et al., 2013; Hertzler, 2010; Sang, et al., 2011; Varol, 2013). This specific type of research is both important and necessary to understanding veteran teachers' perceptions and lends credence and voice to this group's particular needs as they advance in their pedagogical knowledge and practice. This research could benefit all teachers who are preparing to teach using a digital, 1:1 technology initiative. Most studies that have looked at teacher beliefs and perceptions in relation to technology have been quantitative in design (Zabloski, 2010), but this study is different in that it presents a qualitative design in order to derive deep and rich information from the veteran teachers' own perceptions.

Research Questions

There are three main research questions guiding this study. The research questions are grounded in the theoretical frameworks of Ely's (1990) conditions of change theory (COC) and Mezirow's (2000) theory of adult transformative learning (ATL). The first question seeks to thoroughly examine teacher perceptions, and the remaining questions lend supportive information. The research questions are:

1. How do pre-millennial, veteran teachers in private elementary schools describe their perceptions of integrating digital, 1:1 technology such as tablets and laptops into their classrooms?
2. How have pre-millennial veteran, private elementary school teachers' perceptions about teaching changed since the integration of a 1:1 technology initiative?
3. What role has professional development played in the participants' ability to integrate 1:1 technology into their educational practices?

Research Question One

The first research question frames the study while providing an opportunity for pre-millennial, veteran teachers to describe their perceptions of integrating digital, 1:1 technology such as tablets and laptops into their elementary classrooms. This guiding question is open-ended, evolving, non-directional, and seeks to gain a description of the personal experiences of teachers through collecting vivid and accurate details of their memories of those experiences (Creswell, 2013; Moustakas, 1994; Van Manen, 1990). This question returns repeatedly to genuinely inquire about the nature of the lived experience (Van Manen, 1990) and seeks to identify personal perspectives and perceptions that lead to the essence of the experience (Moustakas, 1994). Interviewing and documenting personal stories helps to achieve clarity and understanding of teacher experiences. Utilizing an online survey, personal one-on-one interviews, and a focus group, research question one opens the door for veteran teachers' input and contribution.

Research Question Two

The second research question seeks to provide additional information about the veteran teachers' perceptions by exploring whether a change in perceptions about teaching or the role of

the teacher has occurred since the 1:1 technology initiative. Veteran teachers that have taught for many years have pre-conceived ideas and beliefs about how technology should be used in the classroom (Perrotta, 2013). As they experience transitioning from traditional teaching methods to digitally embedded classrooms, their understandings and perceptions of what it means to teach are affected (Flanagan & Shoffner, 2013; Hertzler, 2010; Perrotta, 2013). Perceptual change is required in order to transition from traditional, teacher-centered instruction to constructivist, student-centered instruction. Song & Looi (2012) found a vast difference in perceptions regarding technology use in the classroom among teachers. Some teachers view technologies as tools to be used to facilitate student learning while others view them as add-ons to traditional pedagogical practices (Song & Looi, 2012). Although there are few studies researching how teacher perceptions about technology are formed, many studies show a strong correlation between teacher beliefs, perceptions, and teacher practices (Hutchison & Reinking, 2011; Potter & Rockinson-Szapkiw, 2012; Song & Looi, 2012). There is evidence that changes in teacher perceptions and changes in teaching practices are intertwined (Jacobson et al. 2010). This question is grounded in Mezirow's (2000) ALT theory as veteran teachers' perceptions are challenged or rapid changes in circumstances occur.

Research Question Three

The third research question examines the professional development processes and ongoing learning networks provided by the schools, as well as those developed independently among teachers, that contribute to the establishment of technology embedded classrooms. Sprenger (2010) states that in order for classroom technology to be used effectively, teachers must be equipped with appropriate professional development. Ham (2010) affirms that it is the teacher who directly experiences the professional development, becoming its immediate

beneficiary; the teacher is the one who directly determines any consequent changes in pedagogical practice; and, the teacher is the one who directly observes student outcomes in relation to that practice.

Other studies show that professional development programs that positively impact teachers and students are those that offer coaching, long duration, continued practice, and ongoing support (Martin, Strother, Beglau, Bates, Reitzes, & Culp, 2010). Additionally, Earley & Porritt (2014) argue that the evidential baseline for professional development programs is their impact on student learning. Therefore, teachers — as educational practitioners — can determine the impact of the professional development in which they are engaged by observing student achievement. This research question seeks to identify the professional development programs participants have experienced as well as the ongoing training provided and additional support needed. This question aligns with Ely's (1990) COC theory stating that sufficient skill, knowledge, and training is required for those who are asked to change.

Research Plan

This qualitative study employs a transcendental, phenomenological research design to describe veteran teachers' perceptions of integrating digital, 1:1 technology such as tablets and/or laptops into their elementary classrooms. This research method was selected in order to describe the common perceptions of 10 veteran teachers as they reflect on the shared phenomenon (Creswell, 2013). An online survey and personal interviews with open-ended questions were chosen to more thoroughly investigate, and hopefully discover, the nature of the teachers' lived experiences and the resulting perceptions (Moustakas, 1994; Van Manen, 1990). The final form of data collection included a focus group. Such conversations provide additional layers of information that aid in obtaining meaningful clusters or themes that may overlap as

textural descriptions are shared (Moustakas, 1994). Additionally, reflective analysis is applied until thematic saturation is achieved, and no new themes emerge from the data (Cordes, 2014).

Data analysis follows Moustakas' (1994) approach of bracketing, horizonalization, clustering, rich, thick textural and structural descriptions, and textural-structural synthesis. In order to organize and analyze the voluminous amount of data collected, Creswell's (2013) data management and analysis plan follows as illustrated in Figure 1.1.

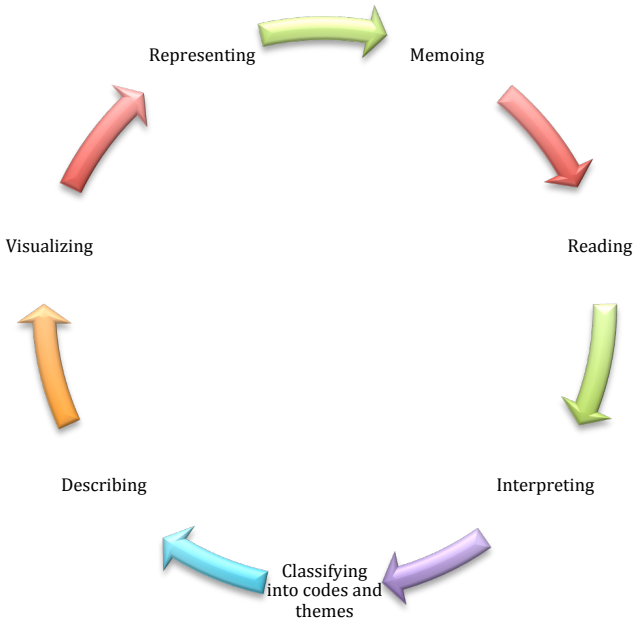

Figure 1.1. Data Management and Analysis Plan as described by Creswell (2013).

Delimitations and Limitations

This study was bound by several very specific limitations. In an effort to produce a well-defined project, this study was bound by several very explicit—and subsequently, very limiting—criteria. Specifically, this research focused only on individuals who:

- Taught at the elementary level (kindergarten through fifth grade), as elementary teachers have voiced concern about how young students tackle the challenges of digital, 1:1 technology as they interact with and learn from online text (Coiro, 2012);
- Were at least 34 years of age, qualifying them as pre-millennials.
- Had taught for a minimum of 10 years, identifying them as experienced and having taught prior to the digital, 1:1 technology initiative; and
- Held a state certification to teach the assigned subject and grade level, and have the equivalence of a highly qualified status as verified by the site principal, indicating an achieved level of expertise.

Participants were also limited by physical location. Specifically, participants were selected from three private, independent schools in the southern United States: one in Alabama, one in Mississippi, and one in Louisiana. The study was conducted only in three private, independent schools and reflects the experiences of this particular group of participating teachers. While the sample could not be described as being representative of the experiences of *all* veteran teachers, it seems unlikely that the findings presented here would be limited to this group of teachers. Then too, this study looked at only schools involved in a digital, 1:1 technology initiative. The three schools involved had recently moved to an all-digital learning environment following 18 months of research, implementation, and measurement. Since their digital 1:1 initiative, the schools reported an increase in test scores, specifically in reading and math. Additionally they reported a decline in disciplinary problems.

As the settings were outside a convenient distance to the researcher, online surveys were employed and phone interviews were conducted. Although this allowed the researcher to spend extensive time conversing with the participants, it also presented a very explicit limitation by not

providing face-to-face interviews. Face-to-face interviews would have led to deeper and richer descriptions of body language and facial responses. While two of the participating schools were located outside a reasonable distance for the researcher to travel, one was near by and face-to-face interviews could have been conducted. Additionally, an on-line focus group could have been conducted, yet, when responses reflected participants from the near-by location, the researcher chose to travel to the location to conduct a focus group discussion. While a face-to-face focus group served to strengthen the study, to further advance the findings, an additional on-line focus group, involving all participants, could have been scheduled.

A qualitative approach was appropriate for descriptive and analytical purposes, but the findings may not be generalized to other populations or settings. Another limitation of this study was the subjective memories of each participant (Cordes, 2014) and the honesty of the participants. Some participants may have remembered and presented events differently from reality, and others may have been more forgetful by nature. Furthermore, this study was dependent on the participants' willingness to engage. Some participants may have been reluctant to share personal thoughts and beliefs during the focus group. Additionally, participants may have given answers that they thought were wanted in an attempt to please the researcher or other members of the group (Cordes, 2014).

Other limitations include the lack of an equal number of male teachers and those imposed by the specific survey questions. Further, the participants all worked in schools that provided excellent technological affordances. Opportunities offered to these teachers might not have been those offered to teachers in schools with a lesser technology focus (Orlando, 2014). While it may be assumed that this research could be generalized to other parts of the United States, only its replication would confirm that.

Definitions

1. *Best practices* are defined as reputable classroom methodologies, practices, and procedures that have been proven through research and are guided by educational theory (Clark, 2013).
2. *Digital technologies* include all electronic devices that are digitally based. These include desktop computers, laptops, tablets, cell phones, iPods, e-readers and smartphones.
3. *Interactive 21st century technologies* include collaborative 2.0 tools such as media sharing sites, wikis, podcasts, virtual worlds, social and blogging platforms that allow users to communicate, share, and contribute information. (Abik, et al., 2012).
4. *iPads* are computers developed by Apple Computers that are smaller than a typical laptop but larger than a smartphone. Such devices do not have keyboards, but are controlled by a touchscreen. An iPad may also be used as an e-reader.
5. *MacBooks* are the lightest and most compact Mac notebook made by Apple Computers. MacBooks have a full-size keyboard, a retina display of over 3 million pixels, and an interactive track pad.
6. *Millennial*s are today's technology savvy students that have also been described as the Net Generation, Digital Natives, Generation Why, and the Millennial Generation (Duhaney, 2012, Kubiatko, 2013). Born after 1980, millennial students currently range from seven to 30 years old (Nikirk, 2012). Millennials have been immersed in technology throughout their lives and show a great propensity and natural proclivity for using technology (Devlin, Feldhaus, & Bentrem, 2013). Millennials are comfortable with computers, iPhones, and other digital devices and have sophisticated technical skills and learning preferences (Nikirk, 2012).

7. *Phenomenology* is derived from the Greek term *phaenesthai,* which means to flare up or appear (Moustakas, 1994). Phenomenology is the term from which we get the English word phenomenon, meaning something uniquely experienced. Phenomenology is a human science qualitative research design and methodology used when the very essence of a lived experience is desired to be known (Van Manen, 1990).
8. *Pre-millennials* is the term used to refer to people who grew up prior to the turn of the second millennium. They were born prior to 1980, making them currently age 35 and older. Pre-millennials did not grow up surrounded by digital technologies, but have successfully adopted and began to use them in the work place (Nikirk, 2012). In the context of this study, pre-millennials are also referred to as experienced or veteran teachers.
9. *Teacher perceptions* refer to teachers' mental processes by which intellectual, sensory, and emotional beliefs, insights, and understandings about educational practices are logically or meaningfully organized (McGraw-Hill, 2002).
10. *Technology integration* is defined as the use of technologies inside classrooms to help facilitate teaching and learning (Phillips, Kennedy, & McNaught, 2012).
11. *Transcendental phenomenology* is a branch of human research that requires *Epoche*, a Greek word meaning to set oneself apart in order to refrain from judgment. *Epoche* allows the researcher to look at a thing or event in a new way. Phenomena are freshly viewed from a pure or transcendental understanding (Moustakas, 1994). Transcendental phenomenology is a reflective meditation on an event or experience in which one comes to a conscious understanding of the essence of the lived event (Van Manen, 1990).

12. *1:1* indicates one-to-one, one digital device for each student. The concept of a digital, 1:1 initiative is the ratio of computers to students in which each student has access to a portable computer and where all teachers and student have ubiquitous access to computers (Arnold, 2015, Bebell, et al., 2010; Bebell & O'Dwyer, 2010; Milman, Carson-Bancroft, & Boogart, 2012; Mingus, 2014).
13. *Veteran teachers* are defined as teachers who, through at least 10 years of practice, have the knowledge and ability to be reflective practitioners and who can accurately speak to the complexity of teaching (Meister, 2010). This term is used synonymously with "experienced teachers."

Summary

The goal of this phenomenological research was to give voice to pre-millennial, veteran teacher perceptions concerning the integration of digital, 1:1 technology into their elementary school classrooms. Additionally, this study examined how participants' perceptions about teaching have changed due to a 1:1 integration and the professional development processes that contributed to this process. This study was necessary due to the overwhelming lack of qualitative studies addressing veteran teachers' perceptions and the resulting changes that occur following the integration of a digital, 1:1 technology initiative. The classroom teacher is the key element to successful employment of digital devices (Bebell & O'Dwyer, 2010; Clark & Zagarell, 2012; Hertzler, 2010, Liu, et al., 2010); therefore, educational decision makers need to know the experiences, perceptions, and professional development needs of teachers as they transition their classrooms into technology embedded environments.

Chapter two reviews current research evidencing the gap in literature concerning veteran teacher perceptions of integrating digital, 1:1 technology into their classrooms. Ely's (1990)

conditions of change and Mezirow's (2000) adult transformative learning theories formed the foundation and guided this study. Teacher perceptions, change, and professional development processes were examined as related to digital integration into elementary classrooms.

CHAPTER TWO: LITERATURE REVIEW

Overview

Because we live in a digital age, both children and adult learners invest vast amounts of time and money into accumulating and learning to use the latest gadgets, games, computers, digital mobile devices, and smart phones. Modern digital technology now provides instant and unlimited access to information and global communication through the Internet (Friedman, 2007). Over the last two decades, new technologies have been heavily marketed to schools, universities, and other education providers with the hope that 21st century, digital technologies will be used by teachers to help bolster and support teaching and learning inside classrooms (Buchanan, 2011; Clarke & Zagarell, 2012). An increase in research has been conducted in the last five years investigating the impact of technology on student achievement.

Chan and Leung (2014) conducted a meta-analysis evaluating 587 mathematics students in K-12, comparing a computer-rich application to traditional pencil-and-ruler instruction. They found that the computer application significantly improved the mathematical achievement of elementary school students. Pegrum, Oakley, and Faulkner (2013) reported the emergence and increase in number of studies substantiating statistically significant learning outcomes in the areas of language, math, science, and engineering. Although they note that these results cover a variety of pedagogical approaches and devices, they also affirm technology's effectiveness to improve learning outcomes on traditional assessments. One of the largest studies involving a digital, 1:1 initiative occurred in the state of Maine in 2000 and involved 16,000 students and teachers (Mingus, 2014). The results of this study showed considerable growth in writing, with students who had been trained in laptop use outperforming 75% of students who had not received the laptop training (Mingus, 2014). Additionally, Shin, Sutherland, Norris, & Soloway

(2012) found that the incorporation of technology in teaching primary mathematics "can result in improvements to student engagement, motivation, persistence, curiosity and attention" (Attard & Curry, 2014, pg. 71). While studies such as these have found promising results, limited research has been published to date on digital, 1:1 initiatives to substantiate widespread claims of increased learning and academic achievement (Bebell, et al., 2010; Bebell & O'Dwyer, 2010; Davis, 2012; Milman, et al., 2012; Pegrum, et al., 2013; Zipke, 2013). With the current trend toward digital, 1:1 initiatives, additional research is needed to examine the result of teachers and students having constant access to technology.

The financial investment into technology has been made due to the Department of Education's (DOE) assertion that classroom digital technology is ushering in fundamental structural changes that are integral to achieving significant improvements in academic productivity (see www.ed.gov/oii-news/use-technology-teaching-and-learning). Some stakeholders regard digital technology as a holy grail in that it is leading to a new revolution in teaching and learning (Buabeng-Andoh, 2012). In 2010, then-Secretary Arne Duncan released the DOE's plan for transforming America's educational system through the use of technology, stating that the plan would create an engaging, state-of-the-art, cradle-to-college, nationwide school system. The drafters of this plan were made up of leading researchers, public and industry officials, educators, and students from across the country, all of who believe digital technology can transform education and provide students with marketable, 21st century skills.

Additionally, the International Reading Association (IRA) asserts that in order for students to become fully literate in today's world, they must become proficient in the new literacies of 21st century technologies, and therefore, educators have a responsibility to effectively integrate 21st century technologies into the curriculum (Hutchison & Reinking,

2011). Likewise, the National Council of Teachers of English's (NCTE) position statements, along with guidelines, resolutions and standards, call for integrating digital technologies into classroom instruction (see www.ncte.org). Moreover, The National Education Technology Plan (NETP) (see http://tech.ed.gov/netp/) entitled Transforming American Education: Learning Powered by Technology and written by ISTE, includes goals in the areas of learning, assessment, teaching, infrastructure and productivity, through which it is hoped that classroom technology will transform education through holistic means. The NETP asserts that the learning, assessment, and teaching components of this plan are tailored to students' needs and interests and are preparatory for college and career.

Another NETP goal relates to infrastructure. The plan for educational infrastructure does not refer to technology embedded classrooms within the brick-and-mortar school buildings alone, but also seeks to provide broadband connectivity for all students and teachers, everywhere: in schools, throughout communities, and even in students' and teachers' homes — all at taxpayers' expense (Vance, 2012). The current administration in Washington, DC, has implemented this plan by annually increasing budgeted amounts spent on education, with $71.2 billion in the fiscal year 2014, an increase of $3.1 billion, or 4.5%, over the fiscal year 2012 level (U.S. Department of Education, 2014). Scherer (2014) reports that by 2017, all 49.8 million American students will be online simultaneously, with flat screens replacing textbooks, worksheets being stored in the cloud instead of within binders, and the Dewey decimal system giving way to Google. Part of the push for Internet connectivity is to provide public, as well as private, school students with 21st century skills that will prepare students to compete professionally and academically on a global scale in a highly digital world (Chan, 2010; Ejiwale, 2012; Howard, 2011; Mingus, 2014; U.S. Department of Education, 2014; Williams, 2012).

Assimilating and integrating innovative, 21st century technologies into the classroom requires associated pedagogical and perceptual change among today's veteran teachers.

Theoretical Framework

It is ultimately the classroom teacher that either embraces or resists the utilization of new, 21st century, classroom technologies by implementing them into pedagogical practices (Clarke, 2012; Mingus, 2014). As transformational shifts in education occur due to digital, 1:1 initiatives, experienced classroom teachers that have taught the longest face the greatest change. Veteran teachers have utilized traditional teaching methods during their careers, and while many view digital technology as significantly beneficial, others view it as a tool to carry out practical and procedural tasks such as lesson preparation, presenting and disseminating content information, and collecting and managing data (Flanagan & Shoffner, 2013; Hertzler, 2010; Perrotta, 2013). Younger teachers are more comfortable with technology, while teachers who have spent more years in the classroom and have been exposed to a greater number of teaching strategies and methodologies have been found to view new media outlets as inferior teaching tools that are deficient in aiding academic endeavors (Milman et al., 2012). Teachers desire to use technologies that improve the quality of learning, but at this time, additional studies are needed to confirm significant increases in student achievement with the use of such technologies when evaluated by traditional means and measurements (Abik, et al., 2012; Bebell & O'Dwyer, 2010; Carr, 2012; Clarke & Zagarell, 2012; Davis, 2012; Drew, 2013; Duhaney, 2012; Lindsay & Davis, 2010; Picard, Martin, & Tsao, 2014; Williams, 2012).

Proponents of classroom technology hope to change experienced teachers' minds about its use by introducing the idea that teaching is not effective without the appropriate application and use of digital devices (Ertmer & Ottenbreit-Leftwich, 2010; Mingus, 2014). In a recent

article in *Time*, Scherer (2014) noted that the national push to get computers into every student's hands changes the foundational way that American children are taught. Due to Common Core standards that push classroom technology forward, even at the elementary level, it is more important than ever to examine teachers' perceptions and perceptual change brought about by integrating digital, 1:1 technology, such as tablets and laptops. The following theoretical framework specific to change and transformative learning provided the underpinning for this inquiry and positioned the study with the literature.

Ely's Conditions of Change Theory

To better understand and explain the conditions under which change occurs in education, this study applied Ely's (1990) Conditions of Change theory. This theory was developed in 1990 by Donald Ely to explain the conditions for change required in educational settings. Ely noted the perceived attributes that facilitate and challenges that deter effective decision-making and change among educators. While similar to Hord & Hall's (1987) concerns-based adoption model (CBAM) that applies to anyone experiencing change, and specifically for policy makers, teachers, parents, and students as they experience pedagogical changes within education, Ely's (1990) COC related more closely to veteran teachers.

In 1999, Ely continued his writing and identified the following eight specific conditions that exist when change and innovation occur:

- Dissatisfaction with the status quo — there must be a perceived need for change;
- Sufficient skill and knowledge — those who are being asked to change must be trained;
- Availability of resources — funds, tools, and materials must be available to successfully implement the change;

- Time — all change takes time, and implementers must have time to learn and adapt to changes;
- Reward and incentives — intrinsic or extrinsic rewards are required to promote and sustain change;
- Ownership — those who are asked to change must be involved at the decision-making level;
- Commitment — time and effort must be given to affirm the endorsement and continued support of the change; and
- Leadership — leaders must supply the ongoing support and enthusiasm for implementing change. (see Figure 2.1).

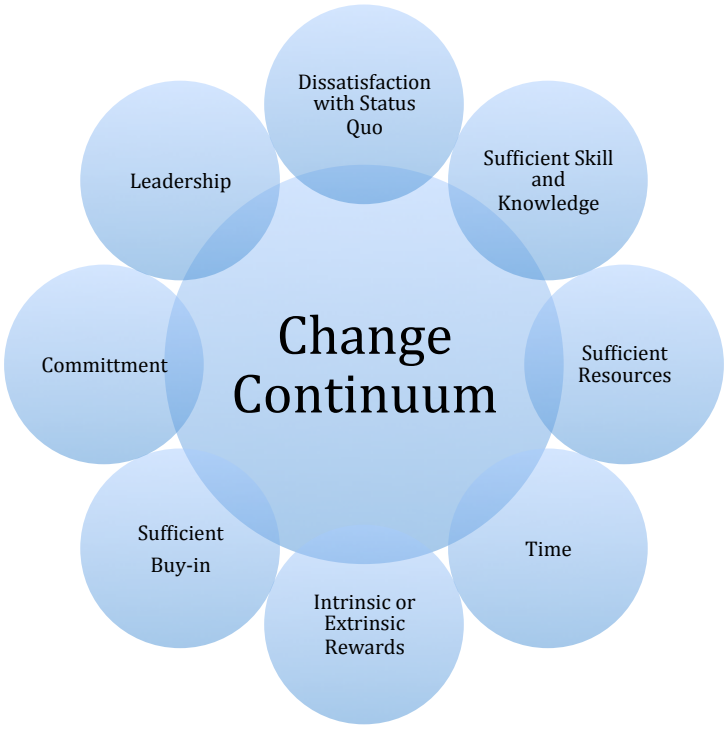

Figure 2.1. Ely's eight Conditions of Change required in educational settings.

Using Ely's (1990) COC theory helped to identify and explain the conditions that exist for veteran teachers prior to and during a digital, 1:1 technology initiative. Additionally, each of the eight conditions were used as a lens through which to investigate those participants currently teaching in 1:1 technology embedded classrooms and helped identify the various stages of change.

Mezirow's Adult Transformative Learning Theory

Even when conditions are present for change to occur, the question remained of how veteran teachers transform their thinking and perceptions about 1:1 technology into active engagement with their teaching methodologies. The answer was anchored in the Adult Transformative Learning (ATL) theory, developed by Jack Mezirow in the late 20th and early 21st centuries (Mezirow, 2000), and was appropriate to this research because it looks at the nature of adult transformation during the learning process. As early as 1997, Mezirow suggested that change is a required element for the modern adult learner. He predicted that future jobs would require more sophisticated skills and technological knowledge and that adult learners would be required to adapt to changing conditions of employment, especially in relation to technology. Successfully integrating digital, 1:1 technology into the elementary classroom requires methodological and pedagogical transformation by today's veteran teachers.

Mezirow's (2000) ATL theory is based on the assumption that one enters into transformative learning because of a disorienting event or series of experiences that conflict with an existing worldview (Mirci & Hensley, 2010). Transitioning to a digital, 1:1 initiative requires change and may be a disorienting event for many, if not most, veteran teachers. Pre-millennial, experienced teachers have deep-seated perceptions and beliefs concerning the value of

technology, their personal efficacy with technology, the time its use would add to or detract from the learning environment, and the importance of its implementation (Buchanan, 2011).

ATL theory explains that adult learning is a form of transforming understanding and asserts that adults have the unique ability to think for themselves inside the context of their personal life experiences (Mezirow, 2000). Specifically, it is one's life experience that contributes to an adult's unique ability to learn and assign meaning to events and changes in the world around them. Mezirow also suggests that adults, unlike children, have mental and emotional abilities that allow them to take ownership of social roles and to develop self-authorship in order to enhance the world and society. A central aspect of ATL theory is that of critical self-reflection, contemplation, and emersion with a renewed and confident view of the world, the circumstances, and one's place in the world based on personal insight and understanding.

Transformative learning occurs throughout an adult's life, but especially when fixed truths are challenged or rapid change in circumstances occur (Mezirow, 2000). Furthermore, this theory recognizes that adult belief is based on the biographical, historical, and cultural context in which it is embedded. Adult learning develops by personal experience and by being able to make meaningful decisions based on insight and understanding. Clearly, this is evident as veteran classroom teachers make daily decisions based on educational standards and their personal beliefs, insights, and understandings about educational practices. Liu, et al., (2010) note that the more knowledge of instructional practices a teacher has, the better equipped they are to compare and contrast them and then to choose the most appropriate practice. The knowledge and understanding gained by many years in the classroom give veteran teachers the ability to make meaningful decisions about the integration of digital, 1:1 technology into the classroom.

As technological change occurs, lasting change in teaching methods may be difficult because it challenges teachers to reconstruct deeply embedded practices and beliefs (Vetter, 2012). ATL theory helps to explain how teachers become aware of personal assumptions, values, beliefs, and changes brought about through the integration process. ATL gives description to the thought processes that move them along from personal expectations to making interpretations as change occurs (Mezirow, 2000).

Additionally, Mezirow (1997) asserts that adult learners are willing to think, consider, and critically reflect on a new concept, to consider its validity, to enter into dialogue, and then to act independently as they orient themselves to change (see Figure 2.2). He notes that transformative learning requires effective discourse in order to arrive at a best judgment regarding a belief. Additionally, the discourse must be free from coercion, critically reflective, empathetic to other perspectives, and incorporate a willingness to search for common ground. This study fills the gap in literature by describing veteran teachers' perspectives, and thereby, opens a discourse with valuable critiques and synthesized understandings of the steps required to establish 1:1 technology embedded classrooms. In addition to the theoretical framework descriptions, the current literature served to illuminate other important factors that informed this study.

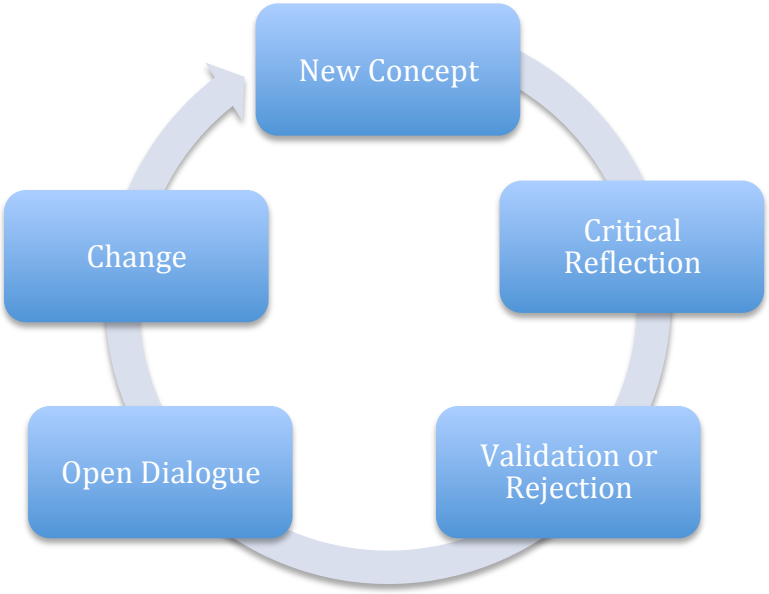

Figure 2.2. Mezirow's (1997) Cycle of Adult Transformative Learning.

Related Literature

Building 21st Century Skills

There is little doubt of technology's widening realm of influence in schools, businesses, and employment. Since the arrival of personal computers in the 1970's, there has been great interest in the potential of technology to improve education (Sprenger, 2010). In the 1980's and 1990's, educators sought to provide students and teachers with computer access through stationary labs or classroom desktop technology (Sprenger, 2010). As technical devices have become smaller, more portable, and increasingly interactive throughout the last decade, American classrooms have been infused with digital learning tools with the goal of increasing student engagement with curriculum and promoting a strong motivation to learn (Bebell & O'Dwyer, 2010; Ciampa, 2012; Milman, et al. 2012). Current educational leaders, teachers, and parents are convinced that interactive digital technology is a necessary addition to today's modern classroom (Lindsay & Davis, 2010). The U.S., as well as other countries around the world, is wagering the future of the next generation on the claim that digital classroom

technologies will usher in academic productivity that will create a citizenry of technological-savvy workers prepared to enter the workplace and become economically and globally competitive (Buchanan, 2011; Clark, 2013; Drew, 2013; Ejiwale, 2012; He, 2013; U.S. Department of Education, 2010).

Technology, and especially digital social media tools, has now eradicated geographical borders and made it possible for people around the globe to communicate, collaborate, and compete in real time (Friedman; 2007; Uzunboylu & Ozdamli, 2011). Digital technologies provide a more level playing field and more equal footing than ever for those seeking employment, as well as an unlimited pool of job candidates for employers (Friedman; 2007). At the same time, the standards associated with the use of digital classroom technologies are redefining relationships between the federal and state governments and opening education to corporate forces in unprecedented ways (Buchanan, 2011). Major computer manufacturers are marketing digital products to educational leaders and making promises of major breakthroughs in academic achievement and preparedness for the global job market (Buchanan, 2011).

Experienced teachers are aware of the claims that digital technology can transform education and generate a globally competitive generation (Buchanan, 2011). While the skills developed by digital tools may create greater competition in the global job market, longitudinal studies are needed to determine if the beliefs about using digital technologies translate into the actual academic achievement needed to be truly competitive. Howard (2011) affirms that the relative value of any educational change must be measured in terms of its impact on and benefit to learners. Unfortunately, despite decades of digital tool use and American millennials attaining higher levels of education than any previous generation, when compared to their international peers, on average, Americans demonstrate weak skills in literacy, numeracy, and problem

solving in technology-rich environments even among the best-performing, most-educated, native born, and highest socioeconomic backgrounds (Goodman, Sands, & Coley, 2015; Mingus, 2014).

