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Middle School Teachers' Perceptions of Self-Efficacy, Preparedness, and Pedagogical Transformation to Implement One-To-One Instructional Technology: Implications for Educational Leaders

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ABSTRACT

EDUCATIONAL LEADERSHIP

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MIDDLE SCHOOL TEACHERS' PERCEPTIONS OF SELF-EFFICACY,
PREPAREDNESS, AND PEDAGOGICAL TRANSFORMATION TO
IMPLEMENT ONE-TO-ONE INSTRUCTIONAL TECHNOLOGY:
IMPLICATIONS FOR EDUCATIONAL LEADERS

Committee Chair: Barbara Hill, Ed.D.

Dissertation dated May 2018

The purpose of this mixed methods study was to explore middle school teachers' pedagogy and their transformations as they implement one-to-one laptop instructional technology in their classroom environments. Statistical correlation and narratives provided a greater understanding of the research problem (Creswell, 2012). A mixed methods approach was the most appropriate research design for this study due to the nature of information being collected. Data collection draws from several sources, such as questionnaires, interviews, or analysis of documents (Creswell, 2012). In this study, the researcher used the questionnaire responses from 48 teachers and transcripts of semi structured focus group interviews of four teachers to create a framework of how middle school teachers perceive their self-efficacy in using one-to-one laptop instructional

technology, their preparedness within Professional Learning Communities (PLCs) to implement instructional technology, and how their pedagogical practices may have changed.

The study was conducted in an urban school district in Georgia. Participants in the study were middle school educators who taught in one-to-one instructional technology classroom environments where each student received a laptop at the beginning of the academic year. The sample included both male and female middle school teachers with varying years of service who taught core curriculum courses (English, history, mathematics, or science). These schools were located in an urban community and are Title 1 schools, in which 69% of students in School A and 79% of students in School B qualify for free or reduced lunch.

After examining the variables, several of the survey participants on the questionnaire, 38 teachers reported that they participated in a Professional Learning Communities (PLCs) that supported the implementation of one-to-one laptop technology into instruction. The researcher concluded that fewer than 60% of the surveyed middle school teachers agreed that the lecture-style workshops, hands-on style workshops, or modeling workshops, reflected on how current classroom experiences supported their use of instructional technology. The researcher identified this variable as an area for future research and believes through further examination will present results regarding further indicators for Professional Learning Communities (PLC) models.

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PREPAREDNESS, AND PEDAGOGICAL TRANSFORMATION TO
IMPLEMENT ONE-TO-ONE INSTRUCTIONAL TECHNOLOGY:
IMPLICATIONS FOR EDUCATIONAL LEADERS

A DISSERTATION

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THE DEGREE OF DOCTOR OF EDUCATION

BY

ADRIANNE M. REDMOND

DEPARTMENT OF EDUCATIONAL LEADERSHIP

ATLANTA, GEORGIA

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Blessed is she who has believed that the Lord would fulfill his promises to her!"

(Luke 1:45)

In life, there will be experiences that one has to face with no understanding of the outcome. There will also be outcomes in life where one has no understanding of the experience but in this, there is always purpose. I thank my Heavenly Father and give Him honor and praise for bringing me to a place unforeseen by my own two eyes.

I thank my parents, Sylvester and Clara Redmond, for their unyielding love, affection, support, and encouragement, but more importantly for their prayers. I thank them for making the commitment with me to fulfill this journey. I thank them for walking by me every step of the way, through my peaks and valleys. I also thank my first friends and sisters, Anna and Alicia, for nurturing my growth and believing in me when, at times, I did not have the courage to believe in myself. I thank my nieces Madison, Macy, Malia, and Ansley, and nephew, Aiden, for being gentle reminders of my purpose and encouraging me in every moment to be the best role model I can possibly be. Sincere thanks go to my extended family and friends for sticking by my side through this journey. I thank them for being my village. I dedicate this milestone to my ancestors and loved ones that have transitioned before me.

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CHAPTER I
INTRODUCTION

“Education is the most powerful weapon which you can use to change the world.”

Nelson Mandela

Technology is an engine of change and the acceptance of change is contingent on the ability and willingness to combine and integrate technology. Schools are tasked to not only ensure that students are proficient in reading, writing, and mathematics, but that they demonstrate a sense of aptitude as a 21st century learner. As technology continues to progress, school districts are incorporating one-to-one laptops in classrooms to achieve “improved teaching and learning, greater efficiency, and the development of important skills in students” (Bebell & Kay, 2009, p. 11). However, some schools have opted to withdraw from such initiatives due to inconsistencies in how teachers use one-to-one laptops in the classroom. Teachers need a sufficient amount of support and preparedness provided by professional learning communities (PLCs) to incorporate the one-to-one laptop technology in a classroom (Drayton, Falk, Stroud, Hobbs, & Hammerman, 2010).

Given the discrepancies in preparation, knowledge, ability, and experience teachers bring into the classroom effectiveness varies. Professional learning communities are intended to prepare teachers for the challenges of teaching, to prepare them about important aspects of the curriculum, and to increase their pedagogical competency. These programs are meant to increase their self-efficacy for handling situations that arise in the

classroom. The ideas behind professional learning communities support both teacher and student learning outcomes (Finance Project and Public Education Network, 2004).

In 2012, the Obama Administration initiated the Race to the Top challenge for school districts. The intent of this federally funded program was to invest nearly \$4 billion in school districts to encourage schools to create modified learning models. The purpose of the models was to engage students' interest so that they can take responsibility for their success. The overall objective of the Race to the Top initiative was to encourage transformative change within schools, targeted toward leveraging, enhancing, and improving classroom practices and resources (Race to the Top, 2014). Lower costs of technology have allowed schools to integrate technology initiatives into their instructional programs. One-to-one is becoming prevalent in large and small schools, where each student has a technological device provided by the school (Bebell & O'Dwyer, 2010).

Statement of the Problem

Educators are continuously armed with new technological tools and new programs aimed at providing one-to-one capabilities intended to increase student learning. Studies report the use of laptops as one variable that increases student achievement (Gulek & Demirtas, 2005; Russell, Bebell, & Higgins, 2004). Today's students were born in a digital age and spend as much time each day connected to some digital communication device as they do sitting in a classroom (Sprengrer, 2009). These new learners hold beliefs that technology is not only an integral part of their everyday lives, but also serves as a vital tool to maximize their learning potential (Oblinger & Oblinger, 2005). However, teachers—many of whom were not born in this age of digital

innovation—may be less inclined to implement those tools despite strong beliefs about their value due to a fear of not being able to effectively implement, troubleshoot, or create effective learning opportunities (Farah, 2011).

Extensive research has not been attributed to the instructional obstacles that educators must overcome for one-to-one instructional technology classroom environments to be successful (Greenhow, Robella, & Hughes, 2009; Hew & Brush, 2007). Bebell and Kay (2010) found that 80% of teachers participating in one-to-one classroom environments reported that their pedagogy altered as a result of such initiatives. Using technology purposefully, teachers can influence successful aptitude of essential knowledge and skills (Gautschi & Manafy, 2011). Technology is prevalent in all aspects of a student's life and educators should use the power of technology in their daily lessons to engage students in the learning process. Teachers who successfully revamp the technology familiar to students typically experience greater student achievement (Brown & Savage, 2014). However, many teachers struggle with implementation. Kirkland (2014) stated, "Many young teachers, despite apparent facility with technology use, struggle as much as any educator in making meaningful connections to learning contexts" (p. 14).

Having a depth of knowledge of the subject matter, understanding students' learning styles and appropriate learning instructional techniques, and practicing effective teaching methods translates into greater academic growth. The successful use of technology in the classroom hinges on the teacher's pedagogy skill. Therefore, it is important that teachers be well prepared when they begin teaching a one-to-one instructional program and that they continue to improve their knowledge and skills

through the use of professional learning communities. Information about teachers' potential pedagogical transformation is both timely and needed as more school districts decide on one-to-one laptop program implementation plans. A study that examines teachers' pedagogical transformation when using one-to-one laptop technology could provide school leaders information with best practices to integrate meaningful, high-level, technology-rich projects into the curriculum as well as informing the activities of professional learning communities to help teachers incorporate one-to-one laptop technology in their classrooms.