In 2013, the National Assessment of Educational Progress (NAEP) found that although millions of investment dollars and a multitude of reforms have been infused into K-12 education over the past decade, America continues to lose ground in terms of the developed skills. This trend continues, as Goodman, et al. (2015) found that 74% of the nation's twelfth graders were below proficient in mathematics, and 62% were below proficient in reading. Organizations such as ACT, which evaluates for college and career readiness, recently reported that 31% of students tested failed to meet the four college-readiness benchmarks in English, math, reading, and science (Goodman, et al., 2015). This suggests that nearly one in three high school graduates is not well prepared for first-year college coursework. Similarly, the College Board reported in 2013 that 57% of SAT takers failed to qualify as college ready (Goodman, et al., 2015).

These statistics, coupled with the fact that more than 80% of the educational workforce is made up of pre-millennial, experienced teachers, indicate that studies are needed to determine what does and doesn't work when integrating classroom technology with the goal of better preparing America's students for college and the workplace. Understanding veteran teacher perceptions leads to filling the gap between the goals of technology enriched education, authentic learning, and academic achievement among students.

Tablets and Laptops

As our culture has become more and more technology driven, the National Educational Technology Standards (NETS) and the National Association for the Education of Young Children (2011) (NAEYC) now encourages interaction with digital technology at a young age

and calls for tablets, laptops, or other digital technologies to be utilized in schools at the elementary level (Bostock, 2012). A recent survey by Pegrum, et al., (2013) revealed that tablets are the most commonly used devices in educational settings in classrooms around the world and are regarded as promising tools for supporting teaching and learning. As a result, tablets and laptops are now being seen as a cost-effective way to integrate digital technology into the elementary school classroom. In a 1:1 tablet or laptop initiative, all students, regardless of their socioeconomic backgrounds, have ubiquitous use, portability, and equal access to information (Sprenger, 2010). In many classrooms, digital options are replacing hardcopy books, and according to Education Market Research reports, K-12 curriculum publishers have been shifting their product development away from print to digital options (Schaffhausen, 2015).

As early as 2005, Zucker & McGhee conducted one of the largest studies of a 1:1 laptop initiative. Their study involved more than 25,000 middle and high school students and teachers at Henrico County Public Schools in Henrico, VA. They found that 1:1 laptop initiatives result in:

- Easier and greater student access to current information;
- Increased student engagement, interest, and motivation to learn;
- Greater self-directed learning and organization amongst students;
- Greater student interaction and communication with teachers;
- Increased professional productivity for teachers;
- Greater collaboration amongst teachers; and
- More flexibility for teachers during instruction.

Challenges to teachers include increased time for planning, classroom management, and discipline issues associated with laptop use (Zucker & McGee, 2005).

Although Larry Cuban, professor emeritus of education at Stanford University, found

little evidence that kids learn more, faster, or better by using technology (Hu, 2011), additional research is needed to confirm or refute these claims. Milman, et al.'s (2014) mixed-methods case study found that students in pre-kindergarten through fourth grade exhibited high levels of student engagement, collaboration, and enthusiasm for using tablets in elementary classrooms. Tucker (2013) identified student control over the learning process, improved communication skills, group collaboration, and problem-solving techniques as benefits associated with classroom technology. Additional studies have found that students enjoy tablets due to their convenience, portability, automatic updates, and customization for kinesthetic learners (Bennett, 2011; Milman, et. al, 2012).

Furthermore, Arnold (2015) found that one-to-one computing leads to measurable changes in teacher practices, student engagement, students' research skills, and to modest increases in achievement. Additionally, Suhr, Hernandez, Grimes, & Warschauer (2010) found that after two years, students in 1:1 technology initiatives experienced higher gains in English Language Arts than non-participatory students. Other recent studies have also attributed increased student academic engagement and student learning to the integration of 1:1 computing (Bebell & Kay, 2010; Keengwe, Schnellert & Mills, 2012; Suhr, et al., 2010). But, Storz & Hoffman (2013) affirm that efforts to link 1:1 computing with positive student outcomes are both inconsistent and complex.

While many studies claim positive academic results, Hu (2011) and Storz & Hoffman, (2013) found that technologies that have been designed to strengthen the educational experience for children who have been raised playing video games and have access to the social Internet sites have garnered mixed results when it comes to increased academic achievement. Other studies assert that student achievement may actually be thwarted by the use of technology

(Milman, Carson-Bancroft, & Boogart, 2012). Tucker (2013) notes that technology integration can be "messy, loud, and disorganized," but also asserts that these challenges result in more meaningful learning for students (pg. 60). Overall, little research exists substantiating the consistent effectiveness of tablets and laptops on academic achievement (Bebell & O'Dwyer, 2010; Milman, et al., 2012; Picard, et al., 2014). Therefore, additional research is needed.

Digital, 1:1 Initiatives

The rapid expansion of classroom technology has resulted in the idea that technology enriched classrooms should be the standard in education (He, 2013). Technology has changed how we think about the future of education, requiring educational leaders to redesign instructional models that provide each student with his or her own digital device. In an effort to improve teaching and learning, public and private school districts around the world are now making the financial investment required to create ubiquitous access to technology by embedding classrooms with tablets and laptops for all teachers and students (Downes & Bishop, 2015; Sprenger, 2010). The National Educational Technology Standards (2014) (NETS) supports the inclusion of digital technologies, and most states have adopted NETS through the Common Core standards of instruction (Clark, 2013). Common Core standards require teachers to establish technology embedded classrooms by using a combination of strategies and methods (Duhaney, 2012). Digital, 1:1 technology initiatives provide students with a portable laptop or tablet loaded with usable software that enables students to access the Internet and allows students to complete homework, tests, and other assignments (Mingus, 2014).

Such initiatives also serve to personalize instruction as never before (Schaffhauser, 2015). When every student is equipped with a tablet or laptop, there is equal access available to information (Mingus, 2014). In their case study, Downes & Bishop (2015) found that teachers

and students believe 1:1 technology creates active, purposeful, challenging, relevant, creative, and individualized educational opportunities. Students in their study consistently regarded 1:1 technology as being both engaging and beneficial to their learning (Downes & Bishop, 2015). Broussard, Hebert, Welch, & VanMetre (2014) found that students' ability to think, think objectively, organize, and recall is positively affected by the integration of 1:1 technology. Education that is integrated with technology effectively takes the limitations off the teacher and textbooks by opening the vast resources of the Internet to students (Mingus; 2014).

In contrast to the positive results of digital, 1:1 initiatives, other research has noted problems with unwanted activities that tablets and laptops offer to distract and tempt students to play games, cheat on tests, and engage in other off-task activities (Tallvid, Lundin, Svensson, & Lindström, 2015). Additionally, Purcell, Rainie, Heaps, Buchanan, Friedrich, Jacklin, Chen, and Zickuhr (2012) found that teachers continue to struggle with balancing effective pedagogical approaches with the distractibility of student devices. In their study, 75% of the teachers believed that while the Internet and digital technologies have a positive impact on students' research habits, an even greater number, 87%, believe technology is causing a generation of students with short attention spans, and 64% believe digital technologies are more distracting than academically helpful (Purcell, et al., 2012). Therefore, it is important that teachers and educational leaders never use technology simply for technology's sake. Rather, effective use of technology must be a prerequisite to positive educational outcomes when implementing a digital, 1:1 initiative (Bebell & O'Dwyer, 2010).

Teacher Perceptions Associated with Digital Technology

Studies show that teachers desire to use technologies that improve the quality of learning, and that teachers are the final decision makers as to what extent technology fits into their

teaching methods (Badia, et al., 2013; Bebell & Kay, 2010; Fresen, 2010). In their study of 278 teachers' perceptions Badia, et al. (2013) identified five main factors that influence teachers to use digital technology: (a) technology's usefulness for improving education and student achievement; (b) teacher support and technical training; (c) teacher efficacy; (d) availability and access to classroom technology; and (e) access to technology outside the classroom. Additionally, Li and Ma (2010) identified a connection between the assumption that technology can improve student learning and teacher support of such technologies.

Badia et al. (2013) found that teachers' emotions toward technology determine its use, and Ramirez, et al. (2012) assert that teachers' positive attitudes toward technology foster Internet use in the classroom. Fresen (2010) points out that most teachers use technology for research, composition, and communication, but that few use it for actual teaching. Therefore, she concludes that technology adoption into the classroom depends on the perceptions of the individual teacher. Additionally, Pegler, et al. (2010) explored the generational attitudes associated with technology use, and Van Aker, Van Buuren, Kreijns, & Vermeulen's (2013) survey of data from 1,484 teachers confirmed teacher attitude toward digital learning devices as the strongest predictor of their use. Other studies have explored pre-service teachers' thoughts about technology in the classroom (Banas, 2010; Cullen & Green 2011; Sadaf, et al. 2012; Zipke, 2013), teachers' knowledge of technology (Rohaan, Taconis & Jochems, 2012), and teachers' beliefs about the value of technology (Ottenbreit-Leftwich, et. al., 2010; Potter & Rockinson-Szapkiw, 2012; Prestridge 2012). Howard (2011) and Zipke (2013) found that teachers are generally receptive to any teaching practice that promises to improve student learning, and Harris & Hofer (2011) found that most teachers believe students need to learn through multiple delivery channels, including technology.

Howard (2011) also found that today's classroom teachers have different conceptions of quality teaching and the value and role technology plays in providing a quality education. Perrotta (2013) argued for more exploration of the relationship between teachers' perceptions and technology as his study revealed that some teachers fully embrace new digital technologies, others display reluctance toward the use of technology, some express outright negative reactions, and some perceive technology as threatening. Perrotta (2013) found that many of the recent accounts of teachers' relationships with digital technology are varied, with a great number of teachers remaining in the role of cautious onlookers instead of moving forward and becoming enthusiastic innovators when it comes to utilizing classroom digital technology.

In a national survey of 1,441 literacy teachers, Hutchison & Reinking (2011) found that 67% believe technology is supplemental to instruction, while only 29% believe technology is central to instruction. When asked to indicate the extent to which technology benefits instruction, 46% indicated that its benefits are large, and 40% view its benefits to be moderate (Hutchison & Reinking, 2011). Additionally, Howard (2011) found that older teachers are more likely to discuss benefits of technology and quality teaching in relation to students' academic achievement and standardized test results, and in general, do not see technology as supporting positive scholastic outcomes. Younger, millennial teachers were found more likely to talk about quality teaching in terms of student engagement with technology as a quality learning experience, and they tend to see technology supporting this aim (Howard, 2011).

Cviko, McKenney, & Voogt (2012) found that teacher beliefs affect integrated classroom use of technology. They state that teachers who hold constructivist, student-centered approaches to teaching and learning have positive perceptions of integrated classroom technology, whereas teachers who hold traditional, teacher-centered approaches have negative perceptions of

integrated classroom technology. These findings support Badia, et al.'s (2013) case study using a mix of quantitative and qualitative methods. Yet, in their case study, Cviko, McKenney, & Voogt (2012) found that both approaches perceive technology as being supportive learning tools when coupled with positive expectations, teacher efficacy toward technology skills, and administrative support towards technology implementation. In his quantitative study, Sprenger (2010) asked if teachers change their basic pedagogy, or teaching practices, as they participate in a laptop initiative. He concluded that teachers show significant change in their teaching styles as they use laptops to meet educational goals and as they learn new ways of instruction.

Pre-Millennial Teachers

The main question driving this research study requires identifying pre-millennial teachers. For the purposes of this study, the term pre-millennial is used to identify those teachers born prior to 1980. Age distinction has much to do with changes in technologies and the launch of the Internet to the public in 1991 (Internet Society, 2012). Pre-millennial teachers differ significantly from millennial teachers in several significant areas.

Unlike millennials, pre-millennial teachers grew up without continuous engagement with technology. Pre-millennials have adopted technologies in the workplace and over time have developed the abilities and skills required to learn, adopt, and become competent with technologies (Houck, 2011; Orlando, 2014; Smith, 2013). Although differences exist on the use of technology among teachers, studies affirm that the propensity to engage in technology and technological endeavors is a function of personal interest and social factors rather than age (Smith, 2013). Additionally, Perrotta (2013) found that school culture plays more of a vital role in shaping teachers' experiences and expectations of technology use than age, gender, or teaching experience.

Implementing a 1:1 digital immersion into the classroom may require pre-millennial teachers to shift their thinking concerning their role as teacher to that of facilitator (Potter & Rockinson-Szapkiw, 2012). Teachers may struggle with a decrease in control and power as they become vulnerable learners of technology in the classroom (Potter & Rockinson-Szapkiw, 2012). Additionally, teachers may experience inner conflict and apprehension, as they are required to explore alternate approaches to pedagogy that contrast with their beliefs about learning, classroom management, and curriculum.

Millennial Teachers

Several terms have been used to describe today's millennial, techno-centric generation. Tapscott (1997) labeled those born after 1980 as the "Net Generation" because they were "the first generation to be bathed in bits" (p. 17). Due to growing up surrounded by technology, those born after 1980 have also been referred to as Generation Why, the Millennial Generation, and Millennials (Kubiatko, 2013; Nikirk, 2012; Smith, 2013). Millennial teachers have grown up just prior to and during the second millennium, and are typically Internet savvy, technology addicted, and very digitally conscious (Attard & Orlando, 2014; Kubiatko, 2013). Additionally, millennials are characteristically very comfortable with computers and prefer working with digital technologies (Kubiatko, 2013). Millennial teachers tend to believe classroom technology plays a primary role in instruction (Flanagan & Shoffner, 2013). In 2012, millennials comprised 26.2%, or 82 million, of the estimated U.S. population and 35% of the labor force (Goodman, et al., 2015). As this group increases in size, it largely determines the future economy, social landscape, and educational requirements in America. General attributes of pre-millennials and millennials are noted below.

Table 2.1

Generational Attributes

	Pre-millennials Born 1946-1964 Now Age 50-64	**Pre-millennials** Born 1964-1980 Now age 34-49	**Millennials** Born 1981-2007 Age 8-33
Generalizations	Majority of current workforce Optimistic Values authority Personal gratification Strong work ethic Determination	Smallest group of current workforce Skeptical Distrusts or ignores authority Values diversity Pragmatic Informal	Many currently entering workforce Values optimism Respects authority and expects it in returned Protects environment Globally aware Sociable Volunteers
Education	Views education as the way to get ahead in life Prefer traditional classroom-style learning	Views education as a means to an end and for personal growth Prefers self-directed learning through technology	Views education as a huge expense Believes in lifelong learning Prefers educational options: classroom, group activities, technology, and fun
Technology	Learned technology at work and believes it improves personal productivity	Learned technology in school and believes it is critical for personal and work efficiency and the best way to connect	Lifetime exposure to technology and believes it is the core to life, work, and way of thinking

Note: The Generational Attributes shown in Table 2.1 is a partial listing of the attributes developed by Houck (2011). More recent data is unavailable.

The Value of Experience Among Pre-Millennial Teachers

While younger, millennial teachers have an overall greater capability and motivation to integrate technology into their teaching practices, they often feel ill prepared and struggle in the areas of mastery of instruction, meeting individual student needs, and classroom discipline

(Attard & Orlando, 2014). Studies show that teacher experience has a greater effect on student learning than any other identifiable factor, including advanced degrees, teacher licensure test scores, certification status, school system, or class size (Ladd, 2013; Rice, 2010; Strategic Data Project, 2011; Chingos & Peterson, 2011). Veteran teachers have long-held thoughts, attitudes, and beliefs about how children learn and the impact technology has on children (Uzunboylu & Ozdamli, 2011). Therefore, veteran teachers provide valuable insights into pedagogical processes that cannot be identified by any other group of educators.

Although simply teaching for a long time does not ensure that one is a good teacher, veteran teachers have been found to be less susceptible to instructional fads and fashions and to possess the ability to compare, contrast, and choose the most appropriate practices (Lui, et al., 2010). Additionally, experienced teachers have a unique understanding of the nuances that are relevant to successful teaching and learning (Meister, 2010). Bringing a plethora of information and academic insight to the classroom, veteran teachers as a group continue to be effective at raising student test scores for more than 15 to 20 years (Ladd, 2013). Therefore, veteran teachers are uniquely qualified to make suggestions and recommendations for improved teaching and learning strategies (Meister, 2010). Using Ely's (1990) Conditions of Change theory and Mezirow's (2000) Adult Transformative Learning theory, this study seeks to give voice to veteran teachers' personal perceptions, both positive and negative, following the integration of digital, 1:1 technology into elementary classrooms.

Although participants in this study are all employed at private, independent schools, they are required to meet the criteria denoting a highly qualified status as defined by No Child Left Behind (2001) federal and state legislation. While each classroom teacher brings a plethora of diverse personality, talent, and level of professionalism to the "art and craft of teaching" (Eisner,

1983, p. 4), it is important to identify those who have put in the time and effort to fulfill the requirements that identify them as being highly qualified in the field of pedagogy. These requirements are: (a) the teacher must have at least a bachelor's degree; (b) the teacher must be licensed to teach in the state in which they work; and (c) the teacher must demonstrate a high level of competency in their subject matter (http://www.ets.org/praxis/al/hq/). A highly qualified status is determined by passing a praxis test or by successfully completing course work in each subject they teach. Additionally, highly qualified teachers that are a part of this study are required to hold a teaching certificate in Early Childhood or Elementary Education.

A highly qualified status is also aligned with the standards and assessments of the 2014 National Board for Professional Teaching Standards (NBPTS). These national standards are based on five main principles or propositions. The NBPTS asserts:

(a) National Board Certified Teachers have mastery over the subject(s) they teach;

(b) Teachers have a deep understanding of the history, structure, and real-world applications of the subject;

(c) Teachers have skill and experience in teaching the subject;

(d) Teachers are very familiar with the skill gaps and preconceptions students may bring to the subject; and

(e) Teachers are able to use diverse instructional strategies to teach for understanding (see http://www.nbpts.org/).

This study is primarily concerned with Propositions A and E: Teachers know their subjects and know how to teach those subjects to students using a diverse set of strategies. Based on NCLB and NBPTS standards, the focus of this study requires a highly qualified status with at least 10 years of teaching experience. Veteran teachers have much to offer, and through this study, their

perceptions and expert perspectives regarding the use of tablet and laptops in elementary classrooms are sought and identified.

No Child Left Behind and TPACK

Integrating technology into the classroom is sanctioned by the federal No Child Left Behind standards. President Lyndon B. Johnson signed Elementary and Secondary Education Act (ESEA) into law in 1965. The ESEA offered federal grants to districts serving low-income students for text and library books, special education centers, and scholarships for low-income college students. Additionally, the law provided federal grants to state educational agencies to improve the quality of elementary and secondary education. In 2002, ESEA was reauthorized by Congress and signed into law by President George W. Bush, giving it the new name of No Child Left Behind (NCLB) (see http://www.ed.gov/esea). While NCLB has received criticism for teaching to the average student, emphasizing group mentality, and passing students through the system as quickly as possible (Zabloski, 2010), section #240, entitled the Enhancing Education Through Technology Act of 2001, includes as a primary goal to improve student academic achievement through the use of technology in elementary and secondary schools. Additional goals for technology integration include: (a) assisting every student in crossing the digital divide by ensuring that every student is technologically literate by the time the student finishes the eighth grade, regardless of the student's race, ethnicity, gender, family income, geographic location, or disability; (b) encouraging the effective integration of technology resources and systems with teacher training and curriculum development; and (c) establishing research-based instructional methods that can be widely implemented as best practices by state and local educational agencies (see http://www2.ed.gov/policy/elsec/leg/esea02/pg34.html).

During the last 10 years, NCLB has required educators to focus on accountability,

employ scientifically based research, utilize standardized tests, and be data driven (Devlin, et al., 2013). In 2009 the National Center for Education Statistics found that many of the students enrolled in K-12 classrooms do not achieve at levels necessary to be globally competitive (Devlin, et al., 2013). Therefore, teacher training is a chief concern of schools in the wake of NCLB high-stakes accountability measures (Allison, 2013). Additionally, TPACK, which combines Technological Pedagogical Knowledge (TPK) and Technological Content Knowledge (TCK), provides an integrated framework for understanding how technology connects to pedagogy and content knowledge (Clark, 2013).

The TPACK learning framework links technology, pedagogy and content knowledge by providing a schema for thinking about and implementing these three elements of learning. Additionally, this framework helps teachers plan comprehensive and integrated lessons and defines how teachers bring together knowledge of subject matter, good pedagogy, and technology. TPACK's framework offers more than simply adding technology to traditional approaches. Teachers need to have a deep knowledge of how technology can be used to access and process subject matter and a solid understanding of how technology can support and enhance learning. Further, they need to make creative links between what is being learned (content), how it is taught (pedagogy), and the appropriate tools (technology) (see http://www.ttf.edu.au).

Professional Development

Teachers make sense of new information and innovation based on their existing beliefs and practices; therefore, perceptual change is required amongst veteran teachers when they are asked to shift from traditional, instructional-based lessons to inquiry-based teaching strategies (Song & Looi, 2012). Studies show that training workshops and other programs that assist teachers in obtaining classroom technologies do not guarantee technology use, as many veteran

teachers remain reluctant to integrate digital technology and often allow costly devices to go unused (Liu, et al., 2010; Mingus, 2014; Zipke, 2013). Many programs do not consider the perceptual changes required to fully embrace new classroom innovation (Song & Looi, 2012). Change can only come about over time through engagement with technology and through training opportunities that results in successful implementation.

Digital technologies have been introduced into classrooms with the expectations that teachers will embed them into their existing practices, but this is often done with little or problematic professional development (Attard, 2013; Orlando, 2014). Studies identify the lack of teacher training as the greatest challenge of classroom technology integration and as the greatest barrier to improved technology use in education (CDW, 2011; Grundmeyer, 2014; Hutchison & Reinking, 2011). The lack of professional development has also been identified as a primary reason technology integration is unused or ineffectively applied in the classroom (Drayton, Falk, Stroud, Hobbs, & Hammerman, 2010; Potter & Rockinson-Szapkiw, 2012). Unfortunately, many school districts offer training through ineffective traditional approaches that do not fully meet the needs of the teacher as learner and do not fully support 1:1 instructional practices (Petrie & McGee, 2012).

Teacher professional development is an essential component of the successful integration of classroom technology (Sprenger, 2010), yet a study by Flint, Kurumada, Fisher, & Zisook (2010) found that formalized plans and change processes such as new policies or professional learning programs do not produce immediate or significant change in teaching. Bebell & O'Dwyer (2010) affirm that special attention should be paid to teachers and their professional development needs when they are involved on the front lines of a digital, 1:1 technology initiative. Teachers are often torn between addressing the learning needs of individual students

and the dynamic change in the environment of the classroom brought about by the many competing initiatives (Gibson & Brooks, 2012). A tension is created between the genuine desire to improve practice and the need to maintain feelings of overall competence and efficacy (Sisk-Hilton, 2009). Section #2414 of NCLB requires local schools to provide ongoing and sustained professional development for teachers, principals, administrators, and school library media personnel in order to further the effective use of technology in classrooms and library media centers (http://www2.ed.gov/policy/elsec/leg/esea02/pg35.html).

A recent survey reports that 16% of information technology professionals believe teachers' lack of training is the "biggest challenge of classroom technology" (Grundmeyer, 2013). In his 2013 qualitative study of digital, 1:1 initiatives, Grundmeyer found that insufficient teacher training led to wasted classroom instructional time, distractions for students and teachers, and a drop in standardized testing scores during the first year. Grundmeyer's (2013) study revealed that pre-adoption applications, skill development, and ongoing training could help teachers maintain student focus and limit laptop distractions. His study found that schools that jump into a digital, 1:1 initiative without enough planning, forethought, and teacher training actually loose many of the gains that the innovation was originally designed to achieve. He recommends that schools move thoughtfully and slowly through the process. Hsu and Kuan (2013) looked at 3,652 teachers and found that teachers' beliefs about technology and the number of hours of training in the previous year predicted technology integration proficiency. Not surprisingly, the number of training hours was found to be one of the most important factors that impact technology integration.

Teaching is a process that comes about through a combination of training and experience and is accomplished from a combination of hard work, extensive experience, training, support,

and mentorship (Ricks, 2010). Professional development for teachers has been recognized as a key vehicle through which to improve teaching, introduce curriculum, present pedagogical reforms, and in turn, improve student achievement (Fletcher, 2012; Hutchison & Reinking, 2011; Petrie & McGee, 2012). Mingus (2014) notes that professional development could more accurately be defined as professional growth. Professional development is supported by Ely's (1990) COC, which states that those who are asked to change must be trained. Additionally, Knowles' (1980) andragogy asserts that adult leaners need to be actively involved in the learning process in order to construct knowledge, make sense of it, and accurately apply it. Therefore, a program of continuous professional development is vital in order for teachers to add value to their lessons, find new strategies and methods, and ensure teacher expertise and experience that supports learning across subject areas (Bradshaw, et al., 2012; Mingus, 2014).

Today's professional development requires much more than traditional discussion groups, administrative presentations, and training videos. A broader understanding of professional development includes all individual and group learning activities in which teachers participate, as well as personal and professional support and guidance provided throughout their careers (Hilton, Flores, & Niklasson, 2013). Effective and job-embedded professional development is especially important to elementary teachers who are required to teach numerous subjects across the curriculum (Petrie & McGee, 2012). Professional development programs should offer opportunities that assist teachers as they develop 1:1 programs, pedagogies, and practices that lead to improved student outcomes and achievements (Petrie & McGee, 2012; Potter & Rockinson-Szapkiw, 2012). Additionally, teachers who provide digital 1:1 integration require training on the management of personalized lessons for each student and access to online resources in order to accurately track student progress (Patrick & Sturgis, 2015).

Initially, teachers must be trained in the use of digital technology, not simply given access to them (Uzunboylu & Ozdamli, 2011). With digital technology integration, teachers also need the opportunity to gather with other teachers in workshop settings and to spend extended time experimenting with the devices for themselves (Fletcher, 2012). These workshop-setting training opportunities often lead to strong professional learning communities and create vital and expanded learning networks that serve to strengthen all teachers involved. It is within these networks that teachers participate in collaborative efforts such as lesson planning and hybrid curriculum design as they become reflective practitioners (Fletcher, 2012). Through such networks, teacher competency is increased, teachers learn more from each other, they are more creative, and they form important collegial support systems (Niesz, 2010). Potter and Rockinson-Szapkiw (2012) also suggest that an effective professional development model for today's technology embedded classroom teacher should include not only technology instruction and application, but also integration, mentorship, and community support.

Owen (2015) also suggests that an innovative educational approach for schooling requires working in teacher teams or professional learning communities (PLCs). PLC's have been found to be highly effective with regard to teacher planning, teaching, and assessment. Instructors involved in PLC's indicate increased learning outcomes for students in terms of achievement, social skills, emotional aspects, independence, creativity, and significantly, the overall increased wellbeing of teachers and students (Owen, 2015). PLC's also provide a valuable venue for administrators to encourage professional growth and contribute collegially to teacher and curricular change (Gibson & Brooks, 2013). Mingus (2014) suggests that PLC's encourage and open opportunities to use the expertise that already exists among the teachers through mentoring, coaching, and team-teaching programs. Additionally, Orlando (2014)

espoused the organization of learning communities as an effective way to promote mutual respect and to share relevant knowledge among teachers.

Howard (2011) found that lack of sufficient training leaves teachers feeling anxious and uncomfortable with technology. Therefore, this study seeks to identify the various professional development training opportunities participants receive in preparation for a 1:1 integration as well as the ongoing processes and learning networks currently available to them. The goal of this study is to investigate the types, delivery methods, and ongoing professional development and training opportunities experienced by participants.

Challenges to 1:1 Technology Integration

While there are many advantages to using digital technologies, difficulties remain that challenge effectively integrating 1:1 technologies into elementary classrooms. Weston and Bain (2010) affirm that many challenges can stymie teachers and students use of technology. Although 1:1 technology is in many ways advantageous, simply integrating it into the classroom does not guarantee effective or quality teaching (Lou, Chen, Tsai, Tseng, and Shih, 2012; Mingus, 2014). As with any teaching method, one size does not fit all learners, and 1:1 learning can possesses its own set of deficiencies. For example, Hodge & Harman (2013) found that extensive use of technology results in decreased interpersonal skills associated with communication, empathy, and connectedness, as well as a lessened depth of knowledge and thinking. As it relates to this study, little research has been conducted on how technology affects brain development due to the ever-increasing speed of technology and technology integration into the culture (Koizumi, 2011). Carr (2011) asserted that technology reduces the brain to a computer analogy by ignoring human spirituality, emotion, and instinct and that relying on computers as memory storage reduces the richness, depth, and breadth of thinking. Warnings

also exist that the flood of information, increased screen time with virtual media, and individualism might actually transform how the brain develops and functions (Battro & Fisher, 2012).

It remains unknown what happens to the brain as it interacts with technology. Piaget (1932), Montessori, (1995), and Herman (2012) confirmed that the primary age span for profuse brain development occurs during childhood, specifically in children from birth to age 11. With the increased use of technology comes increased screen time for children. In 2010, the Kaiser Foundation collated results from studies conducted in 1994, 2000, and 2009. The studies concluded that on average, children between the ages of eight and 18 spend 53 hours per week immersed in various kinds of technology (Kaiser Family Foundation, 2010). With the addition of classroom technology, this number can easily increase to between 70 and 84 hours. The number of hours spent with digital technology by children younger than the age of eight is also rising as students as young as kindergarten receive tablets, interact with social media, play games, and read eBooks at home and in the classroom.

Herman (2012) reports that the use of technology can interfere with understanding, micro-muscle movements and associated behavioral cues. Additionally, Carr (2011) and Devlin et al., (2013) share the concern that technology's effect on the brain causes an inability to focus and decreases the brain's ability to contemplate deep and complex ideas at length. Parents are concerned that schools providing digital, 1:1 devices only focus on the technology instruction rather than ensuring that both the face-to-face and digital learning is of the highest quality (Patrick & Sturgis, 2015). Uzunboylu & Ozdamli (2011) claim that technology alone does nothing to enhance pedagogy. Therefore, longitudinal studies are needed to determine what happens in the brain as children utilize computers and the Internet (Battro & Fisher, 2012). Until

more substantial evidence of long-term consequences is available, parents and teachers are advised to help children develop the ability to balance technology with the mind's deeper need to engage in tasks of mental substance (He, 2013; Herman, 2012; Phillips, et al., 2012; Vance, 2012).

These findings stand as challenges to technology integration, and teachers may experience more. In a study by Hutchison & Reinking (2011), teachers identified six obstacles to digital, 1:1 technology integration: lack of time within a class period; lack of access to technology or access to the Internet; lack of technical support; lack of time to plan for integrating technology into instruction; lack of time to teach basic computing skills; and lack of incentives to integrate technology. The main obstacle of technology integration often centered on loss of time: loss of instruction time due to technology failing to work properly, time to prepare lesson plans that incorporate technology, and time teaching with technology in the classroom (Howard, 2011). Hutchison & Reinking (2011) found that teachers with low computer-efficacy felt the risks of integrating technology were unacceptable due to unresolved technical problems during class instruction. When teachers do not value technology in teaching, the risks become even less acceptable (Hutchison & Reinking, 2011).

With the adoption of the Common Core standards and the inclusion of tablets and laptops, today's digital classroom is already a reality, but how the technologies are used within the classroom determines if these technologies lend themselves to adding new practices or if they simply serve as tools that aid the established practices (Prestridge, 2012). In a study by Banas (2010), 52% of the teachers described technology integration into their classroom as one by which the students learn *from* technology rather than one in which students learn *with* technology. Only 13% of teachers in the study reported integrating technology into classroom

lessons at a level that could be described as learning *with* technology. Banas (2010) found that people are more likely to adopt an innovation if it "offers a better way to do something, is compatible with personal values, beliefs, and needs, is not too complex, can be tried out before adoption, and has observable benefits" (p. 121). Many veteran teachers agree, but due to the rapid adoption and implementation of digital devices required by Common Core standards, may have not yet perceived the benefits of digital technologies.