Purpose of the Study

The purpose of this mixed-methods study was to explore middle school teachers' instructional transformation as they learn to implement one-to-one laptop technology in their classrooms. A quantitative survey measured the middle school teachers' self-efficacy in using one-to-one laptop technology and their perceptions about how professional learning communities prepare them to incorporate the new technology in their classrooms. Semistructured interviews were used to identify teachers' perceptions of their pedagogical transformation or lack thereof.

Research Questions

The following questions formed the basis for this research study:

RQ1: What is the relationship between middle school teachers' self-efficacy in using one-to-one laptop technology and their perceptions about how professional learning communities prepare them to implement the technology in their classrooms?

- RQ2: What is the relationship between middle school teachers' self-efficacy in using one-to-one laptop technology and their years of teaching experience?
- RQ3: What is the relationship between middle school teachers' perceptions about how professional learning communities prepare them to incorporate the new technology in their classrooms and their years of teaching experience?
- RQ4: To what extent has one-to-one instructional technology (laptop) influenced middle school teacher's pedagogical transformation?

Significance of the Study

The results of this study contribute to the emerging body of research regarding teacher's pedagogical changes in one-to-one laptop classroom environments. This research also revealed valuable ways of preparing middle school teachers while they adjust to being successful educational leaders in one-to-one laptop classroom environments, a crucial element needed in making innovative technology initiatives successful. This timely research is especially important in a state where the number of one-to-one instructional technology programs is increasing each year.

Summary

The number of one-to-one instructional technology programs is increasing each year. Greater student achievement is found when teachers successfully integrate technology into their classrooms. However, many teachers struggle with implementation. Their self-efficacy and preparedness for a pedagogical transformation may be lacking.

Therefore, the purpose of this mixed methods study was to explore middle school teachers' transformation from a traditional pedagogy to a technology-rich pedagogy as they learn to incorporate one-to-one laptop technology in their classrooms. The researcher used a quantitative survey and semi structured interviews to examine relationships between variables that may influence the way in which educators' classroom practices are altered as a result of using one-to-one instructional technology.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter is a review of the educational literature that provides a foundation for this study. First, the transformation in pedagogy as it relates to teaching the 21st century learner and using technology as an instructional tool. Next, the perception of one-to-one instructional technology as it relates to technology self-efficacy. Lastly, the preparation within Professional Learning Communities (PLCs) of one-to-one instructional technology as it relates to implementation.

Pedagogical Transformation

One primary characteristic that seems to emerge in the midst of one-to-one initiatives is the transformation of pedagogy and instruction. Teachers are experiencing changes in their practices and instructional delivery, which shifts the overall atmosphere of the classroom (Bebell & Kay, 2010). It has been suggested that these pedagogical transformations gradually create a shift from a traditional perspective to a more constructivist in nature (Baker, Gearhart, & Herman, 1990; Gulek & Demirtas, 2005; Rockman et al., 2000).

In a traditional perspective of teaching, the teacher is an expert in knowledge and the students are passive receivers who are expected to reproduce the knowledge they are taught and are assessed on how much they remember from what they learned. Skinner

emphasized that knowledge is seen as a product as opposed to a learning approach with emphasis on the process. The traditional approach derives from the behaviorist theories of learning wherein a correct answer awards the student with praise while an incorrect answer results in a negative response (Skinner, 1950). From this perspective, knowledge is an absolute, reflecting universal truth about reality, and the assessment is focused on the product, the data, and the predefined fragments of certain contents (Dede, 2008).

Among the factors of constructivist environments, teachers show evidence of lecturing less and taking on the role of facilitator in their classrooms (Corn, Tagsold, & Patel, 2011; Dunleavy, Dexter, & Heinecke, 2007; Rockman et al., 1997, 1998). The classrooms become more student-centered and student led than the traditional classroom environments (Dawson, Cavanaugh, & Ritshaupt, 2008; Drayton et al., 2010; Lowther, Ross, & Morrison, 2009; Rockman et al., 1997, 1998). Teachers and students have access to more communication tools and instructional materials than in a classroom centered on textbook lessons (Silk, Higashi, Shoop, & Schunn, 2010; Windschitl & Sahl, 2002).

In most cases, successful implementation of one-to-one instructional technology is a function of the classroom teacher (Norris & Soloway, 2010). If the classroom teacher is able to adjust and use new pedagogical tools, the students are allowed to research, communicate, and learn in a more engaging and meaningful way because of the technology tools. Teachers begin to employ more authentic learning activities, in which the activity is something applicable and useful outside of the classroom (Corn et al., 2011). In this same nature, teachers may begin to structure their curriculum around more project-based learning (Dawson et al., 2008; Donovan, Green, & Hartley, 2010; Lowther

et al., 2003; Rockman et al., 1998). This is not to say that every teacher experiences these changes or even in the same way; the pedagogy that teachers use depends on those same beliefs about technology, their content area, and education as a whole (Garthwait & Weller, 2005).

Teaching the 21st Century Learner

Today's students are inundated with engaging and collaborative technology outside the school setting. According to Oblinger and Oblinger (2005), the challenge for educators is to meet students' individual educational goals by providing engaging lessons using appropriate technologies. These experiences not only provide entertainment necessary to keep students engaged but also foster essential skills for college and workforce preparedness (Oblinger & Oblinger, 2005).

Born into an age of Internet connectivity, instant communication, and technology integration, Prensky (2001) labeled this generation *digital natives*, and the generations prior to them *digital immigrants* because they adapted to technology as it was introduced into our society. With these new learners, technology is merely a means to an end. They believe that technology is essential to learning because it is part of their world, embedded in society, makes things faster, makes abstract concepts easier to grasp, allows them to research any topic, and connects them with others who can help them learn (Oblinger & Oblinger, 2005).

Contrary to the perception that today's young people lack social skills due to technology-induced self-isolation, Oblinger and Oblinger (2005) found that today's students understand that technology is not the only factor in their educational success.

They understand the vital role that teachers play in providing motivation for learning through the building of relationships. They also value the strengthening of social skills that comes through daily interactions with their classmates, which cannot be replicated through technology (Oblinger & Oblinger, 2005).

Technology as an Instructional Tool

Beginning with black boards and chalk, to whiteboards and dry erase markers; from one-room K–8 school houses, to web-enabled distance learning for doctoral students; the art and science of teaching continues to change while improving opportunities for student learning. New instructional technologies are being made available each day that bring with them the possibility of delivering curriculum in different and potentially more effective ways. Many schools now use technology to store and track grades, take attendance, and communicate with colleagues and parents. In recent years, however, technology has played a more active role in schools as it has been used as a form of instruction in teachers' classrooms. More than ever before, teachers are using computers for not only administrative tasks but for instructional purposes. Because states and school districts nationwide are interested in measurable results, educators are looking to technology to aid them in improving student performance (Rother, 2004). With the ever increasing use of one-to-one instructional technology as an instructional tool in classrooms in middle schools, the effectiveness of this approach to teaching and learning has come under increased examination. The concept of one-to-one computing is a recent development in education and is expected to grow in the coming years, as more classes and assessments are available online (Jacobs, 2010).

Technology is an instructional tool when it is used to engage students and direct them toward constructing new knowledge and skills. Technology creates various learning opportunities because of the access to the global world it provides and the interactive tools it possesses. As educators, we are constantly looking for strategies to improve student learning and academic achievement. Whether that change comes in the form of cooperative learning, brain-based teaching strategies, or using one-to-one technologies, teachers are also being presented with new and improved ways to help students learn. Most of these methods would be considered as supplementary with very few having the potential to be transformational in the way that one-to-one instructional technology does.

The ways in which technology can be used in the classroom as a result of the many tools that now exist present a variety of innovative and authentic learning opportunities for students. However, these tools pose a unique challenge for educators because they must first learn how to use these tools and then feel comfortable enough planning instruction that integrates such tools. Duncan (2010) affirmed the need for teacher training, “In the 21st century, educators must be given and be prepared to use technology tools; they must be collaborators in learning-constantly seeking knowledge and acquiring new skills along with their students” (para. 27).

Technology in Georgia Schools

The A Plus Education Reform Act of 2000 included provisions for all local schools in Georgia to identify and use electronic technology in an effort to enhance instruction in the classroom and improve school system management. The Georgia Department of Education (2008) prepared a comprehensive 5-year state technology plan

for Georgia schools. The plan served several purposes, some of which consisted of establishing how technology would assist in the improvement of student achievement, creating a technology plan that could be used as a guide for funding in other states, and meeting NCLB's guidelines for having a state technology plan. Additionally, Georgia's technology plan identified seven specific goals the state aimed to achieve by 2012:

- Increase effective instructional uses of technology to address Georgia Standards of Excellence (GSE) learning objectives in elementary and secondary schools.
- Increase effective administrative uses of technology to monitor student achievement and student growth percentiles of GSE learning standards and to manage business operations in school systems.
- Increase access for students, educators, parents, school board representatives, and other community members to information technology resources that can enhance student learning.
- Increase educators' proficiency to use technology effectively to enhance student learning and business operations in elementary and secondary schools.
- Increase broad-based community support for Georgia's vision for effective technology use in schools.
- Increase the capacity of school systems to provide the high-quality system support necessary to realize effective technology use, especially in the areas of administrative support for effective instructional technology use; professional

learning communities; technical support for hardware, software, and network infrastructure; technology planning; and program evaluation.

- Achieve and/or maintain equitable access to high-quality technology programs for all students. (Georgia Department of Education, 2003, p. 39)

Essentially, each of these goals shifted the expectation that educators adhered to and demonstrated a sense of aptitude to integrate and use technology for purposes of enhancing students' individual academic achievement.

Constructivist Theory

Constructivism, a learning theory developed by Piaget (1966), hypothesized about how individuals synthesize new meaning or learning. Richmond (2006) stated, "Every experience we have, whether as an infant, child, or adult is taken into the mind and made to fit in the experiences which already exist there" (p. 68). For each experience assimilated, the structures will modify to accept the new experience; intellect continually transforms to create the meaning of the new experience (Richmond, 2006). Piaget stated, "Accommodation can never be pure because by incorporating new elements into its earlier schemata the intelligence constantly modifies the latter to adjust them to new elements (as cited in Richmond, 2006, p. 69). The growth of knowledge and understanding, therefore, is an accumulative process. The accumulated daily experiences a teacher has with using technology in the implementation stage or actively using technology in a lesson affects teacher perception of the merit of one-to-one instructional technology programs. As teachers retrofit their learned pedagogical practices to incorporate technology and learning styles of modern students, teachers experience

predictable stages along the change curve. The accumulation of experiences shapes their perceptions of one-to-one programs and, to a degree, determines the amount of technology implementation a teacher employs within their classroom.

Change Theory

Adult learners, unlike children, learn differently and need to understand why they have to acquire new knowledge. Knowles, Holton, and Swanson (2005) hypothesized that for adults to acquire new knowledge, they need to understand why they must learn something before they endeavor to learn it. Knowles et al. purported that adult learners are influenced by external factors such as better jobs, higher salaries, and promotions that motivate them to want to continue developing and growing. For change to occur there has to be forces for and against it.

In the change theory, Lewin and Gold (1999) addressed the change process in human systems. This theory was used to address the research questions and the ways in which middle schools teachers implement one-to-one instructional technology. Lewin and Gold argued that in order to have systemic or institutional change, the forces that favor the change have to be greater than the forces resisting it. There needs to be a balance between the forces that support change and the forces that resist the change.

Different phases need to occur for change to happen. Lewin and Gold (1999) established a three-phase change model: unfreeze, change, and refreeze. Unfreezing includes practices and processes that facilitate change in an organization or an individual. Unfreezing occurs when the participants understand the problem and the factors involved in the problem (Lewin & Gold, 1999). The first step in unfreezing is to inform the

organization or the individual that transformation is a required component of change. The second step includes movement toward awareness of the difficulty and the establishment of a vision for the future. In this change step, activities and interventions that allow the organization to move toward a new level are introduced (Burke, 1987). The change phase introduces movement and behavior that cause a shift from a current stage to a new functional level that demonstrates noticeable behaviors (Burke, 1987). This second stage of the change theory could include changes in thought processes, perceptions, and behaviors, resulting in positive cognitive adaptations to the new procedures (Lewin & Gold, 1999). Refreezing requires the organization and individuals to anchor new processes, attitudes, and behaviors. In the refreezing step, new behaviors are acknowledged as a new standard in the organization (Burke, 1987). Lewin's change theory (as cited in Lewin & Gold, 1999) is known as action research, a cycle derived from data that provides feedback to the participants, establishes new learning, evaluates the impact of the new learning, and creates more learning (Burke, 1987). Action researchers recognize that people in organizations work together because they want to achieve common goals (Glassman, Erdem, & Bartholomew, 2013). Action researchers have asserted that change occurs by altering community patterns of interaction towards a democratic process of decision making so that collective action emerges (Glassman et al., 2013). Altering the patterns of how people work together involves shifting how they think about themselves in new positions.

In this stage, the organization's behaviors become standard and cannot be distinguished from the regular operating procedures (Lewin & Gold, 1999). The activities

and processes provide the foundation for sustainable change. In the final stage of refreeze, the members change as a group (Silva & Langhout, 2011). This training allows members to become empowered to bring about social change (Silva & Langhout, 2011). This final stage of refreezing, as envisioned by Lewin and Gold (1999), builds unity among the members of the group that fosters transformation.

Perception of One-to-One Instructional Technology

Teacher perceptions of the role of laptops in the classroom have much to do with the degree and complexity of technology implementation (Dexter, Anderson, & Becker, 2000). Dexter et al.'s research intended to reveal both teaching philosophy and perception of technology use. The information was collected as a preliminary study for a national survey concerning pedagogical beliefs and practices. Based on the recommendation of building leaders, 47 teachers across the United States were chosen to respond to a questionnaire. In addition, these teachers were interviewed and observed in their classrooms. The sites were divided among California, Minnesota, and New York; teachers had varied ranges of experience, and both traditional and progressive schools were among the sample. Of the 47 teachers surveyed, 32 were considered constructivists who recognized teachers for their productivity and consistent use of innovative teaching practices to integrate technology successfully in the classroom.

When given the chance to interact on practice, teachers frequently became constructivist-minded, and, therefore, changed practice. Technology then is a tool to help shift and transform the culture; when used with reflection it becomes a powerful resource to help teachers overcome their perceived lack of innovation. If teachers themselves are

seen as the agent of change and trusted to be so, educators must feel confident in their decision-making ability as to whether or not computers are appropriate at the given pedagogical time (Decker et al., 2000).

Motivational Premise

Individuals' motivational beliefs also determine how much effort they will put toward reaching a goal, and their efficacy beliefs contribute to this motivation. When individuals have low efficacy beliefs, their self-doubts will impede them from overcoming such obstacles. Resilience is perhaps the best word to describe the ability to overcome self-doubt, a natural part of existence, and to persevere to overcome life's setbacks and adversities. Those with high self-efficacy are more resilient and therefore more likely to be successful in their actions.

It is important to note that when setting goals, highly self-efficacious people will judge their abilities slightly higher than their actual abilities, thereby setting goals that are slightly out of reach. However, these people also learn more from reaching or attempting to reach these goals than by setting only easily attainable aspirations. Humans would perhaps rarely fail by setting less goals, but they would also never grow in the process of reaching them (Bandura, 1989). Much like Vygotsky's (1978) zone of proximal development, goals should not be set so high as to be unreachable, nor should they be set so low that a learner can reach them without effort. This is the key to continued growth and learning for humans. Motivation to seek out continuing learning experiences, whether in the form of professional learning communities or integrating one-to-one

instructional technology, are characteristic of pedagogical transformations and shifts in education ..