Additionally, Zipke (2013) found that all too often, teachers and educational leaders rush to adopt the latest technologies without first exploring the educational impact and potential benefits. Although most parents do not favor the idea of children's educational time being used for product testing, it has been done for decades in American classrooms as well as in classrooms around the world, as evidenced by C.S. Lewis' (1950) reference to a British school known as the Experiment House. Long-term pilot programs and testing could help to avoid problems like that experienced by students in the Los Angeles Unified School District. In the fall of 2014, the school district expended over a million dollars for a digital, 1:1 technology initiative. Parents and members of the extended community were upset when the district moved ahead with the tablet distribution, and local scientists and public health advocates were highlighting the dangers for children associated with Wi-Fi and non-ionizing radiation exposure. Although the school district implemented security measures, students quickly cracked the security code and proceeded to use the computers. When the schools tried to confiscate the tablets, many of them had gone missing and were unrecoverable. (see https://greenswan.org/los-angeles-unified-school-district-ipad-fiasco/).

Lastly, Mishra and the Deep-Play Research Group (2012) explored the relationship between technology and creativity and cautioned against viewing new technology as the driving

force in educational practice. Mishra et al. (2012) likened the assumption that today's technology should guide education to assuming that the invention of the crayon in 1903 would be of foundational significance to 20th century education. Mishra et al. (2012) asserted that any over-emphasis on the technologies of the early 21st century as the basis of education in this century would be just as misguided and recommended that teachers question the assumption that teaching ought to revolve around today's technological novelties. Mishra et al. (2012) accused the field of education of being too "chrono-centric" (p. 14) in its view of technology in that of viewing it's own era or time in history as the most important or the only one that matters and suggested whether it is Guttenberg's printing press, the simple crayon, or a high-tech digital technology, all should be viewed as tools for learning.

Summary

While research concerning the effectiveness of digital technology on learning outcomes is lacking, there is an increasing number of current studies investigating the trend of digital, 1:1 technology use in educational settings (Bebell & O'Dwyer, 2010). These studies have explored pre-service teachers' thoughts about technology in the classroom (Banas, 2010; Cullen & Green 2011; Sadaf, et al. 2012; Zipke, 2013), teachers' knowledge of technology (Rohaan, et al., 2012), and teachers' beliefs about the value of technology (Ottenbreit-Leftwich, et. al., 2010; Potter & Rockinson-Szapkiw, 2012; Prestridge 2012; Van Aker et al., 2013), but very few have encompassed the experiences of pre-millennial, experienced teachers prior to and following the implementation of a digital, 1:1 initiative.

Due to the interactive experience with students, curriculum, and the implementation of various teaching strategies with students of diverse needs over a long period of time, pre-millennial, veteran teachers provide a unique view into the successes and challenges of 1:1

technology embedded classrooms. Pre-millennial, veteran teachers' experiences provide a necessary context for understanding student engagement with subject content both prior to and after the implementation of a digital, 1:1 initiative. This study seeks to fill the gap in the literature relating to pre-millennial experienced teachers' perceptions after the implementation of 1:1 tablets and/or laptops into elementary classrooms.

There is little empirical research on teaching with new 1:1 technologies due to the fast pace of technology development and the length of time required for research results to reach teachers and schools (Attard & Orlando, 2014). Therefore, it is necessary for educators to critically examine the relationship between technology and learning as they follow educational standards. Experienced teachers strengthen education in many ways and provide the most valuable insights into the pedagogical process (Roach, 2010). New findings show that teachers want to use technology, but also want to be assured of the benefits to the learner, to be included in the decision making process, and to provide feedback as professional development training is developed (Roach, 2010). Teachers that have a sense of ownership and choice are more likely to invest in improving and expanding pedagogical practices (Bostock, 2012; Polly & Hannafin, 2010). Therefore, descriptions of teacher perceptions and the perceptual changes associated with 1:1, digital integrations are needed to help determine future reforms and initiatives that result in authentic teaching and learning.

Pre-millennial, experienced teachers are uniquely qualified to provide an accurate and viable perspective on issues of teaching and learning within the classroom (Meister, 2010; Roach, 2010). Following the integration of digital, 1:1 technology into classrooms, it is important for educators to have open, public, and transparent dialogues with colleagues and practitioners about technology and learning (Bostock, 2012; Evans, 2011). This research is vital

to understanding teacher experiences and acknowledging teacher perspectives about technology. Now, more than ever, it is necessary to investigate the perceptions of pre-millennial, veteran teachers in the areas of digital, 1:1 initiatives into elementary classrooms. This transcendental, phenomenological study seeks to fill the gap in the literature by providing pre-millennial, veteran teacher perceptions, perceptual change, and professional development that leads to the implementation of digital technology in the classroom. The following chapter describes the research design and methods chosen for this study.

CHAPTER THREE: METHODS

Overview

As digital, 1:1 technologies become integrated into classrooms through educational mandates, current curricula, and Common Core standards, they are transforming teaching and learning (Battro & Fisher, 2012). Integration of tablets and laptops into public and private classroom settings primarily demands that teachers' perception of such technologies be positive; therefore, perceptions of teachers are of great significance (Uzunboylu & Ozdamli, 2011). Research has confirmed an increase in student engagement, time on task, motivation to read (Ciampa, 2012; Devlin, et al., 2013; Milman, et al. 2012), interest in technology (Larson, 2010, Milman et al., 2012), and increase in academic achievement (Bebell, O'Dwyer, 2010; Chan & Leung, 2014) as students experience the multi-modal features offered by classroom technical devices. This study questioned how veteran elementary teachers in three private independent schools in the southeast United States perceived the integration process of 1:1 technology into their classrooms. The study investigated the personal and pedagogical changes associated with the integration of 1:1 technology into the classroom and the professional development processes experienced prior to and during the integration.

This transcendental phenomenological study describes the perceptions of pre-millennial, veteran teachers following the implementation of 1:1 tablets into elementary classrooms in three private, independent schools: South Media Elementary (pseudonym) in southern Alabama, East Data Elementary (pseudonym) in central Mississippi, and North Tech Elementary (pseudonym) one in southern Louisiana. This chapter provides an overview of the schools' demographics, participant information, research questions, collection methods, settings, design rationale, and

research procedures. Additionally, concerns of trustworthiness, research bias, ethical issues, and limitations are addressed.

Design

In this study, I investigated pre-millennial, experienced teachers' perceptions through a transcendental phenomenological approach to qualitative research. A transcendental phenomenological research design was the most appropriate design choice for this study because the phenomenon studied focused on the lived experiences (Van Manen, 1990) of veteran, private school teachers following the implementation of 1:1 tablets into their elementary classrooms. A phenomenological design helped to provide a full appreciation of themed variations and more effectively teased out the nature of the relationship between technology use and perceived benefits that an in-depth qualitative study requires (Perrotta, 2013).

Transcendental Phenomenology

A transcendental phenomenological approach to qualitative research was used for this study in order to discover the rich, deep, thick, textured, insightful, and illuminative essence (Creswell, 2013; Moustakas, 1994) of the phenomenon of digital, 1:1 technology integration into pre-millennial, veteran, private school teachers' elementary classrooms. This study sought to provide a deeper understanding of the lived experiences of pre-millennial, veteran teachers (Van Manen, 1990) and to describe the universal essence of the experience the participants have in common (Creswell, 2013) while allowing the researcher to set aside personal, preconceived ideas and beliefs concerning technology integration.

A qualitative study was used for this study in order to describe the perceptions of veteran teachers employed in private schools and engaged in a digital, 1:1 technology initiative because "qualitative research in general, and phenomenology in particular, is concerned with describing

and interpreting human phenomena from the perspective of those who have experienced them" (Milacci, 2003, p. 2). By using a transcendental phenomenological design, the focus remained on the teachers' experiences and not the researcher's interpretation of those experiences. Additionally, transcendental phenomenology is supported by current research (Clark, 2013; Norton, 2013; Williams, 2012). In 2012, Williams used a phenomenological approach to study the perceptions of teachers using social media in the classroom, while Norton (2013) used a phenomenological approach to examine the self-efficacy of teachers. Likewise, Clark (2013) investigated the impact of pre-service and in-service training regarding the classroom integration of technology. Each study used data collection and analysis aligned with a phenomenological approach. The transcendental phenomenology was the only research method that aligned with my research questions and allowed for a complete and thorough examination of the perceptions of pre-millennial, veteran elementary teachers following the establishment of technology embedded classrooms. Additionally, to ensure a transcendental approach, a journal was kept in order to bracket out the researcher's personal opinions, presuppositions, views, and prejudgments (Moustakas, 1994). By putting my personal judgments, opinions, and understandings of classroom technology integration aside and separating them from the lived experiences of those teachers experiencing the phenomenon, a fresh, new, and open vantage point of the events experienced was obtained.

Research Methods in the Literature

Most studies investigating teacher perceptions and attitudes towards digital technology have been quantitative in nature (Badia, et al., 2013; Hutchison & Reinking, 2011; Kubiatko, 2013; Liu, et al., 2010; Shattuck, Corbell, Osbourne, Knezek, Christensen, & Grable, 2011; Perrotta, 2013; Roach, 2010; Uzunboylu & Ozdamli, 2011). Two noteworthy and current

qualitative research studies focused on case study; Hertzler (2010) utilized a case study with a mixed methods format that combined both quantitative and qualitative data analysis to study six high school teachers' perceptions of integrating instructional technology into the classroom. Additionally, using a two-phase, mixed-methods design, Howard (2011) used a case study to explore eight teachers' technology related perceptions to reaffirm risk theory. Both Hertzler's (2010) and Howard's (2011) case studies investigated participants that teach on the high school level. Neither study focused on veteran teachers exclusively, and by the nature of case study, the results could not be generalizable to a larger group; therefore, a case study was rejected for this study. Also, several qualitative studies looked at how tablets have been implemented in educational settings (Bansavich, 2011; Burden, Hopkins, Male, Martin, & Traval, 2012; Crichton, Pegler, & White, 2012; Jennings, Anderson, Dorset, & Mitchell, 2010, and Oakley, Pegrum, Faulkner, & Striepe, 2012). These studies examined students' and educators' motivations, perceptions, and attitudes toward the use of tablets in the classroom via surveys, focus groups, and interviews (Picard, et al., 2014). Case study and phenomenology were the only two qualitative approaches supported by current research.

Kiyici (2011) used a phenomenological research approach to determine the descriptions and perceptions of teacher candidates studying at a computer and instructional technologies department and examined human-computer interactions. Data were gathered from the candidates by means of open-ended questions and were analyzed using descriptive analysis. Likewise, a phenomenological research design was chosen for this study in order to determine experienced teachers' opinions and views about a particular phenomenon experienced and to learn about and compare individual experiences. This study did not explore what teachers expect to happen in the future, but rather looked at past experiences during the specific phenomenon. Although a case

study could have been used, a transcendental phenomenology is the only research design that provided the rigorous, in-depth details of lived experiences needed for this study.

Research Questions

In order to conduct phenomenological research, one must begin by asking questions about the nature of the lived experience (Van Manen, 1990). To address this study, thorough, purposeful, and well-conceptualized qualitative research questions were composed (Creswell, 2013). Moustakas (1994) asserts that the major components of research questions are the "how" and the "what" that leads to a described experience (p. 107). Asking how and what questions denoted openness to whatever emerged about the subject (Moustakas, 1994). Constructing appropriate questions lead to further research and reflections and made possible the discovery of both external and internal perceptions. To narrow the purpose, a single, overarching central question was composed and supported by several sub-questions (Creswell, 2013). The questions functioned together to discover the true meaning of the experienced phenomenon.

This study used three research questions to help describe the true essence of the experience studied. These questions were used and reused until the essential nature of the experience of digital, 1:1 integration into private school elementary classrooms by pre-millennial, veteran teachers was revealed. The first question was firmly rooted in Creswell's (2013) approach to phenomenology and provided the overarching central question for the study as it identified teacher perceptions of their experiences. The second question was based on Ely's (1990) COC theory and examined the perceptual changes that occurred since the digital, 1:1 technology integration. The third question was anchored in Mezirow's (1997) ATL theory and identified the training and professional development experienced by the participants.

The research questions are:

1. How do pre-millennial, veteran teachers describe their perceptions of integrating 1:1 tablets and laptops into their elementary classrooms?
2. How have pre-millennial, veteran teachers' perceptions about teaching changed since integrating a 1:1 initiative?
3. What role has professional development played in the participants' ability to integrate 1:1 technology into their educational practices?

Setting

This study was conducted in three private, independent, elementary schools located in the southeastern United States: one in southern Alabama, one in central Mississippi, and the other in central Louisiana. At the time of this study, these schools served approximately 3,427 students in kindergarten through 12th grade. These schools had recently adopted digital, 1:1technology initiatives and supplied tablets or laptops to all students. The pseudonyms of North Tech Elementary, East Data Elementary, and South Media Elementary were used to protect the identity and locales of the settings. All three schools offered a private, independent education, and none of them were faith-based. Additionally, all three schools served families that resided in medium-sized cities and the surrounding suburban areas. North Tech Elementary was located in a major city with a population of 228,895, East Data Elementary was located in a suburban population of 171,155, and South Media was located in a city of 194,899 residents. These schools were chosen due to their digital, 1:1 initiatives and their willingness to participate. The schools were located approximately 200 miles apart and in three different states, so it was not assumed that participants had contact with or knew each other or the researcher. Therefore, it was hoped that participants would engage in open and honest discussions.

North Tech School was a K-12 facility serving 712 diverse students, with 225 students in Kindergarten through sixth grade. The student/teacher ratio was 15:1. At North Tech, students in kindergarten and first grade were issued iPad Mini 2 tablets for use at school. These tablets had a large number of educational apps and were well received by students for their user-friendly and accessible formats. Students in second through sixth grades were issued 11″ MacBook Air laptops, with only the fourth through sixth graders being allowed to take the devices home for homework and research purposes. The laptops offered flexibility and capability for the creation of content in the form of documents, slide presentations, videos, and podcasts.

South Media Elementary, also a K-12 facility, enrolled a diverse student body of 1,265. There were 776 students enrolled in K through 6th grades. The student/teacher ratio was 11:1. While South Media Elementary's website comments that the most valuable asset in each classroom was the teacher, it also expressed the belief that an education infused with technology would best guide students to reach their highest potential. In 2012, South Media Elementary began a BYOD program, but due to problems with every student owning a device and compatibility issues among the differing devices, it was concluded that each student needed the same device for the curriculum to be fully effective in the classroom. At the beginning of the 2015-2016 school year, each student was issued a personal device. IPad Mini tablets were assigned to K-3rd graders and MacBook Air laptops were assigned to 4th through 6th graders. Only 4th through 6th graders could take the devices home.

East Data Elementary was a K-12 facility that enrolled a diverse student body of 1,450. There were 595 students enrolled in K-6th grade. The student/teacher ratio was 17:1. East Data's website asserted that students needed the core foundation of knowledge as well the 21st Century skills of creativity, critical thinking, problem solving, communication, and collaboration to

prepare them for citizenship. IPad Minis were assigned to K-6th graders. Only 4th-6th graders could take the devices home. Demographics for the participating schools are illustrated in Table 3.1.

Table 3.1

North Tech, South Media, and East Data Demographics

Demographics	North Tech	South Media	East Data
Number of Students	712	1,265	1,450
K-6th Grade Students	255	555	595
Number of Teachers	103	115	200
K-6th Grade Teachers	28	57	35
Student/Teacher Ratio	15:1	14:1	17:1

Participants

This study used purposive sampling wherein participants who were faculty members of schools that have implemented a digital, 1:1 initiative and met the several required criteria were invited to participate. The requirements for this study limited the sample to pre-millennial, veteran teachers: those born prior to 1980, with 10 or more years of teaching experience at the elementary level and having achieved a highly qualified status. The criteria were in place to ensure participant longevity as experienced teachers. The requisite years of experience for the participants allowed them to determine perceived differences in methods, roles, and technology over time (Williams, 2012).

The participants' veteran status was a significant factor in the analysis of change in perceptions about teaching with digital technology, as it was possible that their ages played an

important role in how they approached technology, professional learning, and the phenomenon of integrating technology into elementary classrooms (Orlando, 2013). General considerations of race, age, ethnic and cultural factors, religion, gender, and political and economic factors were made as recommended by Moustakas (1994).

Participants in this study included individuals that were accessible and willing to provide information about the phenomenon being explored (Creswell, 2013). Pre-millennial, veteran elementary teachers were selected for this study in an attempt to fill the gap in literature concerning that group of teachers and their perceptions of technology embedded elementary classrooms. Initially, due to a recent integration of digital, 1:1 technology, the researcher considered conducting the study within the local public school district, but the Superintendent of Education was engaged in a political campaign, after which he resigned his position. The newly appointed interim Superintendent of Education declined to consider a possible study in light of her temporary assignment. Following several conversations between the researcher, local politicians, and fellow colleagues, it was discovered that three private, independent schools within 200 miles of the researcher's home had fully implemented technology initiatives in their educational program of study. Following IRB approval, these three schools agreed to participate in the study.

Creswell (2013) recommended researchers interview between five and 25 individuals who have experienced a particular phenomenon in order to collect enough data to understand the rich detail of the essence of the experience. In this study, I conducted 10, in-depth, individual interviews with qualifying participants. Given the nature of qualitative research, pseudonyms were assigned to all participants and the three schools to ensure and maintain privacy and confidentiality. Additionally, efforts were made to include both male and female teachers,

various ethnicities, marital statuses, and grade levels taught between Kindergarten and sixth grade, as well as differing background knowledge of and experience with technology. However, these efforts were limited to those who chose to participate.

Participant selection was based on the following: a) age, having been born prior to 1980; b) experience, having taught 10 years or longer; c) highly qualified status; and d) willingness to participate. The No Child Left Behind (NCLB) Act of 2001 federal and state legislation defined highly qualified teachers as those that meet the following minimum criteria:

- Have a bachelor's degree;
- Have been certified/licensed to teach in the state (or participate in an alternative route to certification); and
- Demonstrate a high level of competency in their subject matter by (a) passing a state test in each subject in which they teach; or (b) successfully completing an undergraduate major/course-work equivalent to an undergraduate major/a graduate degree/advanced certification or credentialing, in each subject they teach; or (c) using an individual professional development plan (i.e., High Objective Uniform State Standard of Evaluation, or HOUSSE plan) — an option available only to veteran teachers. (Karelitz, Fields, Levy, Martinez-Gudapakkam, & Jablonski, 2011).

The three schools involved in this study required state certification for their elementary teachers. Alabama, Mississippi, and Louisiana all require teachers who teach grades P-3 to hold at least a valid Class B Early Childhood Professional Educator Certificate, a valid Class B Early Childhood Multiple Abilities Professional Educator Certificate for P-3 endorsed in early childhood education, or a valid Special Alternative Certificate for P-3 endorsed in early childhood education. Teachers who teach grades K–6 are required to hold at least a valid Class B

Elementary Professional Educator Certificate for K-6 or K-9, a valid Class B Elementary Multiple Abilities Professional Educator Certificate for grades K-6 endorsed in elementary education, or a valid Special Alternative Certificate for grades K-6 endorsed in elementary education (http://www.alsde.edu/sec/comm/Education%20Report%20Card/REPORT-CARD-2014.pdf). Although the participating schools were private and independent, they shared the professional state requirements for credentialed teachers. Six elementary teachers from South Media Elementary, three from North Tech Elementary, and one from East Data Elementary responded to my request to participate in this study, resulting in a total of 10 participants. Table 3.2, below, provides the participant demographics.

Table 3.2

Participant Demographics

Pseudonym	Age Range	Gender	Ethnicity	No. Years Taught	Location
1. Sheri	41-50	Female	Caucasian	12	South Media
2. Paige	41-50	Female	Caucasian	24	South Media
3. Susan	31-40	Female	Caucasian	13	South Media
4. Ellen	41-50	Female	Caucasian	20	South Media
5. Lauren	41-50	Female	Caucasian	10	South Media
6. Amanda	51-65	Female	Caucasian	20	South Media
7. Cindy	41-50	Female	Caucasian	15	North Tech
8. Donna	41-50	Female	Caucasian	24	North Tech
9. Connie	41-50	Female	Caucasian	27	North Tech
10. Bette	41-50	Female	Caucasian	15	East Data

Procedures

Initial IRB approval was sought through Liberty University (see Appendix A). After gaining IRB approval to conduct the study, North Tech Elementary, East Data Elementary and South Media Elementary schools (pseudonyms) were contacted, and the study introduced to the Heads of School in the hope of gaining approval and permission to conduct the study with their

veteran teachers. Upon receipt of approval from the Heads of School, permission request letters were delivered via email to each of them to more fully explain the purpose and scope of the study and to gain signed permission to conduct the study within their schools (see Appendix B). With consent from the Heads of School, the elementary school principals were then contacted, and permission forms obtained (see Appendix C). The school principals were instrumental in identifying qualified teacher participants and provided their email addresses. A Letter of Introduction/Recruitment explaining the research and inviting teachers to volunteer for the study was emailed to each qualified participant (see Appendix D), along with a Letter of Informed Consent (see Appendix E). Ten participants volunteered, and after the Informed Consent forms were obtained, a welcome email, along with the Online Survey questionnaire, was forwarded to each participant (See Appendix F). The online survey was used to collect the participant demographics shown in Table 3.3.

Table 3.3

Online Survey Rational

Question	Rational for Question	Supported in Research
What is your age bracket? (31-40, 41-50, 51-65, over 65)	Purposeful Sampling Data and Triangulation	Yes
What is your gender?	Purposeful Sampling Data and Triangulation	Yes
What teaching credentials do you hold?	Purposeful Sampling Data and Triangulation	Yes
What educational degrees have you earned?	Purposeful Sampling Data and Triangulation	Yes
What grade level do you teach?	Purposeful Sampling Data and Triangulation	Yes
How many years have you taught?	Purposeful Sampling Data and Triangulation	Yes
What is your ethnicity?	Purposeful Sampling Data and Triangulation	Yes
What digital, 1:1 technology devices do your students use?	Purposeful Sampling Data and Triangulation	Yes

Once the survey was completed by a participant and received by the researcher, a personal interview was scheduled. Since two of the participating schools were located an inconvenient distance from the researcher, in order to strengthen the study's credibility and integrity, equal weight was given to each participant's experience and a greater level of Epoche was achieved by conducting the interviews by phone. The personal interviews (see Appendix G) were conducted over a period of two months. All interviews were recorded and later transcribed by the researcher for coding purposes. Following the transcription, a copy of each transcribed interview was emailed to the corresponding participant for member checking. This provided

participants an opportunity to review the conversation and respond to it, clarifying any points or adding to the discussion. For clarification purposes, participants were asked to email any changes or additional information to the researcher within a predetermined time period. The participants requested no changes or modifications.

Next, participants were invited to attend a focus group for further discussion (see Appendix H). According to Miester (2010), group discussions have special advantages. Focus groups: (a) are less time consuming and less costly than personal contact; (b) increase the participants' feelings of safety and the willingness to take risks; (c) can move the participants toward a deeper commitment to the innovation; and (d) can help to legitimize feelings of assurance or doubt. The advantages focus groups offer are shown in Figure 3.1.

Figure 3.1. Advantages of Focus Groups (Miester, 2010)

Due to the nature of this topic, some participants were expected to be reluctant to express genuine opinions, choose not to expose personal history, or be unwilling to have private aspects of their lives go on record (Creswell, 2013). Therefore, participants were invited to send personal emails and letters to the interviewer before or after the online focus group. These procedures were offered to help participants "articulate the forces that interrupt, suppress, or oppress them"

(Creswell, 2013, p. 173). No monetary compensation was offered for participating in this research, but a small thank you gift card was given to participants at the conclusion of the focus group, paid for by the researcher.

A reflective journal was kept by the researcher (see Appendix I) in which personal thoughts and opinions were recorded in order to maintain a distance from the participants' experience, to remain transparent, and to set aside my "prejudgments, biases, and preconceived ideas about things" (Moustakas, 1994, p. 85). I found the journal entries beneficial for the purposes noted by Van Manen (1990) for "keeping a record of insights gained, for discerning patterns of the work in progress, for reflecting on previous reflections, for making the activities of research themselves topics for study, and so forth" (pg. 73). All data and files were stored on a password-protected computer. At the completion of the study, files were backed up and stored in a securely locked closet in the researcher's office where they will remain for at least three years before being destroyed. Figure 3.2 illustrates the procedural steps that were followed in this study.

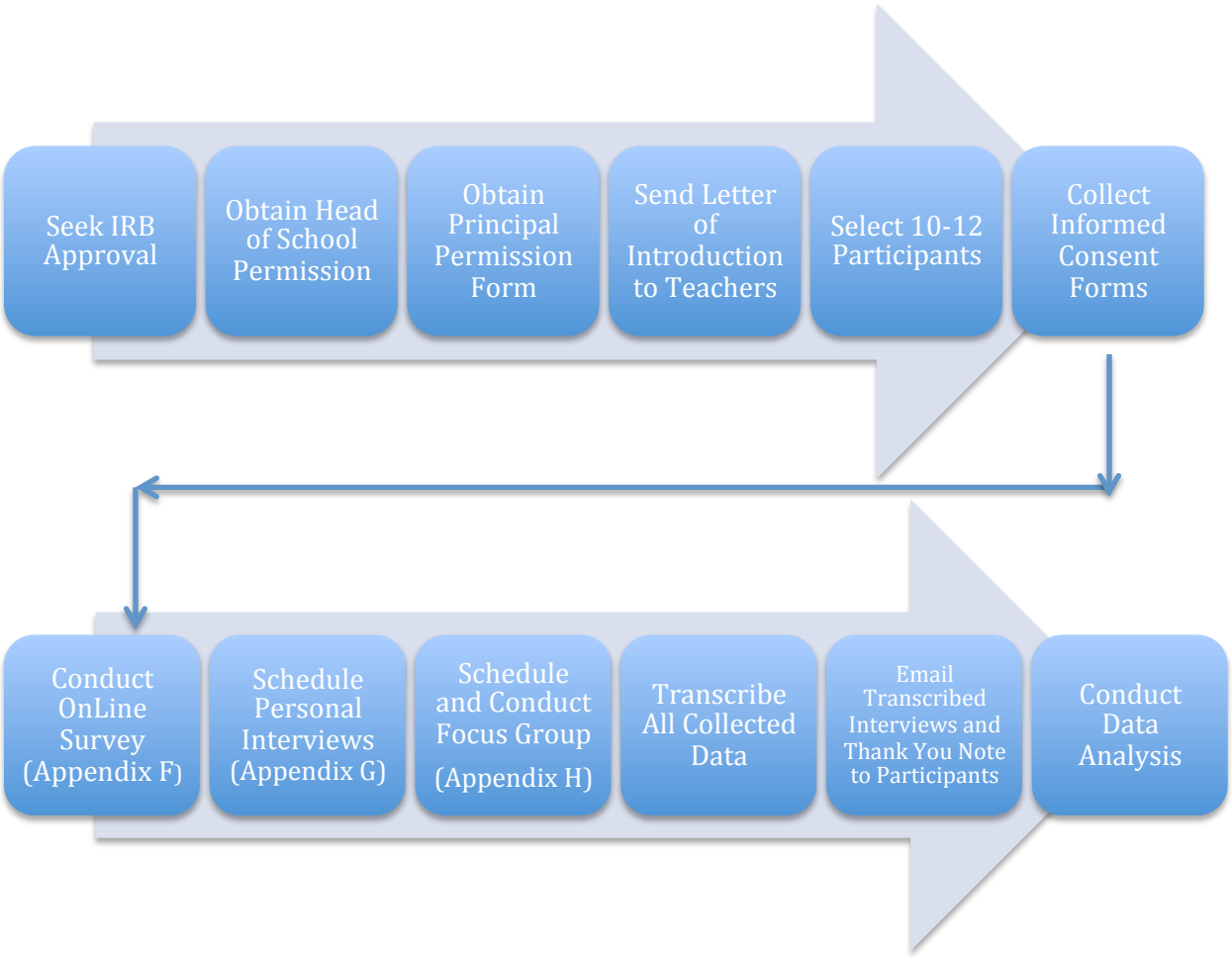

Figure 3.2. Phenomenological Research Procedures

The Researcher's Role

I received my bachelor's degree in Christian education from Huntingdon College and a master's degree in educational leadership from Covenant College. I have served as Head of School in two different small, private, Christian schools for 16 years. My goal is to complete my doctorate in educational leadership from Liberty University. My interest in technology in the elementary classroom arose when the local school district, along with other private schools in the area, instituted digital, 1:1 initiatives and parents in our small Christian school began to ask about potential benefits and challenges of implementing such an initiative at our school. Surveys

have shown that 100% of our private school families have personal home computers, and that the majority of our parents prefer a traditional classroom setting for their elementary child's education. Over the past several years, high school students within our school have participated in a BYOD program. As a pre-millennial teacher, I grew up prior to the implementation of the Internet and learned to use personal computers later in life through the workplace. While working with computers daily, my career did not include teaching classes in which students used computers.

I was the human instrument during this phenomenological study. The text includes reflexivity (Creswell, 2013), meaning that I consciously acknowledged my personal biases, values, and previous experiences. The private school in which I was employed during this study was a parochial school while the three schools involved in this study were non-parochial, private, and independent schools. No relationship existed between myself and the headmasters, administrators, or faculty members of the three schools connected to this study. Anonymity was advantageous to this study as neither the school leaders, site administrators, nor teachers viewed me as being a threat to their privacy. The school located in south Alabama, South Media Elementary (pseudonym), was situated in an urban setting: a mid-sized city. North Tech (pseudonym) was located in central Louisiana, approximately 200 miles east of the researcher in a mid-sized city, and East Data was located in a mid-sized city of Central Mississippi, approximately 200 miles north of the researcher. These schools were selected due to the description of their digital, 1:1 technology integration noted on their school websites.

There was no connection between the researcher and the three schools involved in the study. The stated procedures were in place to help prevent researcher bias during the data collection and analysis stages. This study identified and documented the pre-millennial, veteran

teachers' perceptions of implementing a digital, 1:1 technology initiative in their elementary classrooms. This topic of research lent itself to a phenomenological study.

Data Collection

This study used a transcendental phenomenological approach to research. By using multiple data collection techniques such as an online survey, teacher interviews, and focus group, I was able to describe the perceptions of pre-millennial, veteran elementary teachers following the implementation of digital, 1:1 technology; i.e., tablets and/or laptops, into their elementary classrooms. The phenomenon examined was the transition from using traditional, teacher-centered instruction methods to using student-centered technology-embedded methods.

I employed rigorous and varied data collection techniques. The use of multiple sources ensured credibility and trustworthiness in this study. An online survey (see Appendix F), personal interviews (see Appendix G), and a focus group (see Appendix H) were chosen to describe the phenomenon of interest. The data collected by these sources were used together to describe the perceptions of pre-millennial, experienced teachers following the integration of tablets and/or laptops into their elementary classrooms. These techniques lent credence to the overall essence of the experience. Triangulation was used to confirm the findings and to verify the participants' experience.

Online Survey

An online survey (see Appendix F) was created and emailed to participants. Questions centered on the specific demographics of the participants. Specifically, and appropriate to this study, items surveyed were age, gender, degrees earned, grade level taught, number of years taught, ethnicity, and devices used in their classroom. Similar to Perotta's (2012) study, survey questions were field-tested and evaluated by volunteer teachers external to the study, in order to

ensure clear and concise wording and interpretation of the survey questions. The survey presented an opportunity for participants to reply in a confidential manner. Patterned after the research of Williams (2012), Norton (2013), and Cordes (2014), the peer-reviewed survey questions used are shown in Table 3.4.