Self-Efficacy

Self-efficacy connects to motivation constructivist thinking and social cognitive theory. Efficacy refers to one's perceived ability and is best determined or measured when in relation to a specific context or task. Focusing on a specific task is important because one's perceived ability can easily change based on a given context. Bandura (1994) stated, "Self-efficacy beliefs determine how people feel, think, are motivated and behave" (p. 2). Efficacy involves one's own perceptions or thinking about his or her ability and connects to motivation. People's thoughts influence their actions and motivate them to attempt or restrain from certain behavior (Bandura, 2002).

With regard to teacher efficacy, teachers' beliefs about their teaching abilities will affect their teaching behavior (Henson, 2002). This behavior includes but is not limited to how they plan and prepare for instruction, the strategies they implement, the tools they use during instruction, and their personal presence when delivering instruction. Additionally, with regard to teacher efficacy, it is important to note that teachers' self-efficacy can be tied to students' self-efficacy (Henson, 2002). In classrooms with teachers who have high self-efficacy, there are students who may have increased self-efficacy as well. If students feel more confident, then they may be more motivated to put forth more effort, persist longer when faced with academic challenges, and ultimately perform at higher levels.

Self-efficacy, as proposed by Bandura (1977), has four general sources of efficacy-building information, including verbal persuasion, vicarious learning experiences, physiological arousal, and performance accomplishments. These four sources are thought to be pathways to understanding efficacy and ultimately one's behavior, but according to Henson (2002), "The investigation of factors that might influence efficacy is certainly warranted" (p. 140). There is a need to identify and understand specific aspects that play a role in developing one's efficacy. If factors that develop one's efficacy can be identified, then work can be done to target those factors in an effort to increase one's efficacy. The higher one's efficacy is, the more motivated a person will be to adopt a certain behavior or perform a particular task, so it is beneficial to develop a person's efficacy in an effort to increase a person's motivation and thus produce the desired results.

Some people may be motivated by an internal drive to perform for purposes of self-satisfaction while others may be motivated by external factors such as impressing or pleasing others (Bandura, 2002). Either way, motivation plays a role in an individual's decision to adopt a certain behavior or perform a particular task. Additionally, people with strong self-efficacy have a high assurance in their capabilities to approach challenging tasks, and that factor motivates them to keep going, even when faced with setbacks along the way. Alternately, those who have a low sense of self-efficacy doubt their own capabilities, give up easily, experience anxiety, and lack follow through (Bandura, 1994).

Technology Self-Efficacy

Self-efficacy in the classroom may include many factors, not all directly related to academics. As teachers increasingly use technology tools in the classroom, positive experiences using computers to solve problems can increase students' technology self-efficacy (Morris & Thrasher, 2009). Teacher beliefs and self-efficacy toward technology tools can be a factor in whether the tools are used in a meaningful way in the classroom (Paraskeva, Bouta, & Papagianni, 2008). The technology self-efficacy of teachers affects the way in which they use technology tools, which in turn relates to the students' perceived self-efficacy. Staff development in technology tools as an integrated part of the classroom instruction can assist teachers in increasing their technology self-efficacy (Paraskeva et al., 2008).

Increasing technology self-efficacy among teachers can assist with ensuring teachers are using technology tools in a positive way (Paraskeva et al., 2008). Wilfong (2006) found technology self-efficacy is more likely to impact positive usage of computer by decreasing both computer anxiety and computer anger. Wilfong found that technology self-efficacy had a larger effect than computer experience and computer use did. Increasing technology self-efficacy might be completed through targeted, timely staff development opportunities for teachers. By completing an intense summer staff development targeted on using technology, and then having follow up training throughout the school year, Watson (2006) found technology self-efficacy was increased in secondary teachers. The teachers who received the targeted training showed increased

self-efficacy toward technology for several years after the training, positively affecting their long-term classroom pedagogy (Watson, 2006).

Impact of One-to-One Devices in the Classroom

Research regarding one-to-one classroom technology implementation has shown positive outcomes supporting the development of 21st century skills. Goodwin (2011) reviewed several research studies regarding one-to-one classroom initiatives. The studies' results revealed that technology use was only as effective as the teacher and his or her pedagogy for increasing student learning. Results signified that where there was evidence of an effective teacher and teaching practice, the outcomes or influence of technology use included more engaged learners, improved technology skills, and cost savings in areas such as textbooks, paperwork, and printing (Goodwin, 2011).

Goodwin (2011) concurred with Collins (2001) and stated, "Technology, alone, never holds the key to success...when used right technology is an essential driver in accelerating forward momentum" (p. 159). Three factors emerged from the review of the literature as primary contributors or drivers to the success of one-to-one programs: (a) uniform implementation of technology in every class, (b) time for teacher learning and collaboration, and (c) use of technology daily for student online collaboration and cooperative learning. Goodwin concluded that for better or worse, one-to-one laptop initiatives may, in fact, simply reflect and magnify what happens regularly in traditional classrooms.

Bebell and Kay (2009) conducted a 3-year pretest/posttest comparative study of the impact of the Berkshire Wireless Learning Initiative implemented in Midwestern

schools. Data were collected through quantitative and qualitative measures. Quantitative measures included student and teacher surveys, archival achievement data, and data from a mock state achievement test administered using both computer and pencil and paper methods. Observations and interviews with teacher leaders were the qualitative methods used. Findings revealed four key outcomes: (a) shifts in teaching practice and level of student engagement, (b) student achievement was enhanced on state level math and science assessments at the 7th and 8th grade, (c) teachers and administrators overwhelmingly indicated student engagement increased for all students, and (d) student capabilities to engage in independent research and collaboration increased as all students had access to the Internet during class time. In addition, findings revealed that fundamental shifts in teacher practices occurred both instructionally and pedagogically when one-to-one computerized technology was introduced into the learning environment (Bebell & Kay, 2009).

Means (2010) conducted a Year 1 to Year 2 comparison of 14 elementary schools (seven high performing and seven low performing) to examine technology implementation practices related to improvements in student outcomes. Interviews and observations were conducted with teachers using reading or mathematics computerized intervention software in their classrooms. Teacher data from Year 1 and Year 2 were collected in three areas: teacher implementation practices, school-level implementation practices, and changes in implementation practices. Findings indicated four school-level practices related to improvements in student outcomes: (a) a consistent instructional vision was developed, (b) principals supported software use, (c) teachers collaborated

around software use, and (d) satisfactory on-site technical support was provided. Findings also indicated support for two classroom-level practices: review weekly software reports for all students and manage the classroom effectively (Means, 2010).

Owen, Farsaii, Knezek, and Christensen (2005) studied a full-scale implementation of 9,600 laptops and their effects on teaching and learning in a high school district located in urban north Texas. Five years after initial one-to-one implementation, qualitative and quantitative data were collected on teacher and student practices and perceptions on the effects of laptops in the classroom. Owen et al. triangulated data collected through teacher and student surveys and focus group interviews to uncover patterns and trends regarding the one-to-one classroom initiative. Findings revealed significant classroom changes in the instructional setting. Prior to one-to-one laptop implementation, teachers reported using collaboration and group work 48% of class time. After implementation, 21st century skills, specifically collaboration, were used during 58% of the instructional day in classrooms. The greatest instructional change after one-to-one implementation was a shift in the role of the teacher to guide/facilitator of student learning (used daily 38% of the time) followed by whole class instruction (used daily 28% of the time), which prior to implementation was the dominant instructional strategy and role of the teacher. In addition, Owen et al. found that two of the greatest challenges for teachers were (a) classroom management strategies to support a shift to student-centered learning environments and (b) professional development specific to using one-to-one devices and software in content areas.

Impact of One-to-One Devices on the Teacher

Increasingly, as more schools add low-cost one-to-one devices to classrooms, teachers will bring their own individual strengths and weaknesses to one-to-one integration and teaching (Garthwait & Weller, 2005; Rogers, 2003). Regardless of age or tenure in the classroom, the infusion of one-to-one devices in the classroom setting does have an impact on every classroom teacher (Kay & Knaack, 2005). The greatest impact on teachers in one-to-one classrooms include three areas of need: (a) a need to understand personal and organizational change processes, (b) a need for increased professional learning communities to effectively integrate one-to-one devices, and (c) the need to transform pedagogy from teacher-center to learner-centered (Bebell & Kay, 2010; Bonifaz & Zucker, 2004; Hall, 2010).

Ertmer and Ottenbreit-Leftwich (2010) investigated the values and beliefs of teachers regarding their uses of technology. Ertmer and Ottenbreit-Leftwich measured values and beliefs of teachers' uses (and reasons for those uses) of technology for teaching and learning. Interviews, observations, and electronic portfolios were used to collect data from eight award-winning teachers—teachers from Michigan who received state-level awards for excellence in technology use in the classroom—to (a) investigate the impact of one-to-one devices and teacher education and knowledge regarding one-to-one change initiatives and (b) examine the values, beliefs, and practices of eight practitioners recognized for their technology integration experience (Ertmer & Ottenbreit-Leftwich, 2010).

Ertmer and Ottenbreit-Leftwich (2010) found characteristics that enable teachers to leverage technology resources as meaningful tools. Teachers are the change agents in four areas: knowledge, self-efficacy, pedagogical beliefs, and subject and school culture. Findings indicated that inclusion of teachers in the visioning processes increased effective technology use in the classroom. Involvement of teachers in the personal and organizational aspects of one-to-one initiatives is an essential driver to weathering one-to-one instructional technology implementation dips. Furthermore, teacher-centered professional learning communities that involved the use of one-to-one instructional technology in the classroom facilitated both teacher knowledge and belief in the one-to-one change process. Lastly, Ertmer and Ottenbreit-Leftwich concluded that successful implementation of one-to-one devices in the classroom was achieved through a culture that allowed teachers to try out new practices and easily access technical and pedagogical support.

Job-Embedded Preparation

This concept of teacher teams took shape in many forms across the country. As it did, the practice became identified by the term —learning communities. Astuto, Clark, Read, McGree, and Fernandez, (1993) labeled the process of educators coming together to seek and share knowledge and make improvements to their practices based on the new learning as a professional community of learners. Hord (1997) later coined the practice as professional learning communities and positioned it as a focal point of education discussions.

The Professional Learning Communities (PLCs) approach to teaching shifts the focus away from an isolated teacher-centered approach to instruction. Instead, the focus becomes a student-centered approach, where teachers work collaboratively and interdependently to focus on a shared mission, collective capacity building, inquiry into learning gaps, reflective practice and developing effective instructional practices to meet the individual needs of all students. Schools and districts slowly began to invest time and resources into these —restructured schools‖ where teacher workgroups are centered on enhancing their curriculum knowledge, sharing ideas, and developing local standards and assessments (Darling Hammond, 1996).

In PLCs, the emphasis is on collective inquiry, reflection on current instructional practices, reducing isolation of teachers, sharing responsibility for the learning of all students, and creating a capacity for learning. The learner’s success becomes the priority in schools structured in this way. The focus slowly moves away from excuses and blame, to a change in the approach to instruction focused on the individual needs of the learners (DuFour, DuFour, Eaker, & Many, 2006).

Integration

The U.S. Department of Education’s goal of integrating educational technology into the curriculum expanded during the late 1990s (Sternberg, Kaplan, & Borck, 2007). The vision was to incorporate educational technology into the curricula of all schools (Sternberg et al., 2007). In the 1990s, school personnel began to integrate technology into the curriculum in order to increase student academic performance (Gaither, 2005). Compared to 21stcentury learners, previous generations did not have much opportunity to

use instructional tools and educational technology (Gaither, 2005). Sanders (1999) maintained that it was nationally imperative to incorporate instructional and educational technology into the curriculum to increase students' individualized academic success. It was also important for educators to motivate students to learn. For many years, researchers searched for ways to motivate students and improve student academic performance (Hsieh, Cho, Liu, & Schallert, 2008). Hsieh et al. found that motivation was linked to the amount of effort in completing a task.

If students spent the majority of their time using computers at home, teachers should use computers in the classroom to help motivate students to learn. In addition to being motivated to learn with technology, students could benefit from using computers as a tool to help target their weaknesses or individual needs (Sternberg et al., 2007). Gaither (2005) contended that by using technology students were motivated to excel academically so their educational needs were served.

Fraenkel and Wallen (2007) questioned the extent that technology enhanced learning as it related to student motivation. The participants consisted of a convenience sample of 182 sixth- and seventh-grade students. The researcher, using a mixed-methods design that consisted of both quantitative and qualitative methods, collected the data with the completion of a pretest, a posttest, and student interviews. Fraenkel and Wallen found that integrating technology into the curriculum produced positive results in terms of motivating students to learn, which increased their scores from the pretest to posttest. The interview results suggested that students preferred the use of technology as a supplement for student instruction.

Internet-based learning includes educational software and web sites that students could use as a supplement to learning. Qing (2007) critically examined student views about using technology in the classroom. A mixed-methods approach was used to collect data and focus on affective outcomes. A survey was also used within the scope of the study; open-ended questions were assessed about students' views on using technology. The results showed that the majority of students who participated in this study enjoyed the use of technology and believed that it could motivate them to excel academically. A limitation of the study was the lack of a comparison group of students who did not use any form of technology. In addition, a comparison of current and previous school year data could have determined if technology was as effective as the traditional method of instructing.

The U.S. Department of Education instructed teachers to integrate technology into curriculum and instruction to meet the needs of students (Gaither, 2005). Weller (2008) demonstrated many benefits to integrating technology into the curriculum. School officials questioned how teachers provide information using technology if it was not integrated into the curriculum (Gaither, 2005). Therefore, teachers must be trained on the methods to use technology in their areas of instruction. In order for instructional technology to be successfully implemented in the classroom, teachers must attend professional learning communities and receive continuous support from administrators (Martin, Strother, Baglau, Bates, & Reitzes, 2010).

It was also important that teachers enjoy integrating technology into the curriculum. Gibson (2009) stated, "If teachers were enthusiastic about utilizing

technology in the classroom, student performance could increase as well” (p. #).

Therefore, educational technology could be used to support all students and for differentiating instruction to meet their needs. Gibson reported most teachers agreed that using technology increased students’ academic performance.

Technology Professional Development in Education

Teachers have an unequal playing field on the possession of knowledge to infuse technology effectively into their curricula and classrooms on a daily basis. School technology plans should include a strong professional learning community component (Revenaugh, 2000). If a school’s technology plan does not include quality professional development, the chances of teachers successfully integrating technology into the instructional program are greatly diminished. One-size-fits-all methods do not work with students, or do they work when training adult teachers. A plethora of methods should be used when training adults; methods such as hands-on workshops, in-classroom mentoring, peer support systems, videotapes, and traditional classroom settings have all been shown to be effective means of teaching implementation. Hughes (2008) found in an analysis of researched qualitative data three themes: (a) barriers to professional development of technology implementation, (b) opportunity for technology professional learning communities, and (c) technology professional development’s effect on teaching and learning.

To level the playing field and provide all students with learning using technology, more targeted professional development of the use of technology must be provided to school personnel. Teachers must learn methods to infuse technology effectively, using

curriculum as the backbone for implementation. Teachers need to learn how to use technology as a tool for learning, not as a tutor for learning. Shaffer (2008) stated:

Curricula must be dynamic, free to change with the needs of the student body, district needs, and federal and state mandates. Computer technology is constantly changing and improving; school systems have an obligation to keep up with the rate of emerging technology. (p. 1)

If technology continues to grow at the intensity it has over the past 10 years, policies to improve curriculum, educator preparation, and training and classroom strategies must be developed in order to use technology effectively in the classroom.

The application of technology must be variable to meet the needs of individual learners, teachers, and the core curriculum content standards. Professional learning communities must become collaborative and embedded. The infusion of online communications such as virtual learning communities, blogs, or wiki-curriculums will assist in the collaboration and professional development of teachers to use technology in their classrooms.