Table 3.4

Online Survey Questions (also Appendix F)

Survey Question	Rational for Question	Research Question
1. What is your age bracket? (31-40, 41-50, 51-65, over 65)	Purposeful Sampling	RQ1
2. What is your gender?	Purposeful Sampling	RQ1
3. What teaching credentials do you hold?	Purposeful Sampling	RQ1
4. What degrees have you earned?	Purposeful Sampling	RQ1
5. What grade(s) do you currently teach?	Purposeful Sampling	RQ1
6. How many years have you taught?	Purposeful Sampling	RQ1
7. What is your ethnicity?	Purposeful Sampling	RQ1
8. What 1:1 technology devices do students use in your classroom?	Purposeful Sampling	RQ1

Interviews

Three experts in the field of education reviewed the interview questions, and I piloted the interview with a small sample of teachers outside of my study sample to ensure clarity and precision of the interview process. Teacher interviews provided informal and interactive

processes and utilized open-ended comments and questions that were focused on understanding the central phenomenon (Creswell, 2013; Moustakas, 1994). The teacher participants had all experienced the phenomenon of implementing tablets and/or laptops into their elementary classrooms. Participants were uniquely qualified to discuss the details of their experience and to communicate the richest data through personal interviews.

Van Manen (1990) suggested that personal interviews must be very specific in nature and guided by the main research questions. A richer and deeper understanding of the phenomenon was reached by using questions that helped me stay close to the lived experience. The individual interviews with the participants were scheduled for 30 to 45 minutes, with the initial few minutes being utilized to build positive rapport. The teacher interviews focused on four main themes: participants' experiences of establishing 1:1 technology integrated classrooms, perceptions prior to and after 1:1 integration, perceptions of role change, and professional development received prior to, during, and after establishing technology embedded classrooms. The resulting data were member-checked and validated after each round of collection (Howard, 2011). Appropriate interview protocol and adequate recording procedures via a digital phone recording application were used (Creswell, 2013). In order to prevent subject drift, I helped refocus the conversation by using questions that "turned the discourse back to the level of concrete experience" (Van Manen, 1990, p. 68). Understanding that "a good interviewer is a good listener, rather than a frequent speaker during an interview" (Creswell, 2013, p. 166), I used the questions shown in Table 3.5 to remain on topic during the personal interviews and to seek in depth information of participants' experience.

Table 3.5

Interview Questions (also Appendix G)

Interview Questions
1. Please share your reasons for going into the field of education, specifically elementary education.
2. How did you feel when it was announced that your school would be implementing a digital, 1:1 technology initiative? Probe: What was your initial reaction?
3. What does a digital 1:1 integration look like in your classroom?
4. Compare and contrast your classroom before and after the digital 1:1 integration.
5. Please describe your personal interaction and experiences with digital technologies outside the classroom setting.
6. Please describe your personal interaction and experiences with 1:1 digital technologies inside the classroom setting.
7. Describe the initial training you received prior to integrating tablets and/or laptops into your classroom.
8. What professional development has been offered or formal or informal teaching networks formed during and after establishing a digital 1:1 integration?
9. How do you collaborate with other teachers in using 1:1 technology?
10. What additional training do you believe would be helpful?
11. Describe any positive impact the digital, 1:1 initiative has had on your classroom.
12. Describe any negative impact the digital, 1:1 initiative has had on your classroom.
13. Have your perceptions, beliefs, or views of technology in the classroom changed over time? If so, how and why?
14. Has technology changed your perceptions of the role of teaching over time? If so, how and why?
15. How would you describe your overall experiences during the digital, 1:1 initiative in your classroom?

Question one served as a broad icebreaker in an attempt to help participants relax and to think of education in general. Questions two and three sought to discover the participant's initial reaction to digital, 1:1 technology integration. Question four focused on comparing and contrasting the participant's beliefs about technology and pedagogical practices prior to and after the 1:1 integration, and questions five and six asked the participant to identify their personal interaction with technology. Questions seven through 10 investigated the professional development and networking among teachers provided before, during, and after the digital, 1:1 technology initiative. Finally, the remaining questions were designed to identify perceptual changes that had occurred as well as to gain an understanding of the overall experience of the 1:1 initiative.

Following each interview, I personally transcribed the conversation by listening to each recording several times. I then listened to each recording at least two additional times to confirm the accuracy of each transcription and in order to gain greater insight into the essence of the experience.

Focus Group

Following the individual interviews, a focus group was conducted in order to discuss the shared experiences of a digital, 1:1 technology initiative and to gain additional information that would lead to a better and perhaps deeper understanding. Initially, an on-line focus group was planned and an email invitation provided the date and time of the meeting. As responses were received only participants from South Media Elementary volunteered to attend. Therefore, in order to achieve face-to-face interaction with participants, the decision was made and communicated with participants to meet in a conference room at the South Media campus. Additionally, the time was changed to immediately follow afternoon class dismissal. Five of the

10 participants attended the focus group. I opened the meeting by thanking the participants for attending and presented the open-ended questions shown in Table 3.6 below. The conversation was audio and video recorded using an iPhone. For additional back up, I also used a Kindle Fire to audio record the shared data. Following the focus group I transcribed the data received. Listening to the recordings over and over provided me with new insights and understandings. This process provided me with an in depth review of the conversation and was helpful in identifying common codes and significant statements during data analysis (also see Appendix H). Once the transcriptions were completed, they were emailed to focus group participants for their review as part of the member checking process. Recordings of the collected data were removed from the two recording devices, placed on a USB drive, and then stored in a locked closet in my office. Making notes about my observations, thoughts, and reflections about the interview experience in the reflective journal was an effective process throughout the interview and focus group process.

Table 3.6

Focus Group Questions (also Appendix H)

Question #	*Questions*	*Research Question*
1.	What initially attracted you to the field of education and teaching? Probe: What were your hopes and dreams about teaching?	
2.	How many years have you taught and at what grade level?	
3.	What are your basic thoughts and beliefs about teaching and how children learn?	RQ1
4.	What are your basic thoughts and beliefs about technology and its impact on childhood learning?	RQ1
5.	What technologies do you use in your grammar classroom? Probe:	RQ1
6.	What was your initial reaction to the digital, 1:1 initiative? Probe: What were your concerns or fears?	RQ1
7.	How do you integrate digital technologies in your classroom? Probe: Tell me about student responsibility.	RQ1
8.	How would you describe your experiences during the establishment of 1:1 technology in your classroom? Probe: How did you feel? How did you react? What did you do?	RQ2
9.	Reflecting on when you first used digital technologies until now, describe any differences in your perceptions about project activities. Probe: Have you concerns or fears changed? How? Probe: What do you know now that you wish you had known then?	RQ2
10.	What would you tell other private school pre-millennial teachers who are transitioning technology into their classrooms?	RQ2
11.	Explain the role professional development training has played in preparing you for the 1:1 initiative.	RQ3
12.	What kinds of ongoing training do you receive? How often?	RQ3
13.	Tell me about any formal and informal learning communities or networks among teachers that have developed as a result of the 1:1 initiative.	RQ3
14.	Where do you see/hope training/technology going in the future?	RQ3
15.	What other information concerning classroom technology or learning with technology would you like to add?	RQ1

Data Analysis

Moustakas' (1994) processes of phenomenological reduction were employed in order to analyze the data for this study. His six steps of phenomenological reduction were followed: (a) bracketing, (b) open coding, (c) horizonalization, (d) clustering the horizons into themes, (e) textural descriptions of the phenomenon, and (f) imaginative variation (Moustakas, 1994). (see Figure 3.3)

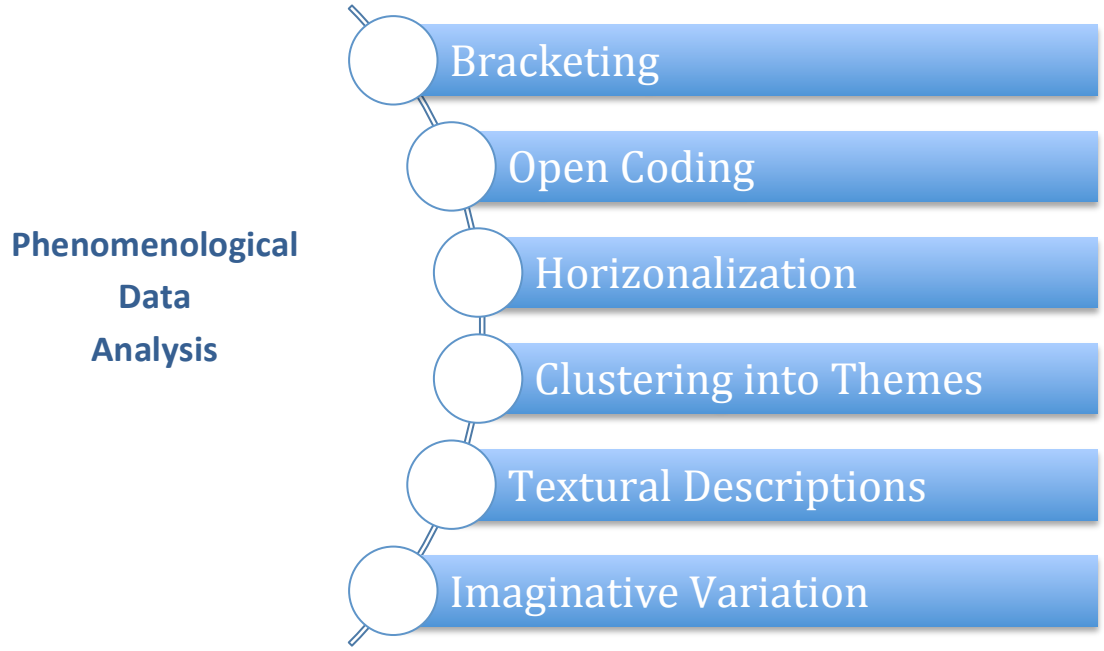

Figure 3.3. Phenomenological data analysis as prescribed by Moustakas (1994) and Patton (2002).

Bracketing/*Epoche*

According to Creswell (2013), the first step in phenomenological data analysis is bracketing, meaning that the researcher sets aside preconceived ideas and experiences in order to best understand the true essence of another's experience. Husserl (1913) first used the term bracketing as it relates to qualitative research to describe how a researcher isolates and suspends personal preconceptions while holding the phenomenon up for serious inspection, apart from the

world in which it occurred. *Epoche* is the Greek term used for refraining from judgment, abstaining from the ordinary way of perceiving a thing (Patton, 2002). The bracketing process allowed me to examine, dissect, and analyze the participants' experience apart from my own personal experience, and as much as possible, on its own terms (Patton, 2002).

Norton (2013) asserted that the purpose of bracketing is to extract the researcher's point of view so that only the phenomenon is visible. Moustakas (1994) believed the value of bracketing is seen in its potential to inspire the researcher "to examine biases and to enhance the researcher's openness even if a perfect and pure state is not achieved" (p. 61). In this study, my personal opinions, perceptions, and predispositions concerning classroom technology were set-aside in order for me to view the teachers' perceptions clearly and without judgment. Epoche was strengthened in this study by conducting personal interviews by phone rather than face-to-face. I kept a reflective journal (see Appendix I) in which I described my personal ideas, preconceived notions, thoughts, opinions, and reflections throughout the data collection and analysis process. By suspending my own personal beliefs, I was able to view the collected data from a fresh perspective.

Open Coding

Creswell (2013) recommended using open coding to analyze the data for significant statements, meaning units, textual and structural description, and description of the "essence" (p. 105). I began the open coding process by reading and rereading the collected data and by identifying connections and interconnections among the details of the participants' shared experiences. Using Microsoft Word's review, highlighting, and search in document features allowed me to effectively categorize commonly used words and significant statements. Once the common themes emerged, the personal insights and experiences of participants were compared

and contrasted. As new themes and understandings emerged, I was able to develop a thick, rich, high-quality narrative. Tables and charts were used to illustrate the data and to support the narrative. The major themes and sub themes are discussed in chapter four.

Horizonalization

Horizonalization occurred as I reviewed the interview transcriptions and highlighted the significant phrases and statements (Creswell, 2013; Moustakas, 1994). It was helpful for me to color-code each participant's comments. Initially, I printed the data and cut each statement apart. By doing this, every statement was treated as having equal value (Moustakas, 1994). This process also allowed me to identify specific quotations and themes that were common to the participants, and the color-coding allowed me to identify the speaker. By returning to the descriptions over and over again, I was able to adequately describe the lived quality and significance of the participants' shared experience (Moustakas, 1994; Patton, 2012).

Clustering Into Themes

In the next step of the data analysis, I took the significant statements and developed the "clusters of meaning" (Creswell, 2013, p. 82) or themes. In this study, I identified all the significant statements from the collected data and grouped them into larger units or themes. I also examined frequently used words or phrases in order to cross-code similar thoughts and perceptions that emerged from the participants (Van Manen, 1990). I used the review feature to electronically identify specific words and ideas. I examined the data for provisional codes based on the theoretical frameworks of Ely (1990) and Mezirow (2000). While entering the coding process with an open mind, I was able to identify codes that directly related to the three research questions: (a) teacher experiences, (b) perceptual changes, and (c) professional development processes. Keeping an open mind allowed me to identify other new or unexpected codes that

arose. Throughout the analysis, I remained open to the emergence of any additional themes that surfaced and then applied imaginative variation to the data (Patton, 2002).

Textural Descriptions

The coding and theme identification process provided me with information to write a textural portrayal of each theme as experienced by the participants. The textural description included verbatim examples from the transcribed interviews (Moustakas, 1994). Every comment was considered equally and contributed to the understanding of the nature and meaning of what the participants experienced (Creswell, 2013, Moustakas, 1994). At this stage, all the individual descriptions were integrated into a "group or universal textural description" (Moustakas, 1994, p. 180).

Structural Descriptions

While the composite textural descriptions described what the participants experienced, the structural descriptions focused on how it was experienced (Creswell, 2013). The next step required a focus on the conditions, situations, and contexts of the lived experiences in order to identify the structural descriptions. The structural descriptions include details about the participant's experiences prior to and during the phenomenon of integrating digital, 1:1 classroom technologies.

Textural-Structural Synthesis

At the final stage of synthesis, I applied "intuitive-reflectively" (Moustakas, 1994, p. 181) and melded both the textural and structural descriptions together, thus synthesizing the meaning of the phenomenon experienced by the participants. Textural-structural synthesis, or combining, created the true essence of the experience (Clark, 2013). This synthesis provided the concluding evidence of the shared phenomenon.

Trustworthiness

Trustworthiness was deeply imbedded in the personal and professional integrity of the researcher and the processes used to collect and analyze the data (Patton, 2002). It was vitally important to me that professional integrity, intellectual rigor, and sound research methods were maintained throughout the study. As a new researcher, I depended on the supportive advice of leaders in qualitative research such as Moustakas (1994), Van Manen (1990), Patton (2002), Creswell (2013), and Plantanida and Garman (2009) to lead this research study and to produce credible, dependable, transferable, and confirmable results. I accomplished trustworthiness by using Creswell's (2013) strategies for validation of member checking, rich, thick descriptions, peer reviews, and triangulation. Credibility and dependability was achieved by accurately reporting the findings, by providing rich and detailed descriptions, and by accurately analyzing the data. While the results of this study are not generalizable, the procedures may be replicated in other settings and with other participants by utilizing the contents and details included in the appendixes.

Triangulation

Triangulation was achieved by compiling data collected from the online survey, personal interviews, and a focus group. Creswell (2013) described triangulation as the process that researchers use to corroborate the multiple evidences found. Arnold (2015) stated that the idea behind triangulation is that many sources of data are better than a single source when seeking a fuller and more complete understanding of a phenomenon. In this study, I was able to triangulate information by identifying evidence from a variety of sources and then using this evidence to document themes. The triangulation process consisted of comparing the survey answers, the formal interview responses, and the focus group discussion. The provisional codes of Ely's

(1990) COC and Mezirow's (2000) ATL were used to determine the themes from the triangulated components, and the common themes and patterns were used to identify and confirm teacher perceptions of integrating digital, 1:1 classroom technology and compared with previous research studies (Cordes, 2014).

Rich, Thick Descriptions

By using rich, thick descriptions of the experience, I was able to fully and clearly understand and describe the phenomenon (Moustakas, 1994). For this study, I used the many details collected through the various data sources to determine and describe the experiences of pre-millennial, experienced teachers' perceptions following the initial integration of a digital, 1:1 technology initiative. The descriptions lead to gaining an understanding of the overall experience.

Member Checking

Member checking and peer review provided accuracy and credibility of the shared experience. Throughout the data collection process, participants were given an opportunity to review the various transcripts. I chose to personally type the transcripts for a deeper review and understanding of the details of each participant's individual experience. Transcriptions were made in a Microsoft Word document and forwarded to participants via e-mail. Participants were asked to review the documents in order for accuracy and to ensure that the essence of the experience had been captured. Further, participants were informed of their ability to withdraw any data collected, but none of them withdrew data or chose to withdraw from the study. Member checking ensured dependability, and dependability was ensured by triangulation of data collected from the three sources: online survey, personal interviews, and focus group.

Peer Review

As a final step, and to further validate the credibility and confirmability of this study, I requested peer review by a fellow a doctoral candidate who also using a phenomenological approach in their dissertation. This peer review provided additional checks and examination of the methods, data collection, analysis, and conclusions (Creswell, 2013). The peer review was a valuable practice for me as I appreciated the advice and recommendations of trusted colleagues and valued the constructive feedback. My peer provided a discerning and knowledgeable review of my paper as well as excellent editorial advice and high-quality recommendations.

Ethical Considerations

As a Christian researcher, I approached this study with a great depth of integrity and honesty. My goal was to "do nothing out of selfish ambition or vain conceit. Rather, in humility value others above yourselves," (Philippians 2:3, New International Version). I also sought to do all things decently and in order. I was careful to formally and officially obtained signed informed consent forms at each level of participation. Upon obtaining consent from the participants, I worked to maintain the confidentiality of all participants. I assigned pseudonyms to participants and settings, obtained informed consent forms, and took as many means to protect anonymity as possible.

Additionally, I was careful to securely manage and maintain the data in a professional and secure manner. Computer files were password protected and physical documents were held in a secure and locked closet. Digital and audio recordings were stored on a password-protected USB drive and stored in a locked closet in my office where they will remain for at least three years before being destroyed. I also refrained from sharing participants' personal information, opinions, and perceptions outside the boundaries of the dissertation.

Summary

Pre-millennial, veteran teacher perceptions are crucial to understanding classroom technology integration. This study will contribute to a pragmatic and reflective approach among educational leaders as they consider the perceptions and challenges faced by pre-millennial, veteran elementary teachers when integrating digital, 1:1 technology into elementary classrooms. Their perceptions provide a necessary context for understanding the benefits and overcoming the challenges digital technology present inside the classroom. This study fills the gap in literature by identifying pre-millennial teachers' experiences following the establishment of technology embedded classrooms, and thereby, opens the discourse to valuable critiques and synthesized understandings by giving voice to their experiences, views, and recommendations.

More research is needed to investigate effective means for teacher input and to identify ways for experienced teachers to influence and impact high-level educational decisions through voice and leadership (Picard, et al., 2014). Additional research is also needed to understand the effects of technology on young children and brain development during the formative years. Chapter four will present the data analysis of this study, and chapter five will present the findings, interpretations, and implications of this research.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this phenomenological study was to describe perceptions of pre-millennial, veteran teachers employed at three private, independent, elementary schools in the southeastern United States as they integrated digital, 1:1 technology in their classrooms and adapted to new teaching techniques. I was curious about the ability of veteran teachers to successfully integrate digital devices into the classroom and about how 1:1 technology changes the role of teaching elementary students. I also began to question the role professional development plays in preparing pre-millennial, experienced teachers for the task. A review of the current literature revealed that there were no qualitative studies focusing exclusively on pre-millennial, veteran teacher perceptions during a 1:1 initiative. Therefore, this study focused on the shared experiences of participants following the integration of 1:1 technology into their elementary classrooms.

This study was founded in the main research question: How do pre-millennial, veteran teachers in private, independent schools describe their perceptions of integrating 1:1 tablets and laptops into their elementary classrooms? The remainder of this chapter used the participants' voices to describe and understand the overall experience. I utilized a transcendental phenomenological design that allowed me to set aside my own opinions and judgments while interpreting the participants' lived experiences (Van Manen 1990). In this chapter, the key findings obtained from personal surveys, in-depth interviews, and focus group discussions are presented.

Research Questions

Three research questions were used to describe the lived experiences of pre-millennial, veteran teachers as they integrated digital, 1:1 technology into their private school elementary classrooms. Each of the three questions was anchored in the theoretical frameworks of Ely's (1990) Conditions of Change and Mezirow's (2000) Adult Transformative Learning Theory. The following research questions were investigated:

Research Question One: How do pre-millennial, veteran teachers in private, independent schools describe their perceptions of integrating 1:1 tablets and laptops into their elementary classrooms?

Research Question Two: How have pre-millennial, veteran, private, independent school teachers' perceptions about teaching changed since the integration of a 1:1 initiative?

Research Question Three: What role has professional development played in the participants' ability to integrate 1:1 technology into their educational practices?

Participants

Ten participants from three private, independent elementary schools located in the southeastern United States were involved in this study. The requirements for this study limited the sample to: pre-millennial, veteran teachers born prior to 1980, having 10 or more years of teaching experience at the elementary level, and having achieved a highly qualified status. The criteria were in place to ensure participant longevity as experienced teachers. The requisite years of experience for the participants allowed them to determine perceived differences in methods, roles, and technology over time (Williams, 2012). The qualifications were set in order to focus solely on the experiences of veteran teachers that had taught elementary students both prior to and during a digital, 1:1 technology initiative.

In order to identify and recruit qualified participants, I contacted several schools in my geographical area that publicized a 1:1 student technology initiative on their school website. Upon receiving permission from the Head of School and IRB approval, recruitment emails were sent to qualified participants. Ten participants responded to the recruitment letter (Appendix D), signed a consent form (Appendix E), and agreed to participate in the study. Upon receiving the digital responses to the initial survey, an interview was scheduled, and a pseudonym was assigned to each participant.

Descriptions of Participants

All the participants were female (n = 10), and all participants identified themselves as Caucasian. All were between the ages of 31-40 (n = 1), 41-50 (n = 8), and 51-65 (n = 1). The number of years taught at the elementary level ranged between 10 and 27 years with the average number of years taught being 18. Participants were employed at three private, independent, elementary schools: South Media Elementary (n = 5), North Tech Elementary (n = 3), and East Data Elementary (n = 1). Two of the participants worked with integrated, 1:1 iPad Mini tablets in the classroom, while the other eight integrated MacBook Air laptops. Table 4.1 provides a full description of all participant demographics.

Table 4.1

Participant Demographics

Participants	Age Bracket	Gender	Ethnicity	Degrees And Credentials	Grade	No. of Years Taught	Devices Used	School
P1-Sheri	41-50	Female	Caucasian	BS in Communication Disorders MA in Early Childhood Education Highly Qualified	K5	12	iPads	South Media
P2-Paige	41-50	Female	Caucasian	BS in Early Childhood Education MS in Early Childhood Education Highly Qualified	K5	24	iPads	South Media
P3-Susan	31-40	Female	Caucasian	BS in Collaborative Elementary Education MA in School Counseling Highly Qualified	4th/5th	13	MacBooks	South Media
P4-Ellen	41-50	Female	Caucasian	BS in Elementary Education Highly Qualified	4th	20	MacBooks	South Media
P5-Lauren	41-50	Female	Caucasian	BS in Early Childhood Education Highly Qualified	5th	10	MacBooks	South Media
P6-Amanda	51-65	Female	Caucasian	BS in Business & Music Masters of Fine Art Highly Qualified	4th	20	MacBooks	South Media
P7-Cindy	41-50	Female	Caucasian	BS in Fashion Design MA in Childhood Education Highly Qualified	1st	15	MacBooks	North Tech
P8-Donna	41-50	Female	Caucasian	BA in Elementary Education MA in Educational Technology Highly Qualified	4th	24	MacBooks	North Tech
P9-Connie	41-50	Female	Caucasian	BA in Elementary Education MA in Human Relations and Supervision Highly Qualified	4th	27	MacBooks	North Tech
P10-Bette	41-50	Female	Caucasian	BA in Psychology MA in Curriculum and Instruction Highly Qualified	K5	15	iPads	East Data

Formal Responses

Participants were asked to respond to an electronic survey (Appendix F) prior to the formal interview for the purpose of collecting demographic data. For this study, classroom observations were not a valid tool for collecting data because the phenomenon to be studied was teacher perceptions rather than classroom methodologies. Once a participant responded to the survey questions, a formal interview was scheduled. All participants were interviewed using the same 15 questions (Appendix G), including the question probes, when needed. Lastly, a focus group discussion (n = 5) was conducted. All interviews and discussions were audio recorded and later transcribed verbatim. A copy of the transcript was emailed to the corresponding participant for member checking. This provided participants an opportunity to review the interview and focus group conversations and to respond, clarifying any points or adding to the discussion. Formal interviews and focus group discussions provided textual and structural descriptions as described below.

Sheri

Sheri (pseudonym) is a female Caucasian teacher between the ages of 41 and 50. Sheri earned her undergraduate degree in communication disorders. During the personal interview, Sheri explained that as an undergraduate, she did not plan to go into education. She said, “I just didn’t think that was the life that I wanted. The teacher life just looked so unappealing, I mean the apples and all, you know, they just didn’t look very adventuresome at all.” Following several years of pursuing other unfulfilling career paths, Sheri realized that she had always loved children and returned to school to earn a master’s degree in early childhood education. With 12 years of teaching now under her belt, she confirms that educating children “is very fun, and I absolutely love it now.”

Sheri had taught for five years in a public school setting and has been teaching kindergarten at South Media Elementary (where she has been engaged in multiple teacher development programs) for the past seven years. During her 12 years of teaching, she has been involved in a 1:1 initiative of classroom iPad tablets only in the past year. Sheri attributed her ability to integrate technology into her kindergarten class to her students' excitement for learning and researching new subjects. She believes their excitement was generated by their personal interest in the topics they explored. According to Sheri, "They are just so excited to learn about these things as they're looking them up and learning about them. It means more to them because they're interested in them."

Paige

Paige (pseudonym) is a 46 year old female teacher. Paige was one of the most experienced participants in this study due to her twenty-four years of elementary classroom teaching. Paige graduated from South Media Elementary herself years ago, and went into the field of education due to the influence of a beloved teacher who taught at South Media at that time. Paige stated, "I just loved children, and I knew that that was my calling." Paige holds a bachelor's degree in early childhood education and a master's degree in early childhood education. At the time of this study, Paige had been teaching kindergarten at South Media Elementary for 12 years. Prior to teaching at South Media, Paige taught kindergarten in a public school. She attributed her longevity and dedication to teaching to her participation in continued professional development programs and workshops. For 23 years of her teaching career Paige used technologies such as the teacher laptop, student desktop computers, and a Smartboard and integrated to 1:1 digital technology into her classroom this year. She expressed her great ease with using iPads in her classroom and attributed her comfort with student technology to her

child's engagement with an iPad at home. She commented, "I have a lot of experience just from having a six-year-old son. We use the iPad a lot. So I am very comfortable with it."

Susan

Susan (pseudonym) is a Caucasian female teacher between the ages of 31 and 40. Susan earned a bachelor of science degree in collaborative elementary education and a Master of Arts degree in school counseling. Over the years, Susan taught K4 through fifth graders, but currently teaches kindergarten. Additionally, she has served as Lower School counselor. Susan has a definite love for educating children and shared,

> Since I was a little girl and played school, I've always wanted to be a teacher. I was a summer camp counselor… I've always been around kids baby-sitting, and I just knew that I loved working with kids.

Even after 13 years of classroom teaching, Susan stated, "I still love every morning! You know, I get up, and I'm excited to see my kids, and I'm excited to interact with them."

Ellen

Ellen (pseudonym) is a Caucasian female between the ages of 41 and 50 who, at the time of this study, had taught at the elementary level for 20 years. Ten of those years were spent teaching in public schools, and 10 at South Media Elementary. Influenced by both of her parents' involvement in education, Ellen earned a bachelor's degree in elementary education. When asked about her reasons for entering the field of education, Ellen recalled, "My mother was always such a good teacher in things she did, so it just kind of rubbed off on me."

Ellen expressed an enjoyment for teaching fourth graders, as evidenced by the fact that she had taught fourth grade for 18 of her 20 years in education. The fourth-grade teachers at South Media spent the last year integrating MacBooks into their classrooms. Ellen believed

technology helps provide differentiated instruction to individual students. According to Ellen, "You can individualize instruction very easily through links… yet not everybody has to be at the exact same place at the same time. It helps me to individualize instruction better."

Lauren

Lauren (pseudonym) is a 45-year-old female teacher and mother of triplets. Lauren earned a Bachelor of Science degree in early childhood and elementary (P-Six) education. With just over 10 years in the classroom, Lauren has the least experience of all the study participants. She grew up working with children as a summer camp counselor and always knew she wanted to be a teacher. Her grandfather was a history teacher and football coach, and three of her my aunts were educators, so education ran in her family. At the time of this study, Lauren had been teaching second grade at South Media for two years prior to teaching the fifth grade STEM subjects of science, technology, engineering, and mathematics. She enjoys discovering different avenues through which to teach her students and commented, "I like giving them information and seeing that little light when everything clicks!"

Amanda

As a teen, Amanda (pseudonym), like Lauren, spent many summers working in church camps, and these experiences influenced her decision to work with children through education. Amanda describes herself as a Caucasian female between the ages of 51 and 65. She received her Bachelor of Science degree and later earned her master's degree in education. Amanda has been an elementary school educator for more than 20 years, and taught social studies, history, and language arts at South Media. Amanda began her teaching career later in life — around the age of 30. She expressed her desire to help students achieve their goals by constantly raising the bar

on expectations. She maintained that she learned a lot from her students. Reflecting on the challenge and rewards of technology integration in her classroom, Amanda stated,

> Being an older teacher, you've got so much [information and ideas] that you cannot [implement them] all. And you've got to make decisions between the old good stuff that you don't want to let go of and the things that, you know, you can integrate with the technology. I think it's wonderful!

Cindy

Cindy (pseudonym) is a female between the ages of 40 and 50 who has been employed as a classroom teacher at North Tech Elementary for 15 years. Cindy graduated with a bachelor's degree in fashion design, but after taking a temporary job in a pre-school she discovered how comfortable and at ease she felt with children and decided to return to night school to earn a teacher's certification in elementary education.

After completing her certification, Cindy taught in several schools, including a pre-school and an academy for dyslexic children. She teaches at North Tech Elementary and enjoys teaching reading, writing, math, social studies, and science to first graders. Cindy recalled the situation years ago when her first classes had to leave the classroom to go to the computer lab for computer instruction, and she recognizes the benefits of having 1:1 technology integrated into the classroom so that all students have their own device. She commented, "I think it's great. They actually have surprised me in that they can do a lot more than I thought they could with it."

Donna

Donna (pseudonym) is a Caucasian female teacher between the ages of 41 and 50. She holds a bachelor's degree in elementary education and a master's degree in educational technology. She is certified to teach first through eighth grade, and her degree also qualifies her

to teach middle school math to fourth through eighth graders. In addition to teaching, Donna is also the Educational Technology Leader at North Tech Elementary. Donna's love for teaching was obvious as she lightheartedly shared, "I always wanted to be a teacher since the time I was young. I was always in the education field. I was always attracted to it, but obviously not the money!" At the time of the study, Donna's 24-year career was the longest of all the participants. She believes the 1:1 computers help gain students' attention and make learning more appealing. With a laugh she explained, "I think the students are a little more interested when computers are involved."

Connie

Connie (pseudonym) is a Caucasian female teacher between the ages of 41 and 50. She holds a bachelor's degree in elementary education and a master's degree in human relations and supervision. When asked why she chose teaching as a career, Connie confidently replied,

> It was something I always wanted to do. There was never any other job that I wanted. For some reason, I guess I just admired the teachers I had, and I wanted to do what they did. I never even considered any other career path.

Connie taught in public schools for a brief period, but had spent the majority of her 27 years teaching fourth grade math and science at North Tech Elementary, making her the participant with the most teaching experience. Connie is amazed at the amount of information her students now have at their fingertips and conveyed her appreciation for classroom technology saying,

> When I graduated high school [in 1984], there was not one computer class that I had to take. In college it [computer class] was still an elective. That was technology and basic

> facts. So, I can't even imagine going back and not having all of that information in the classroom.

Bette

Bette (pseudonym) is a female, Caucasian teacher between the ages of 41 and 50 with 15 years of experience teaching elementary school. Bette received her bachelor's degree in psychology but later returned to school and earned a Master's Degree in curriculum and instruction. She has taught in a public school for three years and in a private school for 12 years. Bette shared, "Teaching is my passion. It is what God made me to do. To make a difference in the life of a child, I see as my ministry." Bette explained her impetus for teaching by saying, "In general, my childhood was not a good one, so school was an escape for me and a safe place. I wanted to help students feel that same way."

At the time of this study, Bette taught kindergarten at East Data Elementary (pseudonym), which has been involved in 1:1 technology integration for three years. Out of the 10 participants, Bette is the only one that noted that she was "overwhelmed" when she first heard that her students would receive individual devices. She explained, "It did not come with a lot of 'how to.' It was basically done. It was intimidating to be told, 'Use these in all subject areas. And we expect to see you using them when we come in.'" After three years of integrating digital, 1:1 technology in to her classroom, Bette stated,

> I still don't think kindergarten needs a 1:1 initiative. I don't think it's a good use of financial resources or my time in the classroom — not to be conversing and discussing and sharing with a kindergartner. I think it [learning] comes from that personal contact.

Results

The data analysis process included a thorough review of 10 online surveys, in-depth interviews, and a focus group. Throughout the analysis, I followed Moustakas' (1994) processes of phenomenological reduction, employing (a) bracketing, (b) open coding, (c) horizonalization, (d) clustering the horizons into themes, (e) textural-structural descriptions and synthesis, and (f) imaginative variation. After synthesizing the meaning of the 1:1 technology integration phenomenon experienced by the participants, the following four essential themes emerged:

- Technology enhances instruction;
- Technology is supplemental to instruction;
- Teachers' role is unchanged; and
- Pre-adoption training and on-site technical support is required.

According to the transcendental design of this study, my personal perceptions, thoughts, and beliefs have been set aside, and the following section provides a narrative of each theme and sub-theme reflective of the participants' experiences and perceptions.

Themes

Research Question One

The first research question explored how pre-millennial, veteran teachers describe their perceptions of integrating 1:1 tablets and laptops into elementary classrooms. To answer question one, participants reported the following themes and sub-themes shown in Table 4.2.

Table 4.2

Major Themes Associated with Research Question One

Major Theme:	**Major Theme:**
Technology Enhances Instruction	Technology Is Supplemental to Instruction
Sub-themes:	**Sub-themes:**
Greater Access to Information	Maintaining Balance
Student Motivation to Learn	Tool of Teaching and Learning
Student Excitement and Enthusiasm	Positive Teacher Engagement
Increased Student Responsibility	Surprise

Technology Enhances Instruction

The belief that technology enhances instruction was the first theme to emerge from this study. Participants spoke of various ways pre-millennial, veteran teachers' instruction was enhanced when engaged in a 1:1 technology integration. This theme emerged in various areas throughout the analysis process, and coalesced around four distinct sub-themes that helped describe this major theme.

Greater access to current information. According to current research, innovations in technology have provided unbound access to information in support of the learning process (Al-Khatib, 2011). All 10 participants reported that implementing 1:1 technology integration into their elementary classroom had resulted in students' increased access to information. The participants unanimously identified access to unlimited information as one of the most important benefits of integrating 1:1 technology in the classroom. For example: Lauren, who teaches fifth grade STEM subjects, shared, "For good or bad, you're constantly having those iPads out,

having that computer out as far as looking things up." She added, "With each unit I do, there's a research linkage, so of course we're on [the computer] for that, using it for that." Lauren also acknowledged the unlimited supply and appropriate access to information her students experienced, noting that with 1:1 technology, "the sky's the limit." Connie agreed and mentioned that her fourth-grade math and science students accessed unlimited information through their 1:1 MacBooks. Connie shared, "The amount of information, it's unlimited. There's just so much you can find on the computer."

Sheri described how her class accessed online information during research and during their weekly show-and-tell time. She described one student who'd brought to class a storybook about a stallion, and Sheri felt the story would be more meaningful to the student if he could actually see a horse in action. Using the student's iPad, Sheri explained to the student, "Look, you can use these kinds of things that make you curious to find more information on the computer." She commented, "We do that a lot, so they know that's a good tool for research." Her experience supported Ellen's belief that the use of 1:1 technology caused teachers to improve their teaching due to the unlimited information online resources offer.

Two participants noted how much easier research had become with the use of classroom technology when compared to previous years of researching in a school library. Cindy reflected,

> I think that it gives them access to more information. If we were doing a research project when I was teaching last time around [last year], they would get all their information from books, and only the books that were available in my classroom, and possibly they could get some from the library. So, it was limited as far as the information they could find out. Where with computers they have, you know, whatever information they need… you can access information right at your hand that you never had before.

Amanda, who had taught for more than 20 years, concurred that accessing information online was easier than leaving the classroom to go to the school library. Additionally, five participants noted the value of accessing the most current information in performing research during their science classes. Connie also expressed that 1:1 technology had made a big difference in her classroom by bringing in an extra component of added information that her students embrace. Cindy added, "They're just learning skills at, I think, a little bit of an earlier age than they did before because they have the access to information, like being able to research." Lauren summed up the experience each teacher had described of quickly accessing current information through the use of 1:1 technology saying,

> Previously, when I would teach my science program, if they asked you something that was a little more cutting edge, you would just sort of say, "Well, you know what? We're going to have to look that up and figure it out." Now, sometimes in the middle [of class] when someone will ask me, I'm like, "Hey, grab your laptop and look that up." That's a great thing.

Amanda and Donna noted the advantages of having greater access to current information in the subjects of history, social studies, and geography. Donna noted, "You know, just for information, whatever we're working on, sometimes they'll have a state project that they're gonna have, that they will be working on…, so they'll find information for their state." Donna continued to explain that some class days are fully dedicated to research, "I'll put websites on my blog for them to go to for various things," she added, "and they can go to those websites like in social studies when we're studying special regions of the United States. They can click on that and find the information or practice the states or that sort of thing." Bette added that for her first graders, "Access to information is great." Cindy also expressed that her first graders enjoy

accessing information "sometimes for research in science and social studies and then they type a little report."

Sheri also extoled the advantages of accessing online information during her kindergarten geography classes, stating,

> They are so fascinated by Google Earth. And we study the presidents in February, so a lot of them are still going back to the Washington Monument and doing the Lincoln Memorial, and they're just touring the Pentagon, and they wanted to go inside the Statue of Liberty, so there's a lot [of online research].

Donna, who had taught for 24 years, declared her pleasure in students accessing so much information, "I think it has opened up a whole lot of doors that students couldn't have gone through and just opened up things in the world that they wouldn't have been able to see or do…" Likewise, Connie, who had taught the longest of all the participants —27 years —, noted the high value she placed on having immediate access to information and her desire to never again attempt to teach without it. She said, "I can't even imagine going back and not having all of that information in the classroom."

Student motivation to learn. Previous research indicates that engaging activities that are based on students' curiosities and interests lead to more practical and meaningful learning experiences (Gutek, 2011) and that iPads have a positive impact on students' motivation to learn (Foote, 2012). According to participants in this study, implementing a 1:1 technology initiative into their elementary classrooms enhanced learning and increased the students' motivation to learn. This sub-theme was corroborated from the results of the interviews as well as the focus group discussion. For example, Sheri told how her kindergartners were motivated to learn through the games they accessed on their iPads. She described the motivation that was presented

by the educational games and her students' desire to reach higher and higher levels within the game. She explained,

> They have to get to a certain level and then they're allowed to play whatever game they want. I saw the frustration in so many of them that they couldn't get to that level, but had such a desire to play that they kept working at it. So there was a higher sense of, "I want this." And now, it takes them a shorter amount of time to get to that same level, and they are so proud of themselves!

Later on, Sheri also recalled a student who, despite only being in kindergarten, was motivated to learn multiplication. "It has definitely encouraged some of them to step outside their comfort zone and learn how to do it because it's fun," she said. "It is a great incentive to learn." Lauren explained that for her fifth graders, "Peer pressure is definitely a big motivator, and they want to do what their friend is doing, so I see that with the technology." Ellen agreed, "There's just so much visual going on with technology. They're very interested in it." Susan added, "It grabs their attention." Lauren continued, "In today's world, there are so many interactive things that children are already engaged with, and so when you bring technology into the classroom I think it enhances some of your curriculum."

Participants noted that the use of games was not the only conduit for learning. Cindy described how her first graders were motivated to learn through the use of the school's Accelerated Reader program, which they accessed via their iPads. Cindy indicated, "It really motivated my kids to read more and more and more." Even without games and physical rewards, Donna believed that her students were motivated to learn through technology saying, "It's just something different to change the routine. It's just not the same-old, same-old." With a laugh she went on to say, "Their interest is a little more heightened just because it involves something

more than just reading words out of a book or listening to me talk!" She described how her students responded with, "That was just the coolest!" after she played a video on the Erie Canal. She added, "It's just a fun way for them to actually see what we're talking about because you can't take field trips everywhere. And it does kind of give you the feeling like you're going to different places."

Connie concurred that the digital, 1:1 technology served to present information in a way that it could not otherwise be observed. Sheri agreed, "It brings things to life for them that they wouldn't imagine without it. It just broadens so much, and especially for a kindergartner whose experiences are still somewhat limited." Sheri believed that more human senses were engaged when students used the iPads as compared to using only a book and that this naturally and physically motivated the students to learn. She concluded, "They can just see, you know, the Northern Lights. They can just see what's out there. They can watch a volcano erupt. You know, to see it with more senses than with just a book." Ellen agreed, saying, "I think it has been a nice link for our children to the outside world."

Several of the participants reported that implementing 1:1 technology into their elementary classroom provided student motivation to learn by contributing to their ability to gain their students' attention. Lauren asserted that she could get and keep her students' attention with little "pops" of technology here and there instead of utilizing the devices all day. She noted that sharing new and interesting information via the MacBook Air laptops allowed her to hold the students' attention. Paige agreed that 1:1 technology tended to keep her students' attention and engaged them throughout the school day. Bette added, "It is so engaging that I do not worry about someone being off task or losing their attention. It helps with attention." Susan concurred, saying,

> I think it definitely holds their attention… it's very engaging for them. And I think a lot of them are so used to, you know, having their cell phones or their iPads and that constant interaction, so it does help them in keeping their attention.

Student excitement and enthusiasm. Most participants also indicated that student excitement and enthusiasm about technology was a motivation for learning. Ellen shared her students' feelings, saying, "The students—it was a huge excitement knowing they were getting laptops." Sheri also described the anticipation her kindergarten students exhibited as they looked forward to using their iPads. Upon their arrival, she noticed a great motivation to learn, especially through the use of YouTube videos. "They were enthralled!" she exclaimed. "They were so excited to see them. It just brought the concepts to life." Paige also commented on her kindergarten students' excitement in relation to the iPads, "I think the kids are excited about having the iPads in the classroom." She explained that although most of her students are fortunate enough to have iPads, laptops, and other technology in their homes, the devices still hold a fascination for them when used in the classroom. During the focus group, Paige described the iPads as "something extra for them to get excited [when learning about] math and reading." Susan spoke of how the 1:1 devices brought excitement to her class, saying, "If you can add something exciting and something to kind of break things up a little, it makes a world of difference." In her personal interview, Bette echoed their sentiments, "When they got their iPads, there was excitement and they did not tire of it as long as I had a variety of activities for them. They enjoyed it. They enjoyed the center activities. They were engaged."

During her interview, Amanda recalled her students' excitement for using their MacBooks. She laughed as she recalled their enthusiasm for reading literature on their devices, "I have part of the books on the computer, and it's just a book. That's all it is. There's nothing

fun about it, and they still think that's just the coolest thing ever!" Paige concluded, "I think that's been the biggest excitement as far as the kids are concerned, you know, they're just really excited about getting that time to spend on the iPad." Amanda was the only participant to express the belief that the "fun" of the devices could hinder learning. She commented, "I think it's cool, and they may get there when they can calm down a little about thinking the computer is the coolest thing on earth!"

Increased student responsibility. The research data analysis revealed that participants believed their students experienced an increased sense of responsibility in relation to the implementation of 1:1 technology. Although, the teachers did not assert that the responsibility was a direct result of the integration, six of the 10 participants mentioned the responsible care and ownership exhibited by their students as it related to the 1:1 integration. Donna noted her surprise when she learned that each student would get his or her own personal MacBook. She explained the process North Tech Elementary used for assigning student laptops, clarifying that the school's technology department assigned the MacBooks using a numbering system and once a MacBook was assigned to a student, that device traveled with them year after year. Donna believed this process created more responsibility in the students and that taking ownership had actually caused them to better care for their laptops. She continued by describing the responsibility exhibited by her fourth grade students, thusly:

> They're responsible for getting them out of their carts every morning. And, with that being said, they are responsible for plugging them in when they leave, putting them up at the end of the day, and making sure that they are plugged in so they are charged the next morning.

Sheri waited several months into the school year before issuing iPads to her kindergarten students. She shared her desire to "get a feel for their personalities, and see how responsible they can be" before entrusting such an expensive device into their care. She maintained, "I want to see who is going to be most responsible and who I'll really have to watch, and then really teach the use and proper use and care and how to put them back into the cart." Several months later Sheri was surprised to discover that an initial level of responsibility had developed among her young students.

Cindy's perceptions supported that 1:1 classroom technology had enhanced her instruction by instilling a good work ethic and additional responsibility into her first graders saying,

> I think it's great for them each to have their own [device]. It's helping some kids, to take… well, you know they all take ownership in it and they all are learning responsibility and taking care of the computers. They are learning the proper way to take care of them, and use them, and walk around the class with them. It has been a good experience.

Cindy also noted, "Before [1:1 iPads], everything was a lot more teacher-directed, and now they are a little more independent. There are things they can do by themselves on the computers." Cindy continued to explain,

> They actually have surprised me that they can do a lot more than I thought they could with it. Currently they know how to start it, they know how to log in, and they know how to shut it down. They are also very familiar with Safari, and they know how to get on Safari, and they can bookmark, and go to something they have bookmarked as their favorite.

Similarly, Ellen, Connie, and Betty echoed these experiences. Bette explained her kindergarten students' ability to follow her simple instructions and the responsibility they exhibit by staying on track as they go through their school day, "I have laminated mini-posters with 'I CAN' statements on there. They just know the procedures from the repetition we do each day. They go to the prescribed sites. It can be literacy, or math, or whatever subject area we are in at that time." During the focus group discussion, Ellen described her students' responsible behavior towards their MacBooks throughout the school day, saying,

> And they are in and out of that cabinet all day everyday and at different times, and sometimes several of them are over there. And we try to certainly have systems where there are not tons of them, but I don't have to stand there and monitor. They do it themselves. So they get that responsibility, plus they get the time responsibility even. "This is the time to go get it, this is not. These are the things that I'm allowed to do at this time and these are the things I'm not," and then of course, the responsibility of which sites you can go to and things like that.

When asked if responsibility has resulted from the use of the iPads and MacBooks, Amanda reasoned, "I think that could be giving too much credit for that [technology] by itself. They're still learning responsibility in all areas." Ellen agreed, "It could be how they went and put up their glue or anything. As far as how they put up a computer, it could be how they did anything in the class." Sheri took a different view and thought the iPads contributed much to teaching responsibility to her young students. She articulated, "But, with kindergarten, if they don't plug in their iPad, I don't do it for them, and they don't have it the next day. So that's like a direct response to their actions." Ellen responded, "So there are different ways that it [technology] teaches responsibility," Lauren added, "I do see some learning responsibility, but I

don't know if it's because of the device itself. I just think it's a progression that's happening for responsible children. I don't know that I would give the device the credit." Ellen quickly concluded, "I think it definitely plays a part." Overall, seven of the 10 participants indicated that integrating 1:1 technology into their classrooms had increased student responsibility as they cared for, handled, and used the 1:1 devices.

Technology is Supplemental to Instruction.

Technology is supplemental to instruction was the second theme identified in this study. This theme answers research question one: How do pre-millennial, veteran teachers describe their perceptions of integrating 1:1 tablets and laptops into their elementary classrooms? This theme also adds credence to the overall understanding of the pre-millennial, veteran teachers' experiences and perceptions during a 1:1 initiative. The supplemental use of technology in the classroom provides an understanding of participants' decision-making processes, how they viewed 1:1 technology, and how they chose to use and apply technology to instruction on a daily basis.

Kindergarten teacher Sheri first declared the view of technology as being supplemental to instruction in her comments, "I don't always plan a lesson around technology. I will use it to supplement a lesson." She continued by explaining, "So, my class view right now is kind of to use it to supplement, especially at the kindergarten level." Paige also explained that her kindergartners use their iPads, "at the beginning of the day, you know, they may be able to use them when they come in for morning work. That may be their morning work, you know, to scan a book and listen to a book, you know, those kinds of things. But I don't use them every single day." Susan concurred, "I think there are definitely lessons that lend themselves to technology and others that where pulling a book out is necessary too." During the focus group session, Sheri

spoke for all the teachers at South Media, when she said, “Most of us agree that technology should not replace what we do because we’re the guiding factor, and technology just supports us. So we’re all pretty much on the same page about it.”

North Tech teachers also used technology to supplement traditional lessons. Donna described her process of the 1:1 technology integration thusly: “In the lower school…technology is an added thing when we feel it’s necessary.” Bette spoke for East Data Elementary when she shared, “When it [technology] enhances, I use them and when it doesn’t, I don’t. I just cannot use something that I do not know is in the child’s best interest.” When explaining her decision-making process when it comes to supplementing her history and language arts classes with technology, Amanda said,

> They use a book a whole lot less. I do teach from a book very much less, a whole, whole lot less. If I couldn’t do it on the computer better than I can do it on paper then I’m just going to stick to paper.

All of the 10 participants communicated that while they value textbooks and writing with pencils and paper, they integrate these traditional tools along with 1:1 technology. Further, they used 1:1 classroom technology to supplement their regular classroom lessons and to teach the curriculum.

Maintaining Balance. When asked how they used technology in their classrooms, participants reported that maintaining a balance between traditional teaching methods and integrating technology was one of the top issues. Integrating technology with traditional lessons and curriculum was a daily priority for all 10 participants. Sheri began the conversation by revealing how she used the 1:1 iPads in her classroom every day as the students brought their device to her for reading. She stated, “I think that I have been in education long enough to realize

that everything needs a balance. I'm kind of against a full immersion of technology. I like a balance." Lauren agreed, "One thing is that you have to be very careful in what you're doing and have a good balance." She explained that her students utilized their MacBooks "at most, it's like 25% of the day." Susan also sought to find a balance between traditional lessons and lessons taught using her fourth and fifth graders' MacBooks. She expounded,

> It varies from week to week depending on what we're doing, but I would say there is probably 25 to 30 minutes out of an hour with technology. I think there can be times that people can tend to lean on it [technology] completely, and, it's more of the technology teaching, and I think there should be a good balance.

Balancing technology and traditional instruction was also discussed during the focus group session. Paige told the group how she balanced her kindergarten class's utilization of their iPads,

> The biggest thing is that you've got to balance it… in my opinion, I just don't think it needs to be done all day long. I think you're going to lose the kids. That may be their morning work to scan a book and listen to a book, you know, those kinds of things. But I don't use them every single day. I maybe use them an hour a day.

In general, participants agreed that they, rather than school administrators, made the decision of when to integrate technology into their lessons. Ellen commented, "We just pull in technology as needed." Bette noted the need for balance with her kindergarteners saying, "With the kindergarten, they have to know how to hold a pencil, how to track from left to right. I would not want their screen time to be increased." Bette defined her students' use of 1:1 iPads in their daily centers,

> They have them out daily. However, it may not all be at the same time. I use them as a center rotation for both math and literacy. Center rotations are usually 20 minutes, so about 40 minutes. I don't feel that they are needed every day.

Cindy described how her first graders use their iPads for writing, "We're working on writing some stories and publishing them right now, and so I've given my class a choice that they can either hand write their story or type it on the computer." She proudly added, "So, most of them have chosen to type them on the computer." Cindy continued to explain the combination of technology and traditional instruction she uses in her writing process, "We'll break apart into three groups and do some kind of like some daily word work. And, sometimes they use computers for that and sometimes they don't." Donna depicted her fourth graders as spending approximately a third of their time using MacBooks in the classroom. She stated, "It may not be everyday. It is as needed according to where we are in our chapter and it may just be a reading learning day and I may give them a research day." Connie also described how her fourth grade students use their MacBooks at different lengths of time and on different days while maintaining a balance between technology and hands-on projects. She explained, "If we were to take some kind of average through the week, I would guess 60-65%, or probably about 70% on the computer, and we also have science kits for more hands-on activities." Lauren added, "I think it is just according to what you're teaching." Paige added, "If you use it too much then I think you're going to have a whole new set of problems, but I think a balance is fabulous. It's got to be done correctly." Susan agreed, "It's all about finding that balance." Overall, nine of the 10 participants reported maintaining a balance between traditional teaching methods and integrating 1:1 technology into their daily lessons.

A Tool for Teaching and Learning. Past research indicates that pre-millennial teachers often view new digital technologies as tools of teaching and learning (Tsai, 2015). Four of the 10 participants maintained this view. Additionally, all participants indicated that for them the use of technical devices was at the teacher's sole discretion. The data revealed that the 1:1 technology was viewed as tools with which to teach, not as teaching devices themselves. Paige mentioned,

> It's just another tool that I use and that the kids use. I do still like the paper and pencil as far as assessments are concerned because I think you catch some kids that have some learning problems and you're not necessarily going to catch that when they're using iPads 24/7.

Paige also viewed teachers as tools, but considered digital technology to be "another tool that I think is just fabulous." Sheri reiterated her concern for evaluating and providing for the learning needs of her kindergarten students saying, "I have to know what they need, and I have to know how they engage the best. And so, it's just a tool that I use."

Susan and Connie expressed a great appreciation for MacBooks in the classroom. Susan said, "It is, I think, a valuable tool, and it helps to make a lot of things come alive that…for me, being up and speaking in front of kids the whole time, it doesn't." Connie expressed her appreciation for such an important tool of teaching saying,

> I think that the computers and technology have become another component that the teachers can use for the kids to explore newer concepts and to facilitate the learning through that. I mean, I see it as a tool, but just an incredibly important tool that has just all the information there.

Although the other participants did not expressly mention the use of digital, 1:1 technology as tools of learning, it was implicit throughout the interviews and focus group

discussion. Participants from all three private, independent schools sought out online programs and applications to utilize within the classroom. The view of technology as a tool to serve their instructional needs was evident in Lauren's comment, "Sometimes I'll let them go on Wonderopolis and they'll have a question that's the wonder of the day that will deal with something that we are talking about in STEM." Also, Amanda's comments alluded to using technology as a tool in her class. She continued, "I still use it a lot when I'm teaching geography… there are a lot of small videos that help and they have quizzes that are fabulous." Additionally, Amanda noted,

> Sometimes I will have them use their computer to type the words from, our high frequency words from the story, or sometimes they'll use the computer to go to a website called Raz-Kids, and they'll read a story and take a quiz on it. Or sometimes I'll have them go to a website called ABCya and I'll pick a certain activity from there that I want them to do. And, so we use them for that time. We use them for math to practice doing different math games and stuff like that.

Donna also indicated the use of 1:1 technology as a tool she utilized when she commented, "It is as-needed, according to where we are in our chapter." She explained, "I put websites on my blog for them to go to… and they can go to those websites, like in social studies when we're studying special regions of the United States and find the information or practice the states." Overall, participants implied that classroom technology was a tool for teaching and learning.

Positive Engagement with 1:1 Technology. The data analysis concluded that participants in this study reported a positive engagement with 1:1 classroom technology. This was the third sub-theme identified that answered research question one. The positive engagement with student

technology provides an understanding of the participants' interaction with iPads and MacBooks and their perceptions of the devices' technological contributions to the learning process within the elementary classroom. All 10 participants viewed their interaction with a 1:1 integration within their classroom as being a positive experience.

This finding was evident among the three kindergarten teachers who experienced a positive engagement with the 1:1 iPads. Sheri shared that following the first year of integration her overall experience had been "positive." She confessed, "I was scared last year." Sheri smiled as she reflected, "It's been really easy and really fun. Way better than I thought. It has really become an easy and pleasant experience in the classroom for all of us." Paige added, "I think it's been great, I really do. And I hope that each year will get even better so I can implement it more. I've really enjoyed it and the kids have enjoyed it. And that's the biggest thing." Bette concurred, "It's been positive because it's been something that the students have been attracted to." Cindy added, "I think it has been great for them each to have their own [device]. It has been a good experience."

The remaining participants, all fourth and fifth grade teachers, shared the same positive opinion. Amanda, who was an outspoken leader in the focus group, described how her opinion of student technology had been transformed by her own personal experience with technology,

> I'm not an experimental kind of person. I was late getting an updated phone actually! And when I first got an iPhone, that's when I went, "Good grief! This is so much simpler than anything!" I mean, it was fabulous! So watching the students with their technology has been fun. It has been a positive experience.

Although Susan confessed that integrating 1:1 technology into the classroom presented a learning curve for her, she assessed her experience saying, "It has been very positive. It's been

wonderful and it's helped advance a lot of things, so overall it's been great." Lauren noted, "For me it has been a very positive, great experience because what I teach lends itself to using that." Ellen continued the conversation by saying, "It has been easy. It has been exciting. I love it. I was fine with it, especially since I have young children." Donna added, "I've enjoyed it. I have learned a lot by having technology in the classroom." Lastly, Connie concluded with the sentiments from all the participants, "I would definitely put it as a positive experience. It has definitely been an extremely positive, enlightening, you know, 'changed my whole way of teaching' experience!"

Surprise. Seven of the 10 participants in this study discussed that the 1:1 classroom initiative had been a pleasant experience for them and many of them were surprised by the students' smooth adaptation. Cindy reflected on her year of integrating iPads into her first grade class, "I think it's been great. They actually have surprised me that they can do a lot more than I thought they could with it." Sheri added, "I have been pleasantly surprised by them." Paige expounded on how surprised she had been after integrating the 1:1 classroom technology, "I really like the iPads… I have a lot of experience just from having a six-year old son. We use the iPad a lot. So, I was very comfortable with it." She added, "It's great for the kids and we've got to prepare the kids for the future."

Connie also expressed surprise at the extent at which her students use their 1:1 MacBooks saying, "It's now just so engrained in the curriculum!" Connie shared the same wonder as her students and quickly acquired the same dependence on classroom technology as her students. She exclaimed,

> When it was first coming, I probably didn't see it as big as it was at the time. You know I thought, "Well this will be great because now they can do things. They can just open their

> computers." But, now if you were to take those things away from me, I would be like, "Oh no!" I wouldn't know what to do because there's just, I mean, the amount of information, and visuals, and everything that they can get now that textbooks can't do is just incredible! It's just so engrained in everything I do now at the school. I'm totally surprised!

Lauren exclaimed, "You know, it's amazing! It really is! I have to say it's actually gone very well." During the focus group discussion Ellen shared, "I was a little nervous last year and I shouldn't have been. I had to get to a comfort stage. It has gone very smoothly this year."

The data answering research question one is significant and reveals that technology enhances classroom instruction by providing greater access to information, motivating students to learn, generating student enthusiasm for learning and increasing responsibility among elementary school students that use technical devices in the classroom. Additionally, the data reveals that pre-millennial, veteran teachers believe that although technology is supplemental to instruction, it should be implemented in a balanced manner along with traditional teaching methods. Participants view technology as a tool for teaching and learning and have been surprised with their positive engagement with the digital, 1:1 technology. Data answering question are significant findings because previous studies show that the classroom teacher is the key decision maker regarding how and when technology is integrated (Clark & Zagarell, 2012; Hertzler, 2010, Liu, Jones, & Sadera, 2010). Therefore, it is important that pre-millennial teachers experience a positive engagement with digital technology. Other studies show that a positive experience will lead to more effective implementations.

Research Question Two

The second research question investigated how pre-millennial, veteran teacher perceptions about teaching have changed as a result of the digital, 1:1 technology integration. The following theme continues to answer research question one and directly relates to research question two. Table 4.3 shows the major theme and sub-themes related to question two.

Table 4.3

Major Theme and Sub-themes Associated with Research Question Two

Major Theme:	**Sub-themes:**
Teaching and Teacher's Role is Unchanged	Teacher's Role Unchanged
	Experience Contributes to Decision Making
	Concerns and Fears

Teaching and Teacher's Role is Unchanged. The role of the teacher has received research attention over the past two decades as technology has become commonly used in the modern classroom, shifting the role of the teacher from instructor to facilitator (Ejiwale, 2012). This theme received diverse opinions and robust discussion among the participants. Seven of the 10 participants affirmed that their perceptions about teaching have remained the same throughout the digital, 1:1 technology integration. Additionally, five participants believed that their role as teacher remained unchanged with the addition of a 1:1 initiative. Three participants believed their role as teacher had changed in some ways, while remaining the same in other ways, and two of the 10 participants believed their teaching role had definitely changed over time as a result of the 1:1 technology initiative.

Teacher's Role Unchanged. When asked if her role had changed as a result of the 1:1 technology, kindergarten teacher Sheri replied, "I don't think my role has changed at all. I think

it's gotten easier in a lot of ways because of technology." Although she utilized the technology, she did not believe it replaced her as a teacher. She continued, "I think that my role has always been to know my students. I have to know what they need, and I have to know how they engage the best. So, no, my role has not changed." She concluded, saying, "I'm still the one that has to know what they need and to know how to reach them best." Susan also considered her perceptions about teaching and the role of the teacher to be unchanged by technology. She expressed her love of interacting with the students and added,

> I think that while technology has changed certain things, it hasn't changed my love or anything else as far as my reason for being in education. It hasn't changed anything. I mean I still love every morning! You know, I get up, and I'm excited to see my kids, and I'm excited to interact with them.

During the focus group, Paige agreed that her perceptions about teaching and her role as classroom teacher had remained the same with the addition of 1:1 technology. When asked if she believed her role had changed from teacher to facilitator, she commented, "I really don't. You know, I've always been one that likes for the kids to participate in all forms of learning, and I've always had work centers and literacy centers, and it's just…I really don't at all." Amanda echoed the focus group's sentiments, "As far as making a person obsolete, I think that is just crazy because they [students] need interaction and positive reinforcement and correction."

Also, during the focus group discussion, Amanda supported her beliefs about the importance of the role of the teacher and the need for interaction between the teachers and students when she said, "I'm just a believer of relationships of people that support humans. The more I read and listen, and not just academic educational stuff, I just believe students get to the point that they need that human reaction." Although she affirmed that her class has benefited

from the 1:1 technology, she did not believe her perceptions about teaching or her teaching role had changed and noted the resourceful role teachers have always filled, “Even today, books are limiting, so you need other resources, which is what you do, you get other resources. Teachers have always done that.”