Administrative Influence in Technology Implementation

To incorporate technology successfully into the school's instructional program, school administrators must become effective instructional leaders and visionaries (Brooks-Young, 2002b; Valdez, 2004). Brooks-Young (2002b) stated:

Becoming, and remaining to be, an effective leader in today's educational environment requires sustained effort on the administrator's part. It requires the ability to hold a global perspective of the school or district while at the same time

being able to recognize and address all the pieces that affect programs including technology, curriculum, instructional practice, staff and community members, and managerial tasks. (p. 3)

The Technology Standards for School Administrators Collaborative (2001) stated that administrators must “ensure that curricular design, instructional strategies, and learning environments integrate appropriate technologies to maximize learning and teaching” (p. 6). The International Society for Technology in Education (2002) stated “Educational leaders identify, use, evaluate, and promote appropriate technologies to enhance and support instruction and standards-based curriculum leading to high levels of student achievement” (p. 1). Brockmeier, Sermone, and Hope (2005) reported that early studies found that the principal’s role in effective technology implementation was ignored. However, the principal’s role is now seen as vital in computer technology implementation (Jones, 2007). Principals were expected to “promote highly effective practices in technology implementation” (International Society for Technology in Education, 2002).

Administrators must create and maintain an instructional milieu that encourages and supports optimal technology implementation into the adopted curriculum (Brooks-Young, 2002b). It is critical that administrators develop a risk-free environment in which teachers and students can attempt innovative teaching and learning approaches using technologies, make mistakes, and learn how to transform those mistakes within the instructional process. To construct this type of environment, the school leadership should understand the following:

- An administrator's primary concern is student achievement.
- It is imperative to have administrative support through modeling technology use; active participation in planning, implementation, and evaluation; and the ability to locate human and financial resources.
- Program planning must be predicated upon the analysis of appropriate data.
- Program planning must be inclusive and dynamic.
- Staff members must have access to regular, ongoing professional development opportunities in a variety of formats both on- and off-site.
- Staff members and students must have ready access to up-to-date equipment that is reliable and well maintained.

There are several focuses on the potential influences from administrators, both via policy/document analysis and through questioning of participants. In the Henrico County study (Zucker & McGhee, 2005), one technology coordinator told researchers that it was difficult to get some teachers to break from existing routines and use the laptops, estimating that approximately 20% of educators in the district actively resisted using technology. Successful schools saw influences from administrators as one key for success. That trait is echoed in research from Chang, Chin, and Hsu (2008) who found positive links between administrators' views and use of technology and the level of implementation by teachers.

Other researchers also found that administration-led implementation, done in a supportive rather than authoritative model, proved effective at increasing technology implementation at the K–12 and university levels (Strudler & Wetzel, 1999). Chang,

Chin, and Hsu (2008) disclosed that elementary school principals who embraced technology and supported its use were perceived by their teachers as partially responsible for increasing the technology implementation level in their buildings. Chang et al.'s statistical analyses at schools in both U.S. and Taiwanese schools found a strong correlation between principals' technology leadership and effective use of technology in the classroom. That connection, combined with the provision of financial support for equipment and access, also suggested that teachers who perceive support from their administrators for technology use are more likely to incorporate technology in their classroom (Chang et al., 2008).

Summary

New instructional methods such as one-to-one instructional technology are emerging to move beyond traditional lecture-based instruction to foster 21st century skills. Standards-based education and the advancement of technology are promoting new teaching methods to leverage the use of technology. The concern is the association and lack of technological implementation and pedagogical practices in the classroom, which has a direct influence on students' academic achievement (Blazar, 2015). Saettler (2004) emphasized, "One of the most powerful and appealing features of the new computer technology is that it opens up new approaches to inquiry-oriented instruction" (p. 470). When schools implement an instructional method that uses technology as a central component, student achievement is affected. Most researchers who have studied these instructional models have reported improved student achievement. Daccord and Reich (2015) stated, "The best technology integration tends to take place in schools created

around a focused pedagogical vision” (p. 20). The school leader must lead an interdisciplinary team to create a vision to implement. Fullan (2007) stated, “Success is not about being right; it is about engaging diverse individuals and groups who likely have many different versions about what is right and wrong” (p. 40). Instructional leaders must work together to ensure everything is in place to support the learning process.

CHAPTER III

THEORETICAL FRAMEWORK

The purpose of this mixed methods study was to explore middle school teachers' transformation from a traditional pedagogy to a technology-rich pedagogy as they learn to incorporate one-to-one laptop technology in their classrooms. The researcher used a quantitative survey and semi-structured focus group interviews to examine relationships between variables that may influence the way in which educators' classroom practices are altered as a result of using one-to-one instructional technology.

Research Design

The purpose of this mixed methods study was to explore transformation of pedagogical practices and skills as middle school teachers' implement one-to-one laptop instructional technology in their classroom environments. Combining statistics and narratives provides a greater understanding of the research problem (Creswell, 2012). A mixed methods approach is the most appropriate research design for this study due to the nature of information being collected. Data collection draws from several sources, such as questionnaires, interviews, observations, or analysis of documents (Creswell, 2012). In this study, the researcher used the questionnaire responses from 48 teachers and transcripts of semi structured interviews of four teachers to create a framework of how middle school teachers perceive their self-efficacy in using one-to-one laptop

instructional technology, their preparedness within Professional Learning Communities (PLCs) to implement instructional technology, and how their pedagogical practices may have changed.

Theory of Variables

The theoretical framework was based upon Knowles's theory of andragogy (as cited in Knowles, Holton, & Swanson, 2005) and Lewin's change theory (as cited in Lewin & Gold, 1999). Andragogy was first studied in the early 1920s, when Lindeman began studying the process of how adults learn (as cited in Knowles et al., 2005).

Knowles et al. (2005) stated that adults learn best based upon specific criteria:

- A need to know
- Self-concept of the learner (*middle school teachers self-efficacy*)
- The learner's prior experience (*middle school teachers perceptions*)
- A readiness to learn (*middle school teachers preparedness*)
- An orientation to learning (*pedagogical transformation*)
- Motivation (*one-to-one laptop instructional technology*)

As a relationship amongst variables, andragogy or the practice of teaching and training adult learners can be used to instruct adults through the use of individualized characteristics of learning. Unlike children, adults learn through different modalities such as the need to understand and expand on their knowledge on a topic, the learner's self-concept, the prior and personal experiences of the learner, the readiness and desire to learn, an understanding that the learning can be applied to their lives, and a motivation to want to learn the new material (Knowles et al., 2005). For adult learners, education and

learning have different meanings. Education changes knowledge, skills, and the attitudes (Knowles et al., 2005).

Constructivism Learning Theory

Constructivism is a learning theory developed by Piaget (1966) that explains how individuals synthesize new meaning or learning. Richmond (2006) stated, “Every experience we have, whether as an infant, child, or adult is taken into the mind and made to fit in the experiences which already exist there” (p. 68). The purpose of the study was to explore middle school educator implementation of one-to-one laptop instructional technology. Fullan (2007) stated, “Introducing innovations is a way of life in most school systems” (p. 93). The accumulated daily experiences a teacher has with using technology in the implementation stage or actively using technology in a lesson affects teacher perception of the merit of one-to-one instructional technology environments. As teachers shift their learned pedagogical practices to implement technology and the learning styles of modern students, teachers experience predictable stages along the change curve. The accumulation of experiences shapes their perceptions of one-to-one programs and, to a degree, determines the amount of technology implementation a teacher employs within their classroom.

Lewin’s Theory of Change

In the change theory, Lewin and Gold (1999) addressed the change process in human systems. This theory was used to address the research questions and the ways in which middle schools teachers implement one-to-one instructional technology. Lewin and Gold argued that in order to have systemic or institutional change, the forces that

favor the change have to be greater than the forces resisting it. There needs to be a balance between the forces that support change and the forces that resist the change.

Definition of Variables and Significant Terms

Instructional technology refers to digital learning tools used to lead and support student engagement and learning.

Implementation of technology occurs when technology is the central vehicle for instruction aimed at developing 21st century skills as opposed to simply supporting or supplementing traditional instructions or teaching how to use computer-based applications.

Middle school is an academic program that is comprehensive in nature and includes students in Grades 6–8.

One-to-one instructional technology is defined as “every student is assigned their own laptop” (Abud, 2014) by the district.