Lastly, Bette reasoned that teaching and the role of the teacher was a balance between teacher and facilitator, and her belief that the role of facilitator best fits with older students. She had always believed that the teacher’s role was to teach children how to be discerning users of information—whether that information came from books or through technology. When asked if her role had changed with the inclusion of technology, she elaborated,

> Perhaps for older students the role may have changed a little bit, but I still think there has to be a healthy balance with both. When I walk down the hall, I see students working on their iPads, but I also see teachers teaching with their white boards and smart boards with no laptops in sight, so I think that teaching has changed and that teachers need to know how to use technology to teach children to think critically.

Donna, Ellen, and Connie all agreed that their role demanded that they perform duties of both teacher and facilitator. Donna commented, “There are times that I feel like a facilitator, but I think in the lower grades I am more teacher.” Ellen shared that both terms described her teaching style, but that with the integration of 1:1 technology, her role as facilitator had become more pronounced. She reasoned,

> I do think there are a lot of times that I can act as facilitator and not as much instructor. That has not changed as much for me, but I have realized over time that there are so many things that can be taught through computers where the teacher can be there more as the person going around and helping the class with it, whereas the knowledge part of it is

> coming from the computers, and the teacher is there more to facilitate that and ask questions in certain ways. It hasn't changed that much in my classes. Now they are independent and love to look things up on the computer and having that tool, but they still like that interaction with the teacher too.

Connie concurred that with the addition of 1:1 technology she filled both roles as she taught. She added, "In some roles I think the teacher is the facilitator, and in some roles not." Lauren and Cindy were the only participants that felt strongly that their role had changed over time with the introduction of classroom technology. Lauren noted,

> I think it has changed very much over time. What I do with the STEM, there's less of direct teaching. There's more of me walking around table-to-table from group to group and addressing things that are happening there. I'm not saying that direct teaching isn't happening, but it's just less involved. It's more of me walking around addressing things there. So I do think it has changed tremendously.

According to Cindy her teaching role has changed with the introduction of the 1:1 iPads. She noted, "I just feel that right now the teacher's role has gone to just being a facilitator and not as much as the main focus in the classroom. She commented on these changes,

> I feel like it has [changed]. I feel like it has gone more from a teacher who is giving kind of everything to the kid, and she is their main source of information, to more as a facilitator and kind of, you know, guiding them too, because they do have access to computers, guiding to problem solve themselves and get information for themselves.

Experience Contributes to Decision Making. Five participants in this study attributed their ability to make appropriate academic decisions about the 1:1 technology to their years of teaching experience. Research supports that experienced teachers have the ability to positively

affect student learning in many ways (Ersozlu & Cayci, 2016). The participants recognized the storehouse of information, ideas, and projects that they possessed as a result of teaching in excess of 10 years. Each participant acknowledged that they retained information from childhood, college years, and current training that could be accessed during the decision making process. The ability to choose from multiple sources provided them with discernment and wisdom when making curricular decisions.

Amanda laughed as she reflected on her years of experience, **"**Being an older teacher, you've got so much [information and ideas] that you cannot [implement them] all. You know, there's so much!" She also noted the decision-making process that veteran teachers experienced, "You've got to make decisions between the old good stuff that you don't want to let go of and the things that you can integrate with the technology." During the focus group discussion, Amanda once again reflected on the decision-making process of veteran teachers,

> There are so many old things that I like and that I know that are so valuable. And I had so many, there's no way I could use them all. So I have to weigh that anyway, all the time.

Amanda exclaimed, "We don't let go of all that stuff that we learned in college and that we know how to do. We know how to do what we do!" Connie joined in, "A lot of times I just like some of the content they have in old textbooks, and so I'll pass that out as a reading source for them occasionally." Ellen also believed that her years of experience provided her with a wealth of ideas and options to utilize when teaching. She expressed, "For me, teaching's a real combination of the modern and the old school."

Several teachers discussed how their years of experience contribute to decision making when faced with technical difficulties. Sheri recalled the technical problems from the previous year, "Last year I had connection issues and so I learned not to rely on it." She continued, "I have

been teaching long enough to be able to do that without it rattling me or the students." Connie expressed that she feels that she looses instructional time when her class experiences "a technical glitch." Cindy agreed and shared how technical glitches required her to revert back to simpler teaching techniques,

> I do have to say that technology is great when it works. But, it can be so inconsistent sometimes. Honestly, there have been so many times that I would just rather use an overhead projector because… I hate feeling like I waste time when the technology is not working and trying to trouble shoot, especially when I've built a plan around it. I feel it just makes it easier to just do things on an overhead.

Connie concurred, "I definitely have to have a fallback plan. You usually do. I have been teaching for a while, and there's always some kind of lesson I'll think of on the fly if something's going on."

Several participants acknowledged their status as "older teachers," "millennials," and "old school" in a lighthearted manner and seemed to enjoy the ability to pull from a deep reservoir within themselves to choose the most appropriate teaching tool for their students. When concluding the group discussion, Sheri once again referenced her belief that veteran teachers' years of teaching experience equips them with the ability to choose the tools that create a balance between technology and traditional teaching methods. She shared, "When you've been in this business long enough you see the pendulum. It goes this way and then it comes another way, then another way. So, I feel like it's definitely going to go back to balance."

Concerns and Fears. Previous research confirms the need for ongoing studies about the effects of technology on the brain and its functions when using digital devices (Bauman, Marchal, McLain, O'Connell, & Patterson, 2014). This third sub-theme helped to describe how

pre-millennial, veteran teachers' perceptions about teaching had changed since the integration of a 1:1 technology initiative. Some of the change that had occurred was in direct relation to the teachers' perceptions of the negative aspects brought about by 1:1 technology. When asked directly for participants to identify any negative aspects that 1:1 technology presented to their classrooms, Sheri, Paige, Ellen, and Amanda answered that they could not think of any negatives, yet they and other participants expressed several concerns and fears throughout the interviews and focus group session that directly relate to research questions one and two. The concerns and fears voiced by the participants centered on three specific areas: a) attention span, b) communication skills, and c) inappropriate pop-up ads.

Shortened Attention Spans. Previous research states that millennial students lack the ability to remain on task due to the way their brains are affected by the use of technology (Nikirk, 2012). This concern was expressed by seven of the 10 participants during the personal interviews as well as in the focus group. When discussing her longevity in education, first grade teacher Susan commented, "I taught first grade for 10 years, and… from my first years to now, children seem to, well you have to basically perform to teach them." The tone of her comment reflected a disappointment as well as a challenge. Her comments insinuated that for her, teaching first graders today required more work, performance, or level of entertainment than it had 10 years ago. Lauren also mentioned a similar experience when teaching second graders saying, "I think we've got a generation of children that… it takes more to get them into it, to keep them entertained." She was concerned that technology would take time away from more subjects such as reading and writing that she felt were fundamentally essential to second graders.

Throughout the interview Lauren continued to extol the benefits of technology while explaining how she used it to maintain her students' attention. She confessed that sometimes she

used the technology to "shock them" in order to gain their attention. She said with technology, "I can get and keep their attention with little pops of it here and there." She continued to explain that technology was required to maintain her students' attention. She explained saying,

> …for this generation, that's what they are used to. They need that almost media, that extra thing. You know, just looking at it in a book, that's not going to be enough. We have a generation that kind of needs that now in the classroom. I don't know if it's from the technology, but honestly they have shorter attention spans than the children I taught in the past.

She expressed that her challenge was, "being able to show them something that's going to keep their attention," and concluded, "Overall, what I see are shorter attention spans when you have a task that needs to be completed. You know, it worries me."

Amanda chimed in with a laugh, "I think it's shortened my own personal attention span!" While all the members of the focus group chuckled at Amanda's light-hearted nature, her comment opened the door for additional discussion about the possible causes of shorter attention spans among their students. They all nodded in agreement when Lauren said, "This is a generation who has always had an iPhone or an iPad in their hands, and most them from the time they were little." They shared stories of seeing students outside the classroom, especially as they waited in carline, viewing Facebook and texting their friends. Lauren said, "I worry about the screen time because they are so young." Lauren added that she had recently read an interview with a physician who had linked the use of technology to short attention spans. She believed her students were "becoming dependent on that extra stimulation just to keep them focused." Susan added that her students tended to become distracted by the 1:1 devices when they should have been attending to other tasks and agreed when Lauren added,

> I worry about what affect this is having on their eyes. Well, my question is: on eye development, on brain development, you know, you've got the different lights and things. What impact is that going to have in the future? You know, I do worry about those things.

Connie, Bette, Paige, and Sheri did not report that 1:1 technology had resulted in shortened attention spans among their students. Rather, they believed that it had actually *aided* in gaining and increasing their students' attention spans. Paige commented, "I think it does help some of those kids with the attention problems focus. It keeps their attention." Connie supposed the increased attention was due in large part to the gaming format of many of the software applications. She also attributed it to "the creative aspect of the computers." Additionally, Bette described how her kindergarten class used their iPads to write and draw. She was very pleased when she reported, "It is so engaging that I do not worry about someone being off task or losing their attention. It helps with attention."

Decreased Communication Skills. Previous studies have shown that the use of technology can interfere with the establishment of basic behavioral cues (Herman, 2012). Seven of the 10 participants included a lack of or inability to clearly communicate associated with technology as a fear and concern. During the personal interviews, as well as throughout the focus group discussion, participants voiced concerns that students were losing the ability to communicate well with one another. Paige noted that she was pleased that they were learning through technology, but that the skills of interacting with one another and talking to one another was just as significant.

Susan shared that some of her students had a difficult time having face-to-face conversations with one another. She stated, "Some of them have a very hard time just having a

conversation because they are just so used to texting or doing something via technology." She was confident that technology contributed to the academic advancement of her students but was convinced that it also contributed to a lack in social skills. She added,

> In my position, I see a lot of kids who it's helped advance a lot of things, but then I see a lot of kids who can't communicate — other than texting. Or you know, it's easy to sit behind a screen and say what you want, but having a face-to-face conversation tends to be difficult for a lot of them.

Sheri joined in saying, "I see that as a crime in that they're on their phones, and they don't play, and they don't really talk to each other like they used to. They text." She continued to share her concerns,

> I just feel like if you do it too much you're going to really lose a lot of important skills, especially at the elementary level. They need to know how to talk to one another. They need to learn how to be social and have those social skills.

Lauren also shared her concern for decreased communication skills among students. She clearly stated, "The big negative impact I see with technology is it cuts down on communication between them." She went on to explain that on some days she showed videos and purposefully stopped the videos intermittently in order to encourage her students to discuss the content. She expressed, "Part of the teaching and the growing process is learning to communicate and learning to [say], 'Let's make eye contact. Let's speak clearly.' I mean, those are very important things that they do need to learn." Ellen added her perceptions of her fourth graders saying, "Their interactions and their social skills are lacking because they've spent so much time on a device." Lauren added, "I also see kids when I'm picking up in car pool, and instead of talking

they are literally standing 10 feet apart laughing at each other and texting back and forth. To me, that's not okay."

Sheri was also concerned for her kindergartners' lack of interaction with each other. She noted that when using 1:1 iPads, her students "don't have to share." Learning to share was of great importance to her because in her words, "In kindergarten that's such a huge social skill." Bette had recently read an article suggesting, "that a 2:1 collaboration with the device is much better than using it one on one." She explained, "I just think they need opportunities to explore manipulatives and materials, to socially interact with one another in a group setting, and to share in a partner setting." Bette concluded, "I don't think kindergarten needs a 1:1 initiative. I don't think it's a good use of financial resources or my time in the classroom—not to be conversing and discussing and sharing with a kindergartner."

Susan noted that when she talked to parents about different problems their child had experienced in the classroom, one of her questions had become, "How much time do they spend on that [technology] instead of getting out and socializing and developing friendships?" She felt that the time spent on the various devices affected many aspects of students' lives. Others also expressed disappointment over the perceived loss of interpersonal relationships and decrease in communication skills among today's students, especially at a very young age. "One day they're going to realize that too much technology is hurting children," Sheri cautioned, "I feel like they are just going to go back to balance, but it will take a little while." Bette agreed, saying,

> I just think they need opportunities to socially interact with one another in a group setting. You could take the iPads out tomorrow and I wouldn't cry, but I wouldn't exactly be thrilled either not to have any technology. So I'm really split, torn down the middle.

Inappropriate Pop-up Ads. When first discussing the positive aspects of classroom 1:1 technology, all participants agreed that the most important aspect and greatest value was the unlimited access to information. While continuing to interview the participants, I asked them if they perceived any negative aspects to the 1:1 integration. Six of the 10 participants named unwanted content and inappropriate and/or unsolicited ads that pop-up as a concern or fear. Donna pointed out that the access to unlimited information, although a positive for her and the other participants, was also viewed as a negative aspect that caused fear or concern. She noted, "That's also the negative — they can access so much more! It kind of works against you sometimes!" In agreement, Sheri shared the following story about researching online and inappropriate content popping up on her own screen, "I'm also leery of [classroom technology] because one time I brought up 'how to play dominoes' and the very next quote was 'how to host a bachelor party!'" She reiterated, "Now I preview things ahead of time so it [an inappropriate ad] doesn't pop on the screen." Ellen also pointed out,

> I know our school has set up ways to block certain things and certain sites, but I will tell you from some of the things that have popped up just searching for things at my house, it is scary, and I do work to make sure that I'm sending them to a site that I have narrowed down as much as close as I can so that there is not as much searching and something inappropriate popping up.

Ellen's perceptions about teaching have remained the same in that she continues to have great concern for her students, but has also changed in that she had to work to avoid exposing them to anything that might be considered harmful such as inappropriate content. She understood that inappropriate pop-ups could happen on any teacher's watch, but she hinted at feelings of guilt if they occurred while the students were in her charge.

Paige also shared the concern that inappropriate ads would pop up on the student devices and viewed this as a negative aspect of implementing the 1:1 initiative. She explained that her students knew they were not allowed to go to the Google Search site, and said that they had all signed a technology contract in which they agreed to go through a school-sanctioned search engine called Safe Search when doing research on their MacBooks. However, she also added, "Safe Search is not 100% fool proof. I'll think I've found a great site and the ads pop up. The sites are okay, but the ads are a little more inappropriate." Ellen agreed, "Even though I had used technology for years, I was nervous about having 23 children having their own device and going to sites. I was concerned for safety procedures."

Overall, the data answering research question two helped to identify that overall, pre-millennial, veteran teachers do not believe their teaching role has changed with the addition of 1:1 technology to their elementary classroom, but that they remain the teacher in charge of the class. A total of 50% of the participants believe their role is a combination of both teacher and facilitator. They acknowledged their role as one who discerns and meets the students' needs. Additionally, pre-millennial, veteran teachers attribute their decision-making abilities to their many years of teaching experience and express that although they enjoy actively integrating digital technology, they also maintain the role of protector. They remain cautionary in their use of digital technology due to their concerns and fears surrounding technology's association with shortened attention spans, decreased communication skills, and inappropriate content and pop-up ads.

Research Question Three

Research question three inquired about the role professional development has played in preparing participants to integrate digital, 1:1 technology into their educational practices. The

following theme answers research question three. In response to it, participants reported the following theme and sub-themes listed in Table 4.4.

Table 4.4

Major Themes Associated with Research Question Three

Major Theme:	**Sub-themes:**
Pre-Adoption and Incremental Training and On-site Technical Support Required	Pre-adoption and Sufficient Time Ongoing Professional Development Immediate Access to On-site Technical Support Required Informal Teacher Networks

Pre-adoption and Incremental Training and On-Site Technical Support Required

The fourth theme that emerged during the analysis process was the importance of pre-adoption and incremental training and on-site technical support. The individual interviews and focus group discussion revealed that participants believed pre-adoption training through professional development was the most important factor involved in their ability to implement a 1:1 digital initiative. When asked to describe the importance of professional development when implementing a 1:1 initiative, all 10 participants confirmed that teacher training supplied by technical professionals contributed to teacher efficacy. According to Amanda, on a scale from one to 10, "the importance of professional development is a 12!"

Pre-adoption and Sufficient Time. Throughout the study, the essentiality of pre-adoption by teachers, sufficient time for training, and technical training became evident as key factors in teachers' ability to integrate 1:1 technology in elementary classrooms. At two of the three schools, participants agreed that pre-adoption of the devices to teachers early, prior to

introducing them to the students, was the most important initial step in the professional development of teachers in preparation for a 1:1 initiative.

At South Media, school administrators began introducing the idea of a 1:1 initiative to the teachers well ahead of the actual training. Lauren said, "We had talked about it, so we knew it was coming down the pipeline." After discussing the idea for a year, a pre-adoption introductory training session was arranged at which teachers received their personal iPad or MacBook. Lauren explained, "They did a training session with us… called a "Meet your Mac" session." The Meet your Mac session was a day of training in which South Media teachers were taught the basic functions of the tablets and laptops. Lauren described it as, "…a six hour training session in one day and, we just kind of came in and they showed us just short cuts as far as searching the Web, Google Drive, how to save things, that type of thing."

Most significantly, the one-year pre-adoption period allowed teachers to experiment with their personal iPads and MacBooks prior to distribution of student devices. This was significant because it gave teachers sufficient time to become familiar with the functions of the devices. Amanda acknowledged, "They said, 'We want you to have this for a whole year before your students get it.' And I think that was huge!" Ellen shared that she had been nervous about the transition because she had never used Macintosh products, but that the slow, incremental introduction of the MacBooks provided her the time needed to overcome that fear and made the transition comfortable. She went on to explain, "Because it was also not something that was forced on me in a quick way, I had time to digest it little by little." Susan affirmed the value of the gradual transition saying, "They actually gave them to us a year before the students received them. So, we got just that time to kind of to play on them and to get used to using the Macs."

Amanda remembered getting her MacBook in June and the technology director saying, "Go home and just play with it." Lauren added, "They made sure you were comfortable with it." Amanda also commented on the value of having sufficient time with the MacBooks prior to launching them to students,

> I will say that my hat's off to South Media for that, we didn't just jump in. By the time we were on a 1:1 initiative, we were so integrated that it was not very daunting at all. They did not shove it down our throats too early. You know, they had us prepared. I was pretty ready for it and open. The more I think about it, the more I appreciate their gradual approach.

Susan and Ellen agreed that the devices had not been forced on the teachers, but the administration did want the teachers to try them out and get used to them. They expressed that during the pre-adoption period, there was no pressure and no stress concerning using the devices in the classroom. Later during the focus group discussion Lauren expounded on the practical value of the pre-adoption period of spending sufficient time with the teacher-issued MacBooks and how becoming familiar with the device prepared her to help her students,

> I think one of the biggest things that they did was as far as training us on computers was to give us that computer an entire year before we had to use them with the kids in the classroom all the time. Which to me was nice, and I think it was a very wise decision because I don't know how it would have gone without that year of me getting my comfort level.

When the focus group participants were asked what they would tell other teachers or schools that were preparing to implement a 1:1 initiative, Susan advised,

> Take it slow. I think just one of the most invaluable things was allowing us just to explore, and have that time. You know, take it, go home, go to different sites, and go do whatever you want to do.

East Data did not offer a pre-adoption program, and Bette commented, "There wasn't a lot [of training] and there doesn't continue to be much."

Ongoing Training. Participants identified ongoing training as a beneficial requirement following the initial introduction of MacBooks and iPads. Participants from South Media Elementary and North Tech Elementary explained that following a year of experimentation with teacher devices, the technology departments began offering technology workshops. These workshop sessions were offered to teachers before and after school hours. East Data Elementary did not offer the pre-adoption year for teachers, but did offer initial and ongoing training. Additionally, all three sites provided on-site technology departments that were open to teachers and students throughout the school day in order to provide immediate access to technical assistance. The employees of the technology department provided ongoing training at regular faculty meetings also.

Paige described it like this: "We really had a couple of faculty meetings where the technology team would come in and share some of the apps that they had found and used when they went to conferences." Susan added, "In our faculty meetings, our dean of technology would come and show us websites that were very helpful that we could use — just things that are out there.**"** Susan expounded on the value of the ongoing training provided at South Media Elementary and explained that several technical specialists had initially visited the school and presented basic computer information to the teachers for several hours. She said,

> We have a faculty meeting usually once a month and at the end of the faculty meeting we always have some form of technology that whether we're teaching it here or giving us some ideas for some new sites that are out there. We bring our laptops to our faculty meetings, so we'll pull up different sites and then actually "do it" instead of just sitting there and listening to somebody present it, which is very helpful.

Connie and Donna described a similar, ongoing professional development program provided by North Tech Elementary as "weekly training sessions." The sessions were announced by email to teachers and offered technical training on a variety of applications, especially common and useful applications such as Google docs. Donna explained the professional development sessions in more detail,

> They were [offered] during school. I just finished some training for finding different content on iTunes at iTunes University. So like for an hour… the Apple Store will come to us, I think it's once a month, and do little trainings on this and that. I did one about a month ago on iMovies. They are optional and just an hour, so it's not too much.

Cindy agreed, "We do get some in-services here and there. And they do offer monthly training on different topics at school that you can choose to go to if you want. That is through the technology department and optional." Connie concluded, "The school has always provided all the training we've needed." This ongoing training has led to a strong, pleasant, and successful integration of student technology in the classroom.

The most notable exception to sufficient time and professional development was at East Data Elementary. Bette expressed her disappointment in the lack of training, saying,

> There is no set schedule for our professional development. It's just set up on half days of school. That's probably the hardest part. It may fall in the hours preceding the start of

school, but here is no follow through. We do not get a lot of data to know if it is being effective. Yes, we're kind of left up to our own devices.

The lack of training was reflected in Bette's comments concerning the 1:1 technology in her kindergarten classroom, "If I had received more support and training, I would be using them in much more innovative ways." She added, "A negative has been my lack of training to implement it and truly integrate it with a five [or] six year old. You could take it out tomorrow and I wouldn't cry."

Immediate Access to On-Site Technical Support Is Required. In this study, participants from all three schools reported that immediate access to on-site technical support also contributed to and was required for the professional development of teachers. Participants noted that immediate access to on-site technical support was a significant factor in their ability to integrate 1:1 technology into their elementary classrooms. The technology departments were described as invaluable resources for technical assistance, training, ideas, and support. The technical employees were described by all 10 participants as "indispensible, go-to folks."

Ellen said, "South Media established a huge technology department just to help in any possible way they can. It's been a very easy go-to for us." She added, "If you want some resources and can't figure out how to get them or what steps, with just a simple email, they're right there to you. We have wonderful support." Amanda described South Media's elementary tech employee, "She is wonderful. You can even just ask her something you're trying to do, and she'll come and help you do it. She'll come and help show the kids how to do it."

Susan added, "We have a wonderful lady who is phenomenal, and she helps us with a lot of our tech questions. And she is our pro around here." Susan appreciated how South Media's

technical director was always willing to jump in and help teachers, how she was always on the go, and always accessible to the teachers. Sheri concurred,

> We have a really wonderful and helpful tech person who will come in like three seconds when we need her. And she has really helped a lot. She is knowledgeable. She is so sweet, so helpful, and she, you know, no matter what question you ask, she is like, "Well, I will find out, and if I can't find out we'll figure this out together." She's really good. She really helps.

Amanda revealed that she had the same experience when she said, "We have so much support! And quick support! We can call them and they are here. And they're Johnny-on-the-spot." Paige confirmed, "It was fabulous when they hired her to come in, and really, she's been fabulous. If we have any questions or concerns, she's right there helping."

Participants at North Tech and East Data Elementary schools also commended the on-site technical crews for their immediate access by teachers and students. Connie described her interaction with the technical crew like this, "I can at any time go and ask them to teach me how to do anything on the computer and they're there and they will tell me — and usually they can do it spot on." Donna also defined her interactions with the technical crew as "very accessible and accommodating." Cindy concurred, "We always have access to them, and so if I ever have a problem they're pretty good about coming quickly to fix that problem." Donna noted the quickness with which the tech crew responded to the teachers' and students' technical needs, "The tech department is very helpful. They're real good at working and are pretty quick with it too. You know, it's [technical help] not something we have to wait on forever."

Bette's perceptions of the East Data Elementary tech crew were equivalent with the other participants. She noted, "They have been a wealth of information." Her comments applauded the

efforts of on-site technology department employees and confirmed the findings of this sub-theme on the necessity of on-sight support saying, "They are indispensible. I think if a school is going to have a technology initiative that they have to have onsite support. It just wouldn't be successful without it."

Informal Teacher Networks. In this study, participants believed that a final factor that contributes to their ongoing professional development was the presence of informal teacher networks. In both the personal interviews and during the focus group discussion, participants were asked about formal or informal teacher networking that had occurred as a result of the 1:1 technology initiative. Participants from the three schools confirmed that no formal networks or teacher forums had been established or organized within their schools by school administrators, yet they all espoused the value and importance of informal networking among teachers. Sheri noted that at South Media Elementary, **"**We mostly we just talk to each other. I can't really say that we have a teacher forum." Amanda confirmed that the fourth and fifth grade teachers got together and shared information about how they were integrating technology. Ellen added that the fourth grade teachers worked together "non-stop" to share ideas and to answer questions such as: "What was the best organization within the classroom?" She added, "None of us teach the same subjects, but we still totally share ideas. And then you can see how you want to use it in your classroom from there. There's definitely a lot of talk about it." Paige said of the kindergarten teachers, "We talk a lot at recess. We try to get together, and if we find something that's fabulous, we'll all get together and put in a request for that app." Noting the informality of the networking, she added, "We work together really well, but a lot of our discussions are on the playground while we're watching the children." When asked about teacher networking opportunities, Lauren laughed and said,

> Yeah, we have to do that a lot! If somebody's talking about something that they've done, we're all like, "Okay, how'd you do that?" and "Where'd you go?" So, yeah, I would say definitely…we were constantly on breaks running up and down and going, "Okay, look. I found this." You know, we would be like, "Oh, we found this great site with this whatever interactive" to go with whatever we were teaching. So, yeah, there was a good bit of that going on!

Donna also described the importance of teacher networking as a means of professional development at North Tech Elementary saying that for a while, North Tech had subscribed to a K12 teacher network website. Although she had enjoyed the opportunity that the website provided to interact with and share with teachers across the United States and around the world, school officials had since discontinued it. Instead, Donna continued, "We get together informally. We talk about those things at recess and lunch. It's kind of limited, but if there is something that we want to share we definitely do that." With a laugh, she added, "And sometimes we'll get emails at seven o'clock at night saying, 'Oh look! I found this.' So, yeah we definitely… I think we're really good about sharing different things." She confirmed the informal teacher networks saying, "We're pretty good about sharing our information. You know, especially something we have found that we think other teachers might benefit from."

Connie also confirmed that teachers network during their planning periods throughout the school day saying, "Everybody at our school is just so willing to help. Teachers have a period of time during the day that I could go and meet with another teacher to see if she's doing something [with technology]." She also explained that teachers networked and discussed ideas for the 1:1 technology at weekly, grade-level, faculty meetings. When asked in the interview about teacher networking opportunities, Cindy reiterated, "One of the other teachers that I work

with is really great about using technology in her classroom, and her kids can do way more than my kids can do. And, so I've learned a lot from her." She continued to explain when and how she worked together with other teachers to discuss the 1:1 initiative, "Really, it's anytime I have a spare second. It could be before school. It could be after school. It could be during a break."

Bette reported the same types of scenarios at East Data Elementary. She maintained that teachers from the same grade level met on a regular basis to compare notes and discuss ideas and projects they were implementing with the 1:1 iPads. She clarified, "We meet in grade-level teams every other week. We often bring up issues at that time, but really it's before school or after school, or maybe during a planning period."

All 10 participants reported that informal teacher networking naturally occurs in their schools. They confirm that teacher networks play an important role in their ongoing professional development and contribute to their ability to more effectively integrate 1:1 digital technology into their daily lessons.

In conclusion, participants answered research question three by sharing their concerted opinion that a pre-adoption program and a significant amount of time is required to successfully introduce teachers to tablets and laptops. They also identify the requirement for on-site technical support to provide an effective, ongoing professional development program. They unanimously agree that immediate access to technical support is a required element of an effective professional development program. Lastly, they place great value on the informal teacher networking that naturally occurs with the implementation of a 1:1 digital initiative.

Composite Textual Description

The composite textual description offers a synopsis of the participants' description of 1:1 technology integration. Using the themes discussed above, the data analysis revealed an overall

group description of what it was like for pre-millennial veteran teachers to integrate 1:1 devices into their elementary classrooms. Regarding pre-millennial, veteran teachers' perceptions of integrating 1:1 tablets and laptops into their elementary classrooms, all 10 participants perceived that the 1:1 technology as being a positive addition to their classroom. This was due in large part to having immediate access to current information. They saw the students' excitement and enthusiasm for the devices as a motivation for students to learn and they believed that handling the devices had increased the level of student responsibility.

Additionally, participants viewed technology as being supplemental to instruction. They expressed the belief that it is the teacher who decides when and how technology is used in the classroom. Although the participants experienced a positive engagement with technology, they believed that elementary-aged children do not need to exclusively use technology to learn. Rather, they believed a balanced approach that includes traditional instruction as well as modern technology to be best for children.

Regarding the participants' perceptions of a change in teaching and the teaching role, five out of 10 participants believed that teaching and their teaching role remained unchanged by the addition of 1:1 classroom technology, three felt their role had changed in some ways, and two saw significant changes in their teaching role. All participants agreed that their years of experience provided them with the ability to choose the best teaching methodologies when applying technology to daily lessons, and they all maintained some concerns about how technology is affecting elementary-aged children.

Finally, regarding the role professional development has played in their ability to integrate 1:1 technology, participants indicated that incremental training and on-site technical support is vital. Nine of the 10 teachers attributed their comfort with the devices to experiencing

a pre-adoption year. All participants shared the belief that sufficient time was needed to successfully integrate 1:1 classroom technology, that consistent and ongoing professional development training was required, and that immediate technical support was needed and required for teachers and students. Finally, participants agreed that informal teacher networks served to extend and support professional development among teachers.

Structural Descriptions

Investigating the integration of 1:1 tablets and laptops into elementary classrooms revealed that pre-millennial, veteran teachers take their role of teaching and protecting young children very seriously. Although they were all involved in schools that had chosen to implement a 1:1 digital initiative, their years of teaching experience equipped the participants with the ability to make judgments and decisions that would best provide for the needs of their students. They viewed their role as that of teacher, sometimes facilitator, and always protector of the children. They each acknowledged the academic value of the digital, 1:1 technology integration, the enthusiasm and excitement the devices brought to the students, and the positive motivation for student engagement. Yet they also possessed the ability to assess the experience with honesty and openness about possible dangers or problems that could accompany technology. Most of their concerns centered on the unknown since this is a new experience and little is known yet concerning the effects of technology on brain development and extended screen time. While the issue of social media did not directly answer a specific research question, participants also expressed concerns about the possibility of an over-emphasis of social media among children in general.

The pre-millennial, veteran teachers shared their initial hesitation about a full, 1:1 integration, but voiced their relief when school administrators allowed a slow, incremental

adoption of and experimentation with teacher devices a full year ahead of the students receiving theirs. All but one participant experienced this advantage. The attention to training and technical support provided by school administrators was highly valued, and having access to on-site technical personnel was considered invaluable. Overall, their experiences were very positive and they looked forward to continuing to grow in their knowledge and abilities to integrate 1:1 technology into their daily lessons. Their only remaining concern was that the 1:1 initiative could possibly lead to student isolation. To remedy this, they suggested a 1:2 initiative that would promote student sharing and collaboration as well as save schools money.

Textural-Structural Synthesis

Examining the overall phenomenon of pre-millennial veteran teachers integrating digital, 1:1 technology into their classrooms gave insight into a history of quality classroom teaching among the participants. The teachers in this study were confident professionals that expressed a love of children and the joy of teaching. They each exuded an air of enthusiasm for the learning process and for life-long learning. This was evidenced in their willingness to participate in the new groundbreaking development of a 1:1 technology program within their schools. Their conversations revealed an underlying respect for the administrative decisions of school leaders to integrate digital, 1:1 technologies. This revealed a care and concern for preparing students for the future with 21st century technologies. Their careful watchfulness also revealed a respect for the financial investment made by the school on behalf of the students.