Pedagogy is the art or profession of teaching.

Professional development refers to the formal training a teacher receives toward the goal of developing new skills knowledge, and competencies as they evolve in the field of education.

Professional Learning Communities (PLCs) for the sake of this study refers to a group of educators that collaborate to improve skills and instructional practices.

Teacher self-efficacy (adapted from Bandura’s social learning theory) is defined as teachers’ belief in their capabilities to deliver and organize one-to-one instruction, in

addition to executing the courses of action required to manage prospective situations (Bandura, 1994).

Teaching experience, for the purposes of this study, is the self-reported number of years teachers have been in education.

Technology implementation for this body of research refers to the reliance on one-to-one laptop technologies for effective teaching and learning processes. Learners use one-to-one instructional technology to construct new knowledge and enhance their learning process, and teachers integrate technology into their teaching process for effective lesson delivery.

Relationship among the Variables

The study was interpreted through the theory of Lewin's Theory of Change and the Constructivism Theory. In this study, self-efficacy was defined as "beliefs determine how people feel, think, are motivated, and behave" (Bandura, 1994, p. 36). Within the constructivist learning theory, an explanation is provided in how individuals synthesize new meaning or learning; thus, creating a high or low efficacy of one's self. The performance and perception of the individual can be determined by their adult experience during the process. The phenomenon that teachers are experiencing in integrating new one-to-one laptop technology in the learning environment can be quite complex. In Lewin's Theory of Change, the step for change introduces activities and interventions that allow the organization to move toward a new level are introduced (Burke, 1987). The change phase introduces movement and behavior that cause a shift from a current stage to a new functional level that demonstrates noticeable behaviors (Burke, 1987). In the

context of the study, how teachers perceived their efficacy and preparedness to implement one-to-one instructional technology, their years of teaching experience, and the use of one-to-one instructional technology (independent variables) were used to help examine the dependent variable—their pedagogical transformation (see Figure 1).

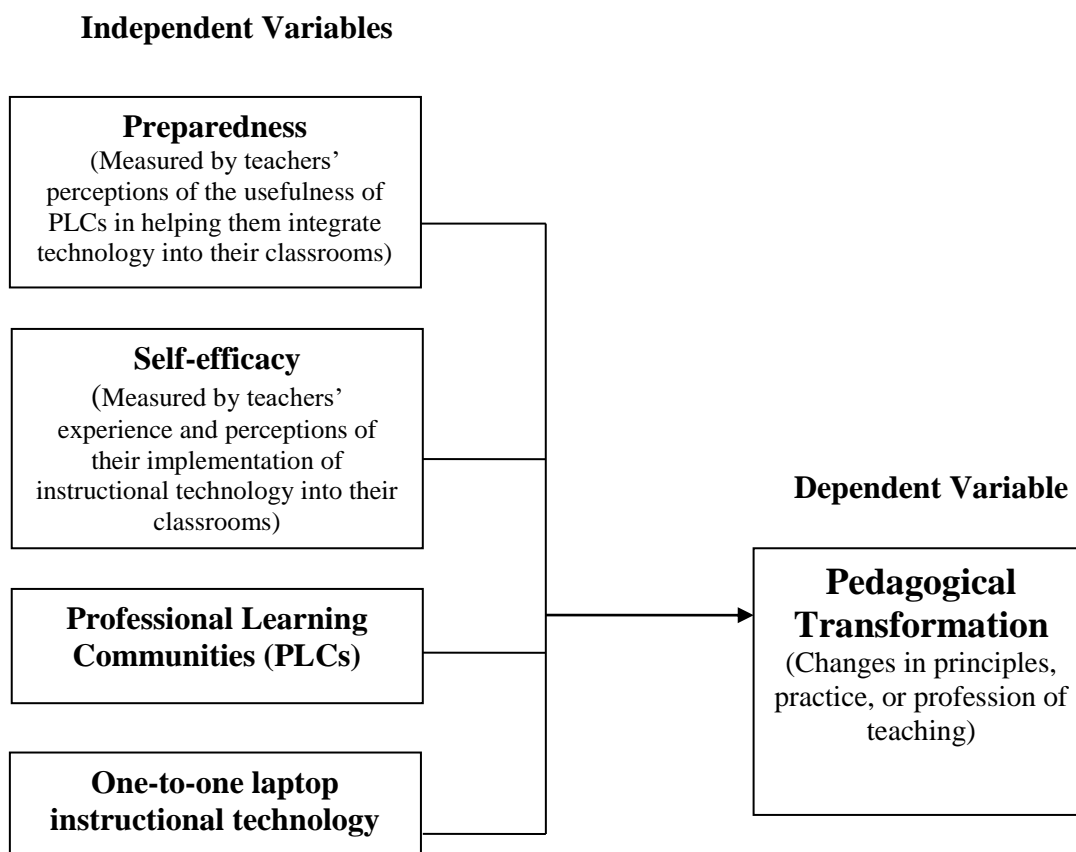


Figure 1. Relationship among the variables.

Limitations of the Study

The researcher used convenience sampling to create a sample of teachers who participated in the study. Creswell (2007) stated that convenience sample “represents sites or individuals from which the researcher can access and easily collect data” (p. 126).

A limitation exists on the generalization of the findings because the study did not include a random sample of teachers that may have represented the population of all middle school teachers.

Another potential weakness is that participants may be limited in their experiences and understanding of the phenomenon. In addition, the participants may not be able to convey their perceptions. Anderson (2010) stated, “The researcher’s presence during data gathering, which is often unavoidable in qualitative research, can affect the subjects’ responses” (p. 3). Finally, the researcher and participants are employed in the same school district. Therefore, participants may know researcher; thereby, introducing both researcher bias and social desirability because the participants may give answers they may think the researcher wants to hear.

Summary

This chapter identified the variables and defined key terms used in this study. The dependent variable was identified as pedagogical transformation from the implementation of one-to-one instructional technology. The independent variables included teachers’ perceptions of their efficacy and preparedness to implement the one-to-one laptop technology, years of teaching experience, and one-to-one instructional technology (laptop). Bandura’s self-efficacy theory and Piaget’s constructivism learning theory formed the theoretical framework used to examine the relationships of the variables. The implementation of Lewin and Gold’s theory of change was pertinent to the theoretical framework of this study because the driving forces for pedagogical transformation within an organization and the community of individuals needed to be analyzed in order for a

plan for change to be designed and implemented within one to one instructional technology environments of the teacher's classrooms. The limitations of the study were noted.

CHAPTER IV

RESEARCH METHODOLOGY

The purpose of this mixed methods study was to explore middle school teachers' pedagogy and their transformations as they implement one-to-one laptop instructional technology in their classroom environments. Combining statistics and stories provides a greater understanding of the research problem (Creswell, 2012). A mixed methods approach is the most appropriate research design for this study due to the nature of information being collected. Data collection draws from several sources, such as questionnaires, interviews, or analysis of documents (Creswell, 2012). This chapter contains a description of the methodology the researcher assessed for data collection and analysis. The following sections describe the methodology of the study: (a) research design, (b) description of the setting and participants, (c) sampling procedures, (d) working with human subjects, (e) instrumentation, (f) data collection procedures and analysis methods, and (g) validity and reliability.

Research Design

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approach is the most appropriate research design for this study due to the nature of information being collected. Data collection draws from several sources, such as questionnaires, interviews, or analysis of documents (Creswell, 2012). In this study, the researcher used the questionnaire responses from 48 teachers and transcripts of semi structured focus group interviews of four teachers to create a framework of how middle school teachers perceive their self-efficacy in using one-to-one laptop instructional technology, their preparedness within Professional Learning Communities (PLCs) to implement instructional technology, and how their pedagogical practices may have changed.

Description of the Setting and Participants

The study was conducted in an urban school district in Georgia. Participants in the study were middle school educators who taught in one-to-one instructional technology environments where each student received a laptop at the beginning of the academic year. The sample included both male and female teachers with varying years of service who teach core curriculum courses (English, history, mathematics, or science). The surveys and focus group interviews were administered at School A, a public middle school in Georgia. These schools were located in an urban community and were both Title 1 schools, in which 69% of students in School A and 79% of students in School B qualify for free or reduced lunch.

Both middle schools consisted of grades 6 to 8. School A, had a total enrollment of 855 students; of that number, 2% were English as a Second Language students and 13% were special education (Governor's Office of Student Achievement, 2012). The

student population of School A had an ethnic make-up of 83% African American and 8%. School B, had a total enrollment of 887 students; of that number, 5% were English as a Second Language students and 14% were special education (The Governor's Office of Student Achievement, 2012). The student population of School B had an ethnic make-up of 56% African American, 29% Hispanic, and 2% Asian. Each of the schools was listed as an alert school by the Georgia Department of Education. Schools were selected according to the following descriptors: Title I status, ethnicity of student population, English proficiency of student population, disabilities of student population, and teacher and student population in each grade level (see Table 1).

Table 1

Description of the Study Sites

Characteristic	School A		School B	
	<i>N</i>	%	<i>N</i>	%
Enrollment	855	100	887	100
Students				
Gender				
Males	478	56	461	52
Females	377	44	425	48
Race				
African American	709	83	497	56
White	42	5	79	9
Asian	17	2	17	2

Table 1 (continued)

Characteristic	School A		School B	
	<i>N</i>	%	<i>N</i>	%
Hispanic	68	8	257	29
Other/Multiracial	19	2.3	35	4
Eligible for free/reduced lunch	589	69	700	79
English language learners	17	2	44	5
Special education	111	13	124	14
Teachers				
Gender				
Males	3	10	7	37
Females	26	89.6	12	63
Sixth grade	277	32	234	26
Seventh grade	357	42	289	32
Eighth grade	221	26	364	41

(The Governor's Office of Student Achievement, 2012)

Sampling Procedure

The researcher used a convenience sample of 48 middle school teachers in two middle schools in the same school district. Convenience sampling is a non probability sampling technique that uses participants because of their accessibility and proximity to the researcher (Creswell, 2012). The researcher visited both schools several times and requested teachers to complete a questionnaire while they were convened for faculty meetings, during planning periods, or while they participated in professional learning communities. Those teachers who attended the meetings and agreed to

participate were included in the sample. Of the 48 teachers in those two schools, 4 teachers participated.

Working with Human Subjects

Before the start of the study, approval from the Institutional Review Board at Clark Atlanta University was received. The participating district also approved the study. Each participant was provided informed consent (see Appendix A) at the time they completed the questionnaire and before the individual, face-to-face interviews. Participation in the study was voluntary, and the participants could end their involvement in the study at any time. No identifying information was collected. After transcription of the interviews, the researcher deleted the audio recordings.

Instrumentation

Data were collected using a questionnaire and semi structured focus group interviews. The teacher questionnaire and interview protocol were developed by both the researcher and the researcher's dissertation committee. The questionnaire (see Appendix B) contains three sections—one to collect teachers' perceived self-efficacy to use one-to-one laptop technology in their classroom (10 items), another to measure the teachers' perceived preparedness to integrate one-to-one laptop technology in their classrooms (seven items), and a section containing six items that collected demographic information (highest degree earned, years of experience teaching and using one-to-one laptop technology, gender, subjects and grade levels taught). The teachers' responses to the questionnaire were used to create the quantitative variables used to answer three of the four research questions (see Table 2).

Table 2

Research Questions and Instrument Alignment

Research question	Variable/topic	Source
What is the relationship between middle school teachers' self-efficacy in using one-to-one laptop technology and their perceptions about how professional learning communities prepare them to incorporate the new technology in their classrooms?	Teachers' self-efficacy	Questionnaire, Items 1-10
	Teachers' perceptions of preparedness	Questionnaire, Items 11-17
What is the relationship between middle school teachers' self-efficacy in using one-to-one laptop technology and their years of teaching experience?	Teachers' self-efficacy	Questionnaire, Items 1-10
	Years of experience	Questionnaire, Item 19
What is the relationship between middle school teachers' perceptions about how professional learning communities prepare them to incorporate the new technology in their classrooms and their years of teaching experience?	Teachers' perceptions of preparedness	Questionnaire, Items 11-17
	Years of experience	Questionnaire, Item 19
To what extent has one-to-one instructional technology (laptop) influenced middle school teacher's pedagogical transformation?	Pedagogical transformation	Interview questions

The researcher collected data using semistructured, face-to-face interviews to answer the final research question. The interview protocol was developed by the researcher and the dissertation committee. The interview protocol was developed from topics in the literature review.

Teachers' Perceived Self-Efficacy

Ten items were created to measure the teachers' perceived self-efficacy to use one-to-one laptop technology in their classroom. The items were responded to using a 5-point Likert scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). A self-efficacy scale was created for each respondent by averaging their responses across the 10 items. The scale ranges in value from 1 to 5, with a higher score indicating higher perceived self-efficacy to use one-to-one laptop technology in their classroom.

Teachers' Perceived Preparedness

Seven items were created to measure the teachers' perceived preparedness to integrate one-to-one laptop technology in their classrooms. The items were responded to using a 5-point Likert scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). A preparedness scale was created for each respondent by averaging their responses across the seven items. The scale ranges in value from 1 to 5, with a higher score indicating greater perceived preparedness to integrate one-to-one laptop technology in their classrooms.

Demographic Variables

The researcher included demographic variables in order to describe the sample of teachers who responded to the questionnaire. The years of experience provided by the teachers were used to answer one of the research questions. This variable, years of teacher experience, was a continuous variable, ranging from 1 to 30 plus years.

Procedure for Data Analysis

The qualitative data analysis began with the transcription of the focus group. The researcher removed identifiers that linked text to an individual or organization during the transcription process to protect participant confidentiality. The participants were provided with a transcript of their interviews and asked to verify that the transcription captured their responses correctly. After transcription, the data were analyzed using the constant comparative method. The constant comparative method shows relationships between categories the researcher created to define the teachers' perspectives on how their implementation of one-to-one instructional technology is creating a transformation in their pedagogy (Denzin & Lincoln, 2000). The researcher sought to make sense of the perceptions of this particular group of middle school teachers who were integrating one-to-one laptop technology in their classrooms.

Glaser and Strauss (1967) defined constant comparative analysis as a process whereby data are compared continuously and coded into categories until no more variation occurs. The researcher used three types of coding when analyzing the transcripts of the teachers' interviews: (a) open coding brought organization to the data, (b) axial coding found the interconnectedness of the categories, and (c) selective coding

defined the main themes in the data and related each theme to the other. The three types of coding helped the researcher find the patterns in the words provided by the teachers during their interviews.

The quantitative data collected from the questionnaire were analyzed to answer the first three research questions. Each of the three research questions sought to determine the relationship between two variables. For each analysis, the Pearson's product moment correlation procedure was used to determine the relationship between (a) teachers' self-efficacy in using one-to-one laptop technology and their perceptions about how professional learning communities prepare them to incorporate the new technology in their classrooms, (b) teachers' self-efficacy in using one-to-one laptop technology and their years of teaching experience, and (c) between teachers' perceptions about how professional learning communities prepare them to incorporate the new technology in their classrooms and their years of teaching experience. A two-tailed procedure was used and the correlation value obtained (r) was evaluated for significance at the .05 level.

Validity and Reliability of the Quantitative Data

The researcher's dissertation committee members established face validity for the self-efficacy and preparedness scales of the questionnaire. Reliability of the scales will be established during the analysis of the quantitative data. Cronbach's coefficient alpha values will be obtained for each scale.

Trustworthiness of the Qualitative Data

Qualitative researchers must determine if a study is trustworthy (Glesne, 2016). Therefore, the following terms are appropriate for qualitative research: credibility,

transferability, dependability, and conformability. This section includes how the trustworthiness of the current study was addressed (Guba, 1981).

Credibility

How the data are interpreted and how the researcher presents it establishes the credibility of the study (Polit & Beck, 2012). The current study's credibility was established by recruiting, surveying, and interviewing an appropriate group of volunteer middle school teachers who provided open and willing answers to questionnaire items and interview questions. The interactions between the teachers