By engaging with iPads and MacBooks, the participants willingly entered into a shared learning experience with their elementary students. The integration of 1:1 devices was novel for both students and teachers; therefore, they were learning and growing together as they interacted with classroom technology. Participants described instances of learning along with the students

in a seemingly fun adventure of discovering new insights and inroads that lead to a greater understanding of the subject matter and the devices. Teachers acknowledged the interactive nature of project-based learning, research tools, websites that link to the outside world, blogs and videos that open doors of cultural understanding, and finding new applications that connect traditional methodologies with the most modern technologies.

While they view the role of teacher as one of providing information and using discernment to choose the best methodologies for teaching, they have enthusiastically embraced the positive aspects of 1:1 technology. Overall, they have been careful to take a slow, incremental approach that has allowed for the few problems and concerns that have occurred to be handled and when possible, thoughtfully and effectively eliminated.

Conclusion

This chapter described the lived experiences and perceptions of 10 pre-millennial, veteran teachers employed at three private, independent, elementary schools in the southeast as they integrated 1:1 technology into their classrooms and adapted to new teaching techniques. Each participant completed an online survey and participated in an in-depth personal interview. A total of five participants participated in a focus group discussion. These three modes of data collection were used to identify and document the perceptions of the participants.

Through a thorough analysis of the data, four themes were identified that related to participant perceptions of 10 pre-millennia, veteran teachers as they integrated 1:1 iPads and MacBooks into their elementary classrooms and adapted to new teaching techniques. The themes were (a) 1:1 technology enhances instruction; (b) technology is supplemental to instruction; (c) teachers' role and beliefs about teaching are unchanged; and (d) pre-adoption and incremental training and on-site technical support is required.

The first three themes identified teacher perceptions of integrating 1:1 tablets and laptops into elementary classrooms and answered research question one. This study revealed that participants believed: (a) 1:1 classroom technology enhances instruction; (b) has a positive affect on the learning process because of greater access to current information; and (c) serves to motivate learning among elementary students due to the gaming format and the novelty of the devices.

The second theme also identified pre-millennial, veteran teacher perceptions and beliefs that technology is supplemental to instruction, answering research questions one and two. Participants viewed 1:1 technology as exciting tools for teaching and learning that have a positive impact. Participants also believed that a 1:1 technology initiative at the elementary school level should be balanced with traditional classroom instruction. Theme three identified that the participants believed that teaching and the role of the teacher has been unchanged by the integration of 1:1 technology and answered research question two. This theme exposed the participants' perceptions that pre-millennial, veteran teachers' years of classroom experience are helpful in informing them of the best decision-making choices in order to reach a balanced approach to instruction. They believed their years of classroom experience contributed to the decision-making process. Additionally, theme three helped to identify that pre-millennial, veteran teachers still have concerns and fears associated with technology use among elementary school students. Participants shared concerns and fears that centered around the affects of technology on attention spans, communication skills, and exposure to inappropriate content.

This study also revealed that participants believed the best professional development included a full year pre-adoption phase of incremental teacher training prior to the distribution of student devices and answered research question three. Theme four revealed that participants also

thought that ongoing and on-site technical support is required in order to maintain consistent and successful classroom technology integration. Participants acknowledged that immediate access to on-site technical support served to troubleshoot technical glitches and, therefore, aided teachers in remaining on task with their lesson plans. Finally, participants reported that in addition to the professional development programs provided by the schools, informal teacher networks were beneficial in providing additional guidance and training. Participants maintained that these informal networks helped them to successfully integrate 1:1 technology into their elementary school classrooms. All themes and sub-themes are listed below in Table 4.5.

Table 4.5

Research Theme Summary

Research Question One How do pre-millennial, veteran teachers describe their perceptions of integrating 1:1 tablets and laptops into their elementary classrooms?	**Research Question Two** How have pre-millennial, veteran teachers' perceptions about teaching changed since the integration of a 1:1 initiative?	**Research Question Three** What role has professional development played in the participants' ability to integrate 1:1 technology into their educational practices?
Major Themes: 1. Technology enhances instruction 2. Technology is supplemental to instruction 3. Teachers' role is unchanged 4. Pre-adoption and Incremental Training and on-site technical support is required	**Major Theme:** 1. Teachers' role is unchanged	**Major Theme:** 1. Pre-adoption and incremental training and on-site technical support is required
Sub-themes: a. Greater access to current information b. Greater student motivation to learn c. Student excitement and enthusiasm d. Increased student responsibility e. Maintaining balance f. Tool for teaching and learning g. Positive engagement with 1:1 Technology h. Surprise i. Plus sub-themes listed under questions two and three	**Sub-themes:** a. Role of the teacher unchanged b. Experience contributes to decision making c. Concerns and fears: Shortened attention spans, decreased communication skills, pop-up ads	**Sub-themes:** a. Pre-adoption and incremental training and on-site technical support required b. Sufficient time is key factor c. Ongoing training d. Immediate access to on-site technical support is required e. Informal teacher networks

CHAPTER FIVE: DISCUSSION

Overview

Since the launch of the Internet to the public in 1991, information has become digitally and globally connected through technology. The skills of creativity, critical thinking, problem solving, communication, and collaboration are in ever-increasing demand, causing educators and educational leaders to seek ways of fostering 21st century skills among students. Public and many private schools alike now seek to provide 1:1 initiatives of tablets, laptops, and other digital devices to their students in order to provide these skills (Schaffhauser, 2015). A recent study by Downes & Bishop (2015) found that students regard 1:1 technology as being engaging and beneficial to their learning, and a study by Broussard, et al, (2014) found that students' ability to think, organize, and recall is positively affected by the integration of 1:1 technology. Several studies have shown that most students, due to growing up surrounded by digital technologies, easily integrate them into the learning process, but this is not always the case for their classroom teachers (Badia, et al., 2013; Perrotta, 2012; Ramirez, et al., 2012; Sang, et al., 2011). Few studies have examined the perceptions of teachers who did not grow up using digital technology but are now being called upon to integrate them into their classrooms (Orlando, 2014; Perrotta, 2012). No studies were found that investigated veteran teachers employed in private school education as they experienced the integration of digital, 1:1 technology.

This study is concerned with the fact that more than 80% of today's classroom teachers, in both public and private education, are made up of pre-millennial teachers who, having been born prior to 1980 (Houck, 2011; Smith, 2013) did not grow up using digital technologies, yet are integrating them into their daily lessons. Because current educational standards leave no option but for today's classroom teachers of all ages to embrace change and move forward with

the integration of digital technology, it is important to examine the processes through which veteran teachers are accomplishing this task. The purpose of this transcendental phenomenological study was to describe the perceptions of pre-millennial, veteran teachers in private, independent schools as they integrated 1:1 technology into their classrooms and adapted to new teaching techniques. Also, this study examined how the participants' perceptions about teaching change as a result of 1:1 integrations. Additionally, this study looked at the role professional development plays in fostering these changes prior to and during the integration process.

The following three research questions guided this study:

Research Question One: How do pre-millennial, veteran teachers describe their perceptions of integrating 1:1 tablets and laptops into their elementary classrooms?

Research Question Two: How have pre-millennial, veteran teachers' perceptions about teaching changed since the integration of a 1:1 initiative?

Research Question Three: What role has professional development played in the participants' ability to integrate 1:1 technology into their educational practices?

In order to answer the research questions, data from survey questions, personal interviews, and a focus group were analyzed into major themes and sub-themes. The themes reveal the lived experiences of 10 private, independent school teachers as they prepared for a 1:1 digital integration, as they later fully engaged with their students operating the devices, and as they received technical training. The surveys and interviews facilitated discovery of the intimate details of this process and provided a thorough and detailed, firsthand account of the phenomenon.

This chapter includes a brief summary of the findings along with in-depth discussions

related to each theme and sub-theme. Throughout the chapter, current literature provides a clear understanding of the themes. Discussions surrounding the theoretical framework are also provided to explain the theories and related findings. Finally, implications of the study, recommendations, limitations, delimitations, and suggested areas of future research are discussed.

Summary of Findings

Chapter four provided the details of how a phenomenological approach was used to examine the perceptions of veteran teachers who had recently integrated digital, 1:1 technologies into their elementary classrooms. The data revealed participants' perceptions, changes to their perceptions, training opportunities provided, and learning networks associated with integrating 1:1 technology.

Using Moustakas' (1994) recommendations for conducting a transcendental phenomenological study, triangulation was achieved through collecting data from several sources. A deep understanding of the lived experiences was accomplished by extrapolating teacher perceptions from online surveys, personal interviews, and a focus group. These three sources produced a wealth of details concerning the participants' preparation for the 1:1 initiative as well as a plethora of information about the actual classroom integration, training that was offered, and changes that occurred over time. From this data, four major themes emerged: a) technology enhances classroom instruction, b) technology is supplemental to instruction, c) the teacher's role is unchanged, and d) incremental training and on-site technical support is required.

The individual themes answer each of the corresponding research questions. All four themes answer question one, but specifically confirmed that technology enhances instruction and is supplemental to instruction. The four themes combined to provide a detailed description of

participants' perceptions of engaging with a digital, 1:1 technology initiative. The finding stating that the teacher's role is unchanged by technology answers research question two. Lastly, the theme of pre-adoption and incremental training and on-site technical support being required answers research question three.

Research Question One Findings

Research question one asked participants that had taught for more than 10 years to describe their perceptions of transitioning from classroom settings that included limited technology to classrooms where students are engaged with 1:1 digital devices. Themes one and two provide answers to this initial question. The first major theme suggests the following: (1) teaching is enhanced with the use of 1:1 devices because the technology provides students with immediate access to the most current information and, therefore, supplements the teaching and learning process; (2) students are excited and enthusiastic about using the devices; (3) this excitement motivates students to learn; and (4) the use of 1:1 technology has helped to develop a strong sense of responsibility among the student users.

The participants spoke positively about their interaction with classroom digital technology. Their enthusiastic support of 1:1 technology was almost exclusively based on their preparedness for the transition. A yearlong, pre-adoption process with their own, school-issued laptops brought about a sense of comfortability, acceptance, and preparedness to help their students adopt their tablets or laptops once the 1:1 initiative was implemented in the classroom. Perrotta (2013) found that a great number of teachers remain in the role of cautious onlookers instead of moving forward and becoming enthusiastic about utilizing digital technology in the classroom, but participants in this study were allowed a full year to cautiously move forward, and this resulted in a full, enthusiastic engagement.

Mingus (2014) suggested that classroom technology effectively takes the limitations off the teacher and textbooks by opening the vast resources of the Internet to students. Participants in this study support this finding and note that access to current information is one of the most important factors and benefits of integrating digital, 1:1 technology into the classroom. Downes & Bishop (2015) found that 1:1 technology creates active, purposeful, challenging, relevant, creative, and individualized educational opportunities. Participants in this study confirmed these findings and maintained that the students' excitement and enthusiasm for 1:1 technology motivates them to learn.

No previous research was found related to student responsibility with the use of digital, 1:1 technology, but this study revealed that teachers perceive a noted increase in student responsibility in relation to the proper use and care of handling such devices. Being assigned a personal, digital device promoted a sense of ownership among students and resulted in greater responsibility in the classroom. This is a significant finding that should be considered as one of the benefits of integrating classroom technology into elementary classrooms.

The second major theme is technology is supplemental to instruction. Hutchison & Reinking (2011) found that 67% of teachers in their study believed technology is supplemental to instruction, while only 29% believed technology is central to instruction. Participants in this study supported these findings. The following sub-themes reveal the several ways participants believe technology can supplement instruction: (1) a balance should be maintained between traditional and modern teaching methodologies; (2) 1:1 student technology is a valuable tool for teaching and learning; (3) pre-millennial, veteran teachers experience a positive engagement with classroom technology; and (4) pre-millennial, veteran teachers express surprise over the pleasant engagement and integration process of a 1:1 integration.

Research Question Two Findings

Research question two sought to identify if and how pre-millennial teachers believe a digital, 1:1 technology initiative changes the role of the teacher and the teaching process. The majority of participants affirmed that their perceptions about teaching have remained the same throughout the 1:1 initiative. Participant beliefs regarding the degree of change in their roles varied. Nine participants perceived a slight change, and only one participant noted a definite change. Ejiwale's (2012) research noted a shifting role of the teacher from instructor to facilitator when engaged in a 1:1 technology integration. This study found that most pre-millennial elementary school teachers continue to view their role as being unchanged by the addition of 1:1 technology to their classrooms. Participants concluded that some lessons required a teaching role, while others necessitated that they only facilitate the learning process.

This study also identified that pre-millennial, veteran teachers possess a confidence in their ability to discern, choose, and apply sound teaching methodologies when applying technology to daily lessons in the classroom. This confidence is based on the number of years of teaching experience. Williams' (2012) research supports this finding that the requisite years of experience provide teachers with the wisdom and knowledge base to determine the best use of methods, roles, and technology use.

Finally, although participants in this study reported a positive engagement with digital technology, they still retain several concerns and fears related to technology use among young children. Participants are concerned with possible negative aspects brought about by 1:1 technology and its effect on: a) attention span, b) communication skills, and c) inappropriate pop-up ads.

Bauman, et al. (2014) called for ongoing studies on the effects of technology on the brain. This was also a concern among participants in this study. Purcell, et al. (2012) found that 87% of the teachers in their study believed that technology is creating a generation of students with short attention spans. Participants in this study were concerned with shortened attention spans among students. Participants also believed that engagement with technology causes a decrease in communication skills; thus, supporting Herman's (2012) claim that the use of technology interferes with the establishment of basic behavioral cues.

Additionally, participants expressed great concern that students would be exposed to inappropriate content through unsolicited ads that pop-up on device screens. Due to viewing their role as protector of their students, the participants view this unpredictable and uncontrollable aspect of Internet use as a significant threat and concern. They believe it is the teacher's responsibility to protect their innocent young students from exposure to inappropriate content. This protective responsibility is vital to their commitment to teaching.

Research Question Three Findings

Research question three explored the role that professional development plays in teachers' ability to integrate digital, 1:1 technology into their educational practices. Additionally, this question sought to identify the ongoing training that is required to successfully integrate 1:1 devices. This question also investigated teacher perceptions in order to identify the ongoing training that is required. Lastly, question three asked about the formal or informal teacher networks among teacher groups that help to extend and support their professional development.

The major theme that surfaced is that for a quality, 1:1 digital initiative to be successfully implemented, pre-adoption and incremental training and on-site technical support is required. This study revealed that the success of a 1:1 initiative is dependent on the professional

development programs offered both prior to and during implementation. Participants are dependent on the ongoing technical training and support offered throughout the school year. Several sub-themes also surfaced that support this theme. Collectively, participants attributed their successful integration to having sufficient time to experiment with their own school-issued laptops a full year prior to the student 1:1 initiative. Also, participants reported that once the students received their tablets or laptops, having immediate access to on-site technical support is invaluable. They viewed such technical support as a necessity, rather than a luxury, when dealing with daily use of technology.

Finally, this question revealed the sub-theme that informal teacher networks serve to support and extend professional development among teachers. Even when professional development training is available, informal teacher networking occurs when teachers learn from each other. Informal teacher groups are common and become a valuable source of ongoing teacher training. Teachers support and identify with each other in the areas of technical deficiencies and are more comfortable sharing authentic needs and questions concerning technology with one another. Teachers are more willing to express a lack of understanding and to offer hands-on, practical solutions to other teachers that may also be struggling with technology. These informal teacher networks become the scaffolding through which teachers support, train, and encourage one another.

Discussion

The following is a discussion of the findings of this study as they relate to the empirical and theoretical literature review. This study was guided by two major theories relative to educational change and adult learning: Ely's (1990) Conditions of Change and Mezirow's (2000) Adult Transformative Learning. These theories were identified in relationship to this research

because today's veteran teachers are encountering new digital technologies that require them to change in specific ways. These changes are unique to pre-millennial, veteran teachers because they did not grow up with the constant presence and continuous use of technology the way that their counterparts, millennial teachers, did. Classroom 1:1 initiatives involve direct and daily engagement with digital technology for students and teachers alike. This constant engagement requires pre-millennial teachers to alter their long-held traditional teaching methods and to adapt to new techniques. Digital, 1:1 initiatives require new ways of thinking and interacting with technology and today's students. The findings of this study support the theories that frame this study.

Conditions of Change Theory

Educational change is unique to educational settings and applies specifically to teachers as they experience pedagogical changes. Ely's (1990) Conditions of Change theory helps to explain the conditions under which change occurs in education. Previous research has found that 1:1 computing leads to measurable changes in teacher practices and student engagement (Arnold, 2015). Therefore, Ely's (1990) COC theory is helpful in identifying the conditions and attributes that facilitate change and in linking specific conditions to educational change. Many of these conditions exist surrounding the 1:1 digital initiatives and pre-millennial, veteran teachers involved in this study.

The first and most prevalent condition that surfaced during this study concerns time. Ely (1990) notes that all change takes time. Teachers must have time to learn and adapt to educational changes. Sufficient time to implement a 1:1 initiative played a major role in this study. Foote's (2012) research noted how digital integrations create an exploratory climate on school campuses. Participants noted the importance of the pre-adoption phase in which they

received sufficient time to explore the Internet and experiment with their own school-issued laptops. Grundmeyer's (2013) research revealed that pre-adoption applications assist teachers to successfully integrate 1:1 technology. Grundmeyer (2013) also noted that schools that jump into a digital 1:1 initiative without taking enough time for planning, forethought, and teacher training actually lose many of the gains that 1:1 initiatives were originally designed to achieve. Participants in this study shared that for them, the notion of "sufficient time" included a pre-adoption phase of a full year prior to implementation of the student 1:1 initiative. The results of this study show that a one-year pre-adoption phase provides invaluable time for the teachers to work, play, explore, and experiment with their own laptops, and thus, successfully prepare for integrating 1:1 student devices into classrooms.

Throughout the interviews, participants shared their appreciation of the slow, incremental pre-adoption phase and noted that by the time the student 1:1 initiative was launched, they felt well prepared and undaunted by the integration. Additionally, participants reported a general concern about wasting valuable teaching time when technical difficulties arose in the classroom. By the time the student 1:1 initiative was implemented, participants were able to encounter and resolve many basic technical issues within the classroom. The study results revealed that sufficient time with devices gives teachers confidence and efficacy in their ability to utilize and apply technical knowledge and to handle minor technical issues.

Those who are being asked to change must be trained (Ely, 1990). The second COC applicable to this study explains that sufficient skill and knowledge are required for lasting change to occur. The results of this study show that most participants received initial skills and basic knowledge of how to operate iPads and MacBooks throughout a yearlong pre-adoption phase. Participants reported that as soon as the pre-adoption began, the schools initiated weekly

workshops and offered regular training sessions. Past research indicated that professional development training for teachers is a key vehicle through which to improve teaching and integrate student technology (Bradshaw, et al., 2012; Fletcher, 2012; Grundmeyer, 2013; Hutchison & Reinking, 2011; Mingus, 2014; Petrie & McGee, 2012). Participants shared that professional development and ongoing training processes continued throughout the school year, and informative technology related workshops were offered and taught by highly qualified technology department staff. This study's results show that regular professional development and training instills the knowledge and provides the skills to successfully integrate 1:1 technology.

Ely's (1990) third COC calls for availability of resources — funds, tools, and other materials to successfully implement change. Downes and Bishop (2015) found that both public and private schools are making an effort to improve teaching and learning by making the financial investment required to embed classrooms with tablets and laptops for all teachers and students. Participants in this study shared that the private, independent schools in which they are employed secure funds to provide teacher laptops and 1:1 student iPads and MacBooks. Additionally, previous research found that today's classroom teachers are expected to enhance learning by identifying and utilizing the most effective teaching tools and methodologies (Clarke & Zagarell, 2012). Other studies have found a vast difference in perceptions regarding technology use in the classroom among teachers, as some teachers view technologies as tools to facilitate all student learning while others view them only as add-ons to traditional pedagogical practices (Song & Looi, 2012). In their study, Cviko, et al., (2012) found that in both approaches, when coupled with positive expectations, teachers perceive digital, 1:1 technology as being a supportive learning tool.

Additionally, Flanagan and Shoffner (2013) found that while novice teachers believe digital technology plays a primary role and center instruction on available technologies, experienced teachers view technology as playing a secondary role to be integrated only if they add to and advance instruction. In this study, participants identified 1:1 technology as secondary tools to add to their traditional teaching practices when they believed they would enhance the teaching and learning process. As shown in the results, the participants in this study were also supplied with other resources such as computer applications, technical assistance, and ongoing training. Participants agreed that when resources and tools are available, 1:1 initiatives are easy, effective, and pleasant for students and teachers.

Those who are asked to change must be involved at the decision-making level. This COC is described as ownership. Building upon this theory, teachers should be the decision-makers concerning the teaching and learning processes used within their classrooms. Previous research shows that teachers who have a sense of ownership and choice are more likely to invest in improving and expanding pedagogical practices (Bostock, 2012). Participants in this study reported that the overall decision to implement a digital, 1:1 technology initiative did not rest with teachers but with school administrators; however, when, how, and in what capacity to integrate 1:1 technology within their classrooms rested solely with the individual teacher. Some participants stated that they utilize the student devices 15 minutes a day, while others use them for several hours. None of the participants neglect to implement digital technology into at least one lesson per day, and all participants reported that the decision-making process of when and how to integrate the student devices is guided by their personal and professional choices. Participants reported that their years of experience contribute to their ability to make meaningful and advantageous decisions about the utility of classroom technology. Results confirm that the

participants in this study experience buy-in and ownership due to the decision-making options afforded them.

Unique to this study is the ownership and responsibility exhibited by the students involved in a 1:1 technology initiative. There is a lack of literature on student responsibility as associated with digital technology; however, in this study, all participants — regardless of the grade level they teach — reported the care with which their students handled the iPads and MacBooks. Participants noted that a sense of responsibility developed among the students when they received the devices, and attributed it to both teacher instruction and the balanced approach by which the devices were implemented. Since the students did not interact with the devices all day, they appeared to appreciate the time they were allowed to use them. Therefore, utilizing 1:1 digital devices became a privilege, not an assumed entitlement. This data shows that limiting the use and time of the 1:1 initiative creates an appreciation among students for the devices that results in responsible care and use.

Leaders must supply the ongoing support and enthusiasm for implementing change. Looking at the themes in this study, enthusiasm, professional development, ongoing training, and teacher networks align with Ely's (1990) factors for leadership. Participants shared that in addition to the professional development training and workshops offered by the schools, informal teacher networks developed as an additional source of information, training, and support. Informal teacher networks provide the framework for leadership among teachers. This study confirms that teachers offer mutual support, teachers teach teachers, and teachers learn from teachers by observation, conversation, and imitation.

Adult Transformative Learning Theory

The second theory aligned with this study is Mezirow's (2000) Adult Transformative

Learning theory. This theory is based on the belief that transformative learning occurs because of a disorienting event (Mirci & Hensley, 2010). Transitioning to a digital 1:1 initiative can be a disorienting event that requires change for pre-millennial, veteran teachers. Therefore, ATL supports the results found in this study.

Adults have the unique ability to think for themselves based on personal life experiences (Mezirow, 2000). Participants in this study are all adult, pre-millennial, veteran teachers who describe decision-making processes with confidence and professionalism. Previous studies show that teachers are the final decision makers regarding the extent to which technology fits into their teaching methods (Bebell & Kay, 2010; Badia, et al., 2013; Clarke, 2012; Mingus, 2014). ATL claims that personal experience, based on insight and understanding, informs meaningful decision-making. The knowledge and understanding gained by many years in the classroom give veteran teachers the ability to make meaningful decisions about using digital, 1:1 technology in the classroom.

Throughout this study, participants expressed that their years of teaching inform the decision-making process of when and how technology is used in the classroom. Participants reported that they chose when to introduce the iPads and MacBooks to the students. They also explained how they purposefully chose the specific subjects and the length of time the integrations occur. They described the decision-making process in light of their personal experiences and professional preferences.

Life experience contributes to an adult's unique ability to assign meaning to events and changes in the world around them (Mezirow, 2000). Previous research shows that education that is integrated with technology effectively takes the limitations off the teacher and textbooks by opening the vast resources of the Internet to students (Mingus; 2014). Participants in this study

believe that digital technology enhances instruction in the classroom by supplying immediate access to unlimited information. Other studies have shown that the push for Internet connectivity in education is made in an effort to provide students with 21st century skills that will help prepare them to compete for jobs globally in a highly digital world (Chan, 2010; Ejiwale, 2012; Howard, 2011; Mingus, 2014; U. S. Department of Education, 2014; Williams, 2012).

Participants also expressed an understanding of the need for developing 21st century skills among students and a desire to prepare students for the future. Participants articulated the importance of integrating digital technology into their classrooms, yet their life experiences dictate that the integration be done in a balanced and supplemental manner. They did not feel a need to implement change simply because other teachers or schools are doing so. As Mezirow (2000) suggests, they do not see the need to run with the herd when making classroom integration choices. Instead, the data show that participants allow the educational needs of the students to direct and inform those choices.

Previous research suggests that due to not growing up with constant access to technology, pre-millennial teachers actually have an advantage in maintaining a more balanced relationship interfacing with media (Kaiser, 2010). Participants in this study supported this finding when they expressed the desire to maintain a balanced approach when integrating new technology with traditional teaching methods. Unfortunately, some current studies show that extensive use of technology results in decreased interpersonal skills associated with communication, empathy, and connectedness, as well as a lessened depth of knowledge and thinking (Hodge & Harman, 2013; Purcell, et al., 2012); yet, other studies claim that student control over the learning process improves communication skills Tucker (2013). Participants in this study expressed immense

concern that an over-exposure or extended engagement with 1:1 technology will result in shortened attention spans and decreased communication skills among their students.

Interestingly, to help remedy this concern and meet the social and interactive needs of students, participants recommend a 1:2 digital initiative. This suggestion is based on the classroom experience of participants as they observed students engagement with one another, viewing other students' screens, and inquiring about Internet site locations, many times leaving one iPad or MacBook unattended. Participants found that pairing students during project-based assignments with one device shared between them was a much more practical use of time and also promoted the social interaction desired by most students. It was thought that this approach would promote communication, encourage connectedness, and save schools money.

Unique to this study, participants also expressed concern that 1:1 technology will lead to exposure of inappropriate pop-up ads and content for young students. It is believed that the desire to limit technology use and maintain a balanced approach is founded on these concerns. There is a lack of research on the topic of student exposure to inappropriate Internet content; however, it was a common experience and concern of the participants. With these concerns in mind, ATL also purports that adults, unlike children, have mental and emotional abilities that allow them to take ownership of social roles and to develop self-authorship in order to enhance the world and society. This aspect of ATL aligns with the data related to the fears and concerns participants associate with 1:1 technology. ATL explains the participants' sense of ownership and self-authorship as they relate to feelings of responsibility and the desire to limit the use of 1:1 digital technologies in order to prevent negative consequences and inappropriate episodes.

Adult learners are able to think, consider, and critically reflect on a new concept, to consider its validity, and then to act independently as they orient themselves to change

(Mezirow, 2000). As shown in the results, the participants in this study entered a one-year pre-adoption phase in which they were able to think about, experiment with, and consider the validity of digital, 1:1 technology. As logical as this idea may be, there is a lack of research on pre-adoption programs, indicating that this is not typically employed during most 1:1 initiatives. As participants in this study critically experimented with their own laptops and reflected on their usefulness, they came to view them as being excellent research tools.

Novel to this study is the pleasant surprise among pre-millennial, veteran teachers with their engagement with their own school-issued MacBooks. Cviko, et al. (2012) found that teachers who hold constructivist, student-centered approaches to teaching and learning and have positive perceptions of integrated classroom technology, whereas teachers who hold traditional, teacher-centered approaches have negative perceptions of integrated classroom technology. This finding was initially true for participants in this study, but the one-year pre-adoption phase promoted a positive experience. This shows that as pre-millennial teachers engage with digital technology, they re-orient their initial expectations associated with its use over time. Teachers in this study came to realize the validity of digital devices as valuable tools that enhance and supplement their instruction. This data indicated that extended engagement with digital technology could result in a surprising and positive experience for pre-millennial, veteran teachers.

Finally, ATL promotes effective discourse that is free from coercion, critically reflective, empathetic to other perspectives, and incorporates a willingness to search for common ground (Mezirow, 1997). Since more than 80% of today's classroom teachers qualify as pre-millennials, giving voice to this unique group is important to the research. This study found that pre-millennial teachers value discourse in order to learn from one another, but also to share common

fears, technical deficiencies, and concerns. Participants shared that coercive-free conversations occur during teacher training workshops and in informal teacher gatherings and continue during breaks, at recess, and after school. They also noted a willingness and desire to learn from school-employed technology directors. Participants place a high value and dependency on staffing that provides technical assistance. They voiced common ground in their willingness to learn new skills, identify new applications, and apply new teaching strategies within their classrooms.

Implications

The purpose of this transcendental phenomenological study is to describe the perceptions of veteran teachers that recently integrated digital, 1:1 technologies into their elementary classrooms. Data was collected from online surveys, personal interviews, and a focus group. From the analyzed results, the following four essential themes emerged to describe the shared essence of the phenomenon: (a) technology enhances instruction; (b) technology is supplemental to instruction; (c) teachers' role is unchanged; and (d) pre-adoption training and on-site technical support is required. Implications of the four themes and several sub-themes are addressed below.

Technology Enhances Instruction

The implications of this study are important to educators and have far-reaching inferences into educational settings and decision-making. Technology enhances instruction in several significant ways. Most notably, teaching is enhanced with the use of 1:1 devices because the availability of the Internet provides students with immediate access to the most current information and, therefore, supplements the teaching process. This implies that both public and private schools should consider the financial investment of student digital technology rather than consuming information from outdated textbooks or continuing to invest in printed materials and resources for school libraries.

Teachers view the relative ease of maintaining massive amounts of information as being one of the greatest benefits of integrating technology into the classroom. Such technology provides students and teachers with extensive libraries and ready access to a vast array of texts, dictionaries, encyclopedias, and books on digital devices (Schugar, et al., 2013). Indeed, Battro and Fisher (2012) describe the digital environment as an expanded school without borders, noting that the Internet has created a revolution of information filled with online access to thousands of teaching and learning activities. These implications also support Schaffhauser's (2015) findings that digital 1:1 initiatives of tablets, laptops, and other digital devices serve to personalize instruction as never before and Mingus's (2014) conclusion that 1:1 initiatives provide every student equal access to information.

As technical devices have become smaller, more portable, and increasingly interactive, schools have integrated digital, 1:1 technology initiatives with the goal of increasing student engagement with curriculum and promoting a strong motivation to learn (Bebell & O'Dwyer, 2010; Ciampa, 2012; Milman, et al. 2012). The finding in this study that 1:1 technology serves to motivate student learning implies that the novelty of 1:1 classroom technology helps promote learning. Supporting these findings, Foote (2012) found that 88% of students surveyed reported that classroom digital technology enhanced their learning experience and motivated them to learn. Additionally, Zipke (2013) found that teachers are generally receptive to any teaching practice that promises to motivate student learning. Therefore, it is implicit that teachers desire to interact with and embrace classroom technologies in an attempt to promote student learning.

Another motivational aspect to 1:1 initiatives is student enthusiasm about using 1:1 devices. Milman, et al.'s (2012) mixed-methods case study found that PreK-fourth graders exhibited high levels of student engagement, collaboration, and enthusiasm for using tablets in

elementary classrooms. In Downes and Bishop's (2015) study, students consistently regarded 1:1 technology as being engaging and beneficial to their learning. Milman, et al, (2012) found that students enjoy tablets due to their convenience, portability, automatic updates, and customization for kinesthetic learners. This implies that novelty is exciting to students and that their curiosity to engage with technology serves to motivate learning.

A novel finding of this study is that the use of 1:1 technology helps to develop a strong sense of responsibility among student users. Being assigned a personal device promotes a sense of ownership among students and results in greater responsibility in the classroom. The implication is that students will respect and take care of devices of which they are in charge. Participants described how they assigned digital devices to students and required students to handle them with care, to only visit approved websites, and to plug them in overnight. Additionally, teachers allowed students to experience the natural consequences of not following these directives. The natural consequence was not having a charged device to use the next day, further implying that teachers can use 1:1 technology to teach responsibility to students.

Technology Is Supplemental To Instruction

The finding that technology is supplemental to instruction implies that technology should be viewed as an aid to instruction. It is significant that then-U.S. Secretary of Education Arne Duncan admitted that technology alone will not improve student achievement, but rather that great teachers working with technology is the best combination to engage students in the pursuit of learning (see www.ed.gov/oii-news/use-technology-teaching-and-learning). This study's finding that pre-millennial, veteran teachers maintain a balance between traditional and modern teaching methodologies supports this belief. The implication is that schools providing 1:1 devices should not only focus on the technology instruction, but also ensure that both the face-to-

face and digital learning is of the highest quality (Patrick & Sturgis, 2015). Until more substantial evidence of long-term consequences is available, parents and teachers are advised to help children develop the ability to balance technology with the mind's deeper need to engage in tasks of mental substance (He, 2013; Herman, 2012; Phillips, et al., 2012; Vance, 2012).

This study also found that pre-millennial, veteran teachers view 1:1 student technology as a valuable tool for teaching and learning. This implies that these devices serve as tools that aid the established practices, rather than mandatory necessities in the classroom (Prestridge, 2012). This view will ensure that teachers remain well prepared to continue appropriate instruction when technical glitches occur. Pre-millennial teachers express an enjoyable interaction with the integration process of a 1:1 initiative and a positive engagement with classroom technology following a one-year pre-adoption phase. Their enthusiastic support is almost exclusively based on their preparedness for the transition, implying that yearlong pre-adoption processes work well to prepare pre-millennial teachers for a 1:1 initiative. Intrinsic rewards are implicit to promoting and sustaining change. Vermeulen's (2013) survey of data from 1,484 teachers confirmed teacher attitude toward digital learning devices as the strongest predictor of their use. Therefore, teachers' positive engagement with digital technology implies positive classroom integration.

Role of Teacher Is Unchanged

The majority of participants affirmed that their perceptions about teaching have remained the same throughout the 1:1 initiative, yet they acknowledged that some lessons require a teaching role, while others necessitate that they only facilitate the learning process. Many studies have noted that the integration and focus on digital technology has initiated an unprecedented educational paradigm shift away from recognizing teachers as sources of information and toward identifying teachers as facilitators (Bostock, 2012; Ejiwale, 2012; Potter & Rockinson-Szapkiw,

2012); yet, this study indicates that both roles remain important to pre-millennial teachers. The implication is that teachers should develop the ability to transfer back and forth between the two roles as needed in order to meet the changing needs of a diverse group of students.

This study also implies that transitioning between the role of teacher and facilitator is not a difficult task for pre-millennial teachers. Due to their requisite years of experience, pre-millennial teachers possess the ability to determine the best use of methods, roles, and technology. Additionally, these experienced teachers provide a wide range of background knowledge and valuable insights into pedagogical processes when it comes to educational practices, tools, and methods.

Pre-millennial teachers also have the wisdom and knowledge to discern potential dangers associated with Internet use. This implies that educators and technology directors should be made aware of their voiced concerns in order to place the appropriate safeguards and filters on student devices. This study identified three major concerns articulated by pre-millennial teachers related to 1:1 technology use: a) shortened attention span, b) lack of communication skills, and c) inappropriate pop-up ads. Other research has noted problems with unwanted activities that tablets and laptops offer to distract and tempt students to play games, cheat on tests, and engage in other off-task options (Tallvid, et al., 2015). Statistics reveal that about half of children have unregulated access to media — that half of children may be socially, academically, and morally affected, perhaps permanently, by images that decrease empathy, shorten concentration, and foster isolation instead of conversation (Herman, 2012) This study implies that schools, technology departments, and classroom teachers have a moral obligation to protect students from exposure to inappropriate content and to promote social interaction.

Pre-adoption, Incremental Training, and On-site Technical Support Required

Studies identify the lack of teacher training as the greatest challenge of classroom technology integration and as the greatest barrier to improved technology use in education (Grundmeyer, 2014). Digital technologies have been introduced into classrooms with the expectations that teachers will embed them into their existing practices, but this is often done with little or problematic professional development (Attard, 2013; Orlando, 2014). The results of this study imply that for a quality, 1:1 digital initiative to be successfully implemented, it must be preceded with a pre-adoption phase of at least one year during which teachers work, play, and explore using their school-issued devices. Additionally, this phase must include a systematic plan that provides incremental training and on-site technical support. Teachers involved in a 1:1 initiative are dependent on ongoing technical training and support offered throughout the school year; therefore, a program of continuous professional development is vital. Effective and job-embedded professional development is especially important to elementary school teachers who are required to teach numerous subjects across the curriculum (Petrie & McGee, 2012).

Results from this study also imply that when given the time and opportunity, teachers will naturally form informal networks that serve to support and extend their professional development. Even when professional development training is lacking or readily available, teachers learn from other teachers, making informal teacher groups valuable sources of ongoing teacher training and mentorship. Additionally, professional learning communities crop up spontaneously when teachers meet for lesson planning, team teaching, or during recess. Conversations can lead to valuable information concerning digital implementation. Orlando (2014) notes that informal learning communities are effective for promoting mutual respect and sharing relevant knowledge among teachers. It is implicit that schools should plan for and

provide time for informal groups to assemble and open opportunities to use the expertise that already exists among teachers to develop mentoring, coaching, and team teaching.

Lastly, the results of this study imply that ongoing professional development and on-site technical support is a necessity when implementing a digital, 1:1 technology initiative. When each student and teacher is required to use a device throughout the school day, even the smallest school will require a full-time technology professional, extensive funding, and adequate internal structures such as sufficient broadband width. Teacher workshops, technical instruction programs, and immediate assistance will be required. Therefore, it is also implicit that technology departments must be well funded and staffed with enthusiastic, knowledgeable, efficient, and friendly professionals that enjoy technical troubleshooting and interacting with adults and students alike.

Practical Implications

The findings from this study provide a clear understanding of the perceptions, perceptional change about teaching, and the effectiveness of the professional development provided to pre-millennial, veteran teachers when involved in a 1:1 initiative. These factors directly affect the success of 1:1 technology integration and help to fill the gap in literature concerning the experiences of pre-millennial teachers as they transition from traditional teaching methods to technology centered teaching strategies. From the findings of this study, the following specific recommendations are offered:

Recommendations for Educational Leaders and Decision Makers

This study provides educational leaders and decision makers with the knowledge of how to better understand, serve, and best meet the needs of the majority of classroom teachers: pre-millennial, veteran teachers. Educational leaders and decision makers in both public and private

schools have the greatest impact upon ensuring that financial expenditures toward classroom technologies are well spent. Additionally, educational leaders should know if and how 1:1 initiatives are effectively implemented.

The results of this study indicate that these stakeholders should seek out veteran teacher voices with regard to classroom technology. Respect and value should be given to veteran teachers' opinions, questions, and concerns due to their years of teaching experience and their extensive knowledge of child development and learning processes. Listening to veteran teachers can help inform choices when selecting professional development programs, technical personnel, and security filters. Additionally, this study indicated that when planning for a 1:1 initiative, leaders should plan for sufficient time for teachers to pre-adopt their own device. By extending the process by one year, teachers become comfortable with the technology by experimenting with their device, integrating technology into their lesson plans, learning multiple applications, and practicing basic trouble shooting skills. School leaders could preclude having disgruntled teachers and save instructional resources by providing teachers with the time, tools, and support they need.

Additionally, school leaders should make wise financial decisions by hiring qualified and efficient technical personnel to provide ongoing technical training and support to teachers and students. Finally, school leaders should consider the option of a 1:2 initiative instead of a 1:1 initiative in order to promote social interaction, improved communication, team building, and project based opportunities for students. Such a program would effectively save the school half the cost of devices.

Recommendations for Teachers

This study looked at the perceptions of pre-millennial, veteran teachers, yet all teachers could benefit from their years of knowledge and wisdom. A major recommendation for instructors is to enjoy the processes of learning new and integrative technologies — they should exhibit lifelong learning to their students. When educational change occurs, teachers should use the culmination of their gained knowledge and understanding of educational processes to provide an assessment of it. While integrating new methods, programs or devices, all teachers should maintain a balance between novel and more traditional, proven strategies and practices. They need to develop the skill of transitioning between the role of teacher and facilitator, carefully discerning the students' changing needs. They should also consider how classroom technologies might be used to promote student responsibility. Additionally, teachers must continue to advocate for the child, serving in the role of protector by maintaining a moral obligation and commitment to speak out in defense of childhood innocence.

Lastly, this study encourages teachers to think for themselves and avoid adopting teaching methods or practices simply because others are doing so. Teachers should ask questions, seek solutions, and require reasonable and logical answers from school leaders — especially when educational change is involved — prior to empirical evidence of the effectiveness of the new application or method is lacking. Additionally, teachers are encouraged to join both formal and informal learning communities and teacher networks, afford themselves all the training that is available, become obvious life-long learners to their students, and always ask for help, realizing that their questions may be common and the answers may be helpful to others.

Recommendations for Technology Directors

This study provides valuable information for technology professionals employed in educational settings. Recommendations include planning a systematic professional development plan that includes a pre-adoption phase of at least one year in order to successfully meet the needs of pre-millennial, veteran teachers. Also, technology directors are encouraged to present training opportunities such as the "Meet your Mac" introductory session, to offer regular, hands-on training workshops, and to offer training seminars at different times of the day to meet the needs of the teachers.

Additionally, technology personnel should provide efficient, immediate service, attending to the technical needs of students and teachers. Such accessibility may require additional staffing, so technology directors should build and develop technical departments by hiring additional employees to provide the technical resources, training, and assistance needed by teachers and students. Lastly, technology directors should respect teacher experience, by listening and addressing teachers' concerns and fears. Directors should also maintain a moral obligation to protect the students within the school by installing appropriate filters, setting sufficient safeguards and placing protective software on devices.

Delimitations and Limitations

Delimitations

As in every study, some delimitations and limitations are present in this research. The first delimitation was associated with purposeful sampling. Due to the topic under investigation, I chose to focus only on pre-millennial, veteran teachers: those born prior to 1980. Also, this study included only those teachers who taught elementary school, those who had taught for more than 10 years, and those who held a highly qualified status. These delimitations purposefully

excluded all other teachers. In addition, I chose to focus this study on teachers employed in three private, independent schools. This study did not include other public or private schools educators. The demographics of the schools also delimited this study. The schools involved were all located in the southeastern United States. Specifically, participants were selected from three private, independent schools in the southern United States: one in Alabama, one in Mississippi, and one in Louisiana. It is possible that the experiences and perceptions of teachers from other locals would yield different data results.

The study was conducted only in three private, independent schools and reflects the experiences of this particular group of participating teachers. While the sample could not be described as being representative of the experiences of *all* veteran teachers, it seems unlikely that the findings presented here would be limited to this group of teachers. Then too, this study looked at only schools involved in a digital, 1:1 technology initiative. The three schools involved had recently moved to an all-digital learning environment following 18 months of research, implementation, and measurement. Since their digital 1:1 initiative, the schools reported an increase in test scores, specifically in reading and math. Additionally they reported a decline in disciplinary problems.

Limitations

There are also several limitations associated with this study. The first limitation was the volunteer nature of the teachers who chose to participate. This limitation resulted in a homogenous group of 10 participants—all were female and all were Caucasian. It is supposed that a group of participants more diverse in age, gender, and ethnicity and a greater number of participants might have produced different themes. Additionally, I was the only one to code the data; therefore, it is presumed that another researcher might have noted other major themes and

sub-themes. Other limitations were the subjective memories and the honesty of the participants. Furthermore, an important limitation to note was that all participants worked in schools that provide excellent technological affordances. Opportunities offered to teachers in schools with a lesser technology focus or inadequate funding might yield dissimilar results.

As the settings were outside a convenient distance to the researcher, an online survey was employed and phone interviews were conducted. Although this allowed the researcher to spend extensive time conversing with the participants, it also presented a very explicit limitation by not providing face-to-face interviews. Face-to-face interviews would have led to deeper and richer descriptions of body language and facial responses. While two of the participating schools were located outside a reasonable distance for the researcher to travel, one was near by and face-to-face interviews could have been conducted. Additionally, an on-line focus group could have been conducted, yet, when responses reflected participants from the near-by location, the researcher chose to travel to the location to conduct a face-to-face focus group discussion. While the face-to-face focus group served to strengthen the study, to further advance the findings, an additional on-line focus group, involving all participants, could have been scheduled.

A qualitative approach was appropriate for descriptive and analytical purposes, but the findings may not be generalized to other populations or settings. Another limitation of this study was the subjective memories of each participant (Cordes, 2014) and the honesty of the participants. Some participants may have remembered and presented events differently from reality, and others may have been more forgetful by nature. Furthermore, this study was dependent on the participants' willingness to engage. Some participants may have been reluctant to share personal thoughts and beliefs during the focus group. Additionally, participants may

have given answers that they thought were wanted in an attempt to please the researcher or other members of the group (Cordes, 2014).

Other limitations include the lack of an equal number of male teachers and those imposed by the specific survey questions. Further, the participants all worked in schools that provided excellent technological affordances. Opportunities offered to these teachers might not have been those offered to teachers in schools with a lesser technology focus (Orlando, 2014). While it may be assumed that this research could be generalized to other parts of the United States, only its replication would confirm that.

Recommendations for Future Research

This study sought to hear the voices of pre-millennial, veteran teachers as they described their lived experiences and their perceptions during this transitional process of integrating digital, 1:1 technology into their classrooms following many years of teaching without it. Although pre-millennial teachers make up the majority in the educational workplace, and experienced teacher perceptions are crucial to the success of new programs (Clark & Zagarell, 2012; Hertzler, 2010, Liu, et al., 2010), few studies have looked exclusively at this unique group of teachers. While this study helps to fill the gap in the empirical literature on pre-millennial teacher perceptions prior to and during digital, 1:1 technology integrations, replicating this study with a larger sample across multiple educational settings would provide a more rich description of the phenomenon. This study should be replicated among public school pre-millennial teachers and with students of all ages. By adding student perspectives, a fuller, more robust understanding of the phenomenon could be gained.

Because of the many important factors associated with 1:1 technology, many more questions arose from this study. Further research is recommended to study:

- The long-term effects of daily technology use on elementary children;
- The effects of digital technology on children's cognitive development;
- The effects on the brain as children use computers;
- The effects of 1:1 technology on student achievement;
- Shortened attention spans associated with technology;
- Communication skills associated with technology;
- Pre-adoption programs; and
- Quality, on-site technical support.

It is clear that much more qualitative research is required to explore these numerous issues, to identify the various factors related to technology enriched education, and to offer solutions for today's pre-millennial, veteran teachers. Additional work is needed to identify the long-term effects of technology use on children and adults alike. The replication of studies like this could provide additional information to inform educational stakeholders and strengthen professional development programs.

Summary

Utilizing the theoretical framework of Ely (1990) and Mezirow (2000), this study sought to describe the perceptions of pre-millennial, veteran teachers as they integrated digital, 1:1 technology into their elementary school classrooms. In conducting the research, I examined the factors that contribute to 1:1 initiatives. Through examining the lived experiences of 10 pre-millennial teachers having more than 10 years of teaching experience each, and through listening to their shared stories, four common themes emerged. The first theme, Technology Enhances Instruction, is supported by four sub-themes: (a) greater access to information, (b) student motivation to learn, (c) student excitement and enthusiasm, and (d) increased student

responsibility. The second major theme, Technology is Supplemental to Instruction, is explained through the themes of: (a) maintaining balance, (b) tools of teaching and learning, (c) positive engagement with 1:1 technology, and (d) surprise.

The third significant theme identified in this study is Teaching and Teachers' Role is Unchanged. The details of this theme are described by the following three sub-themes: (a) teachers' role is unchanged, (b) experience contributes to decision making, and (c) concerns and fears. The fourth theme identified by the data is Pre-adoption and Incremental Training and On-site Technical Support is Required. The following sub-themes help clarify the details of this final theme: (a) pre-adoption and sufficient time, (b) ongoing training, (c) on-site technical support, and (d) teacher networks.

Although there has been much research on classroom technology, there were few studies that examined pre-millennial teachers' engagement with 1:1 integrations. By focusing on three primary questions, the descriptions provided by the participants address the gap in literature by giving voice to experienced teachers' opinions and concerns related to digital, 1:1 technology initiatives. This study also provides valuable information and data to help inform educational leaders as they consider implementing 1:1 initiatives. It directly encourages school leaders to instead consider implementing a 1:2 initiative as a means of being fiscally responsible and to promote social interaction, improved communication, team building, and project based opportunities for students. This study also encourages teachers to maintain a balanced approach between new modes of instruction and traditional teaching strategies and practices. By doing so, teachers can effectively imitate seasoned physicians that remain open to new discoveries and medications while appreciating the value of a hot bowl of chicken soup. Teachers are urged to develop the skill of transitioning between the role of teacher and facilitator in accordance with

student needs. Additionally, it is recommended that teachers advocate for their students by assuming the role of protector against unwanted and unsolicited Internet content.

It is the conclusion of this researcher that pre-millennial, veteran teachers involved in digital, 1:1 initiatives experience a positive engagement with classroom technology when given sufficient time and training. Their years of teaching experience uniquely qualify them to maintain a balanced approach between traditional instruction methodologies and novel strategies. This study confirms that pre-millennial teachers view classroom technology as being tools of teaching and learning, yet they retain fears and concerns about Internet use. Lastly, this study identifies the value of teacher networks and confirms that the successful implementation of 1:1 digital initiatives requires ongoing training and on-site technical support.

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APPENDIX A: IRB APPROVAL

January 11, 2016

Pamela E. McKee IRB Conditional Approval 2295.011116: Pre-Millennial, Veteran Teacher Perceptions of Implementing a Digital 1:1 Initiative into Elementary Classrooms in Two Private Schools in the Southern United States: A Transcendental Phenomenology

Dear Pam,

We are pleased to inform you that your study has been conditionally approved by the Liberty IRB. Conditional approval means that your complete approval is pending our receipt of certain items, which are listed below:

-Documented approval on letterhead from each research site you are enrolling in your study

Please keep in mind that you are not permitted to begin data collection until you have submitted the above item(s) and have been granted complete approval by the Liberty University Institutional Review Board. Thank you for your cooperation with the IRB, and we wish you well as you continue working toward complete approval.

Sincerely,

G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

The Graduate School

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IRB Change in Protocol Approval: IRB Approval 2295.012516: Pre-Millennial, Veteran Teacher Perceptions of Implementing a Digital, 1:1 Initiative into Elementary Classrooms in Three Private Schools in the Southern United States: A Transcendental Phenomenon
IRB, IRB

4/26/2016McKee, Pamela E.; Courduff, Jennifer L. (School of Education); IRB, IRB

Good Morning Pamela,

This email is to inform you that your request to include [School] as a research site for your study has been approved. Thank you for submitting documentation of permission from [School].

Thank you for complying with the IRB's requirements for making changes to your approved study. Please do not hesitate to contact us with any questions.

We wish you well as you continue with your research.

Best,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
The Graduate School

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APPENDIX B: HEADMASTER LEVEL PERMISSION

Date

[School Address]

Dear Headmaster:

As a graduate student in the Education Department of Liberty University, I am conducting research as part of the requirements for a doctorate degree in educational leadership. The title of my research project is "Pre-Millennial Veteran Teacher Perceptions of Implementing A Digital 1:1 Initiative Into Elementary Classrooms In Three Private Schools in the Southern United States: A Transcendental Phenomenology," and the purpose of my research is to examine the perceptions of experienced teachers who have recently integrated 1:1 digital technologies into their elementary classrooms.

I am writing to request your permission to conduct my research with teachers in the (School).

Participants will be asked to complete an online survey, give a personal interview, and participate in a focus group discussion, all of which will be used to describe the phenomenon of interest. The data will be used to understand experienced teacher perceptions, identify the professional development processes that lead to those perceptions, and inform educators and educational leaders in the selection of professional development programs that will lead to future improvements in educational standards. Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please respond by emailing signed approval on district letterhead to pemckee@ (email address).

Sincerely,

Pamela E. McKee
Doctoral Candidate

APPENDIX C: PERMISSION FORM FOR PRINCIPALS

Date:

Dear (principal):

As a graduate student in the education department at Liberty University, I have recently been grated permission through the (School's) Headmaster's office to conduct research as part of the requirements for a doctoral degree in Educational Leadership. The title of my research project is "Pre-Millennial, Veteran Teacher Perceptions of Implementing A Digital 1:1 Initiative Into Elementary Classrooms In Three Private Schools in the Southern United States: A Transcendental Phenomenology," and the purpose of my research is to examine the perceptions of veteran teachers who have recently integrated 1:1 digital technologies into their elementary classrooms.

I am writing to request your assistance in identifying qualified participants. Participant requirements are: (1) the teacher must teach at the elementary level; (2) the teacher must have taught for more than 10 years; (3) the teacher must have a highly qualified status; and (4) the teacher must have been born prior to 1980.

Participants will be asked to complete an online survey, give a personal interview, and participate in a focus group discussion, all of which will be used to describe the phenomenon of interest. The data will be used to understand experienced teacher perceptions, identify the professional development processes that lead to those perceptions, and inform educators and educational leaders in the selection of professional development programs that will lead to future improvements in educational standards. Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please respond by emailing signed approval on district letterhead to pemckee@ (email address)

Sincerely,

Pamela E. McKee
Doctoral Candidate

APPENDIX D: LETTER OF INTRODUCTION/RECRUITMENT LETTER

Dear Teacher,

(School) is participating in a research study concerning teacher perceptions of technology integration in the elementary classroom. (School) was selected because of the recent digital, 1:1 initiative in elementary classrooms.

The receipt of this email indicates your site principal has identified you as a possible participant for this study. You were selected as a possible candidate because you (1) teach at the elementary level, (2) have taught for more than 10 years, (3) have achieved a highly qualified status, and (4) were born prior to 1980.

I am Pamela E. McKee, a doctoral candidate in the School of Education at Liberty University, and I will be conducting this study in the fall of 2015. The purpose of my study is to examine the experiences of elementary school teachers who have taught prior to and during the digital, 1:1 technology initiative. I am writing you to invite you to participate in my study.

If you agree to participate in this study, you would be asked to sign a Informed Consent Form confirming that you are willing to participate, have taught elementary level for more than 10 years, and that you were born prior to 1980. I will then ask you to do the following:

(1) Complete an online survey consisting of eight questions;
(2) Participate in an interview session where I will ask 14 questions related to your experiences during the integration of iPads and other digital technologies into your classroom; and
(3) Participate in a focus group discussion regarding these same topics. I will audio record all interviews and focus group discussions for transcription purposes.

The online survey can be completed within 15-20 minutes, and the interview and focus group session should last between 45-60 minutes. Interviews can take place at your school, by Skype or via FaceTime, and no travel is required except for the focus group meeting that will be scheduled after school at a mutually chosen, convenient location. All procedures will be conducted within a two-week period.

Participant information will be kept confidential through the use of pseudonyms and codes, and no personal identifying information will be required. There will be no compensation for participating in this study, and participation in this study is voluntary. Participants may withdraw from the study at any time. All recorded information will be deleted at the time of withdrawal.

The Informed Consent document is attached to this letter. The consent document contains additional information about my research. Please click on the survey link at the end of the consent information to indicate that you have read the consent information and would like to take part in the survey.

If you have questions, you are encouraged to contact me at: (cell) or by email at pemckee@ (email address). Thank you for your consideration. Please reply to this email indicating your willingness to participate and you will be contacted soon to schedule the interview.

Sincerely,
Pamela E. McKee

APPENDIX E: CONSENT FORM FOR PARTICIPANTS

PRE-MILLENNIAL, VETERAN TEACHER PERCEPTIONS OF A DIGITAL, 1:1 INTEGRATION IN ELEMENTARY CLASSROOMS IN THREE PRIVATE SCHOOLS IN THE SOUTHERN UNITED STATES: A TRANSCENDENTAL PHENOMENOLOGY

Pamela McKee
Liberty University
School of Education

Dear Participant,

You are invited to take part in a research study concerning teacher perceptions of digital, 1:1 technology integration in the elementary classroom. Your school was selected because of the recent, digital, 1:1 initiative implemented in elementary classrooms. You were selected as a possible candidate because you: (1) teach at the elementary level, (2) have taught for more than 10 years (3) have a highly qualified status, and (4) were born prior to 1980. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

Pamela E. McKee, a doctoral candidate in the School of Education at Liberty University is conducting this study.

Background Information:
The purpose of this study is to examine the experiences of elementary school teachers that have taught prior to and during the digital, 1:1 technology integration.

Procedures:
If you agree to participate in this study, I would ask you to sign this Informed Consent Form confirming that you are willing to participate, have taught elementary level for more than 10 years, and that you were born prior to 1980. I will then ask you to do the following:

(1) Complete an online survey consisting of eight questions;
(2) Participate in an interview session where you will be asked 15 questions related to your experiences during the integration of iPads and other digital technologies into your classroom; and
(3) Participate in a focus group discussion regarding these same topics. Interviews and focus group discussions will be audio recorded for transcription purposes.

The interview and focus group session should last between 45-60 minutes, while the survey should be completed within 5-10 minutes. All procedures will be conducted within a two-week period.

Risks and Benefits of being in the Study:
Risks associated with this study are minimal in that participants will not encounter any other risk than they would during everyday life.

There are no direct benefits to participants, but the results of this study will provide a deeper understanding of teacher perceptions as educational leaders move forward in developing future integrations, professional development strategies, and successful pedagogies. In addition, this study will inform educators, parents, and educational leaders in selecting tools of learning, adopting new technologies, investing taxpayer dollars, and developing new and improved educational standards.

Compensation:
There will be no compensation for participating in this study.

Confidentiality:
The records of this study will be kept private. In any sort of report published, no information will be included that will make it possible to identify a participant. Research records will be stored securely on a flash drive in my home, and only I will have access to the records. Audio recording will be stored in a secure file cabinet at my residence, thereby limiting access to anyone but me. At the end of thee years, all related documents and recordings will be destroyed.

Confidentiality related to information shared (i.e., the use of pseudonyms, securely filing data and recordings, etc.) will be adhered to; however, when conducting the focus group, I will not be able to ensure that other participants will maintain subject confidentiality and privacy during this study.

Voluntary Nature of the Study:
Participation in this study is voluntary. The districts' and participants' decision whether or not to participate will not affect your current or future relations with the researcher or with Liberty University. If you decide for the district to participate, participants will be free to not answer any question or to withdraw at any time without affecting those relationships Should the district or any participant wish to withdraw from the study, this may be accomplished at any time by expressing that desire in writing to me, Pamela E. McKee, the principal researcher. All recorded information by that participant will be deleted at the time of withdrawal.

Contacts and Questions:
The researcher conducting this study is: Pamela E. McKee. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact me at: (cell) or by email at pemckee@ (email address). (Advisor: Dr. Jennifer Courduff, (cell), jlcourduff@ (email address).

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24515 or email at irb@liberty.edu.

You will be given a copy of this information to keep for your records.

Statement of Consent:
As an educator in the (School), I have read and understood the above information. I have asked questions and have received answers. By signing below I agree to participate in the study and give my permission to be audio recorded.

Signature: _____ Date: _____

Signature of Investigator: _____ Date: _____

APPENDIX F: ONLINE SURVEY QUESTIONS

1. What is your age bracket (31-40, 41-50, 51-65, more than 65)?
2. What is your gender?
3. What teaching credentials do you hold?
4. What degrees have you earned?
5. What grade(s) do you currently teach?
6. How many years have you taught?
7. What is your ethnicity?
8. What 1:1 digital devices do your students use?

APPENDIX G: INTERVIEW QUESTIONS

1. Please share your reasons for going into the field of education.

2. How did you feel when it was announced that your school would be implementing a digital, 1:1 initiative? Probe: What was your initial reaction?

3. Please describe your personal interaction and experiences with digital technologies outside the classroom setting.

4. Please describe your personal interaction and experiences with 1:1 digital technologies inside the classroom setting.

5. What does a digital 1:1 integration look like in your classroom?

6. Compare and contrast your classroom before and after the digital 1:1 integration.

7. Tell me about the training you received in preparation for integrating tablets and/or laptops into the learning process.

8. What professional development or teaching networks have been offered or received during and after establishing a digital 1:1 integration?

9. How do you interact with other teachers in a 1:1 integration?

10. What additional training do you believe would be helpful?

11. Describe any positive impact technology has had upon your classroom.

12. Describe any negative impact technology has had upon your classroom.

13. Do you feel or think differently about classroom technology now?

14. Have your perceptions of the role of teaching changed over time and, if so, how and why?

15. How would you describe your overall experiences during the implementation of technology into your classroom?

APPENDIX H: FOCUS GROUP QUESTIONS

1. What initially attracted you into the field of education and teaching?
   Probe: What were your hopes and dreams about teaching?

2. How many years have you taught and at what grade level?

3. What are your basic thoughts and beliefs about how children learn?

4. What are your basic thoughts and beliefs about technology and its impact on childhood learning?

5. What digital technologies do you use in your grammar school classroom?

6. What was your initial reaction to the digital 1:1 initiative?

7. How do you integrate digital technologies into your classroom?

8. How would you describe your experiences during the establishment of 1:1 technology in your classroom?
   Probe: How did you feel? How did you react? What did you do?

9. Reflecting on when you first used digital technologies, describe any differences in your perceptions about project activities over time.
   Probe: What do you know now that you wish you had known then?

10. How are you involved in the decision-making process of technology use in your classroom?

11. What professional development training prepared you for the 1:1 technology initiative?

12. What ongoing training do you receive? How often?

13. Tell me about any formal and informal learning communities or networks among teachers that have developed as a result of the 1:1 technology initiative.

14. What training do you still desire or need?

15. What other information concerning classroom technology or learning with technology would you like to add?

APPENDIX I: SAMPLE REFLECTIVE JOURNAL ENTRY

Date	Activity	Reflections
3/26/16	**Coding**	It is spring break, and I have scheduled this time to write, write, write! Even without collecting all the data, I am beginning to identify codes and main ideas from the data that I have collected so far. These may change with additional information, but for now, this is what I can do.
4/1/16	**Identifying Significant Statements**	After printing out all the collected data and cutting each sentence apart, I have begun to identify codes and significant statements. This is a fun and interesting process. I just wish I could move forward by having all the data collected. It will come slowly, but surely.
4/6/16	**Bracketing**	Setting apart my own opinion is an important element of a transcendental study. This process was challenging as I conducted the literature research and completed the proposal. I thought I would find pre-millennial teachers that were struggling with the integrated technology, but to my great surprise, the teachers I am speaking with have not had a negative experience at all! We share concerns and some fears about the future, but they are very comfortable with the integration. It is helping me to set my expectations aside.
4/8/2016	**Composite Data**	It has been very helpful to go through the composite data and code each sentence and the significant statements. I am beginning to identify major themes and to more fully view the overall teacher experience.
4/10/16	**Identifying Themes**	Discovering even more about premillennial teachers and how easily they have accepted and integrated technology. I wonder if I would have engaged with technology just as easily had I remained in the classroom. Although we share some of the same concerns, they have been able to glean the positive aspects from the use of technology and to really appreciate its value. What a nice surprise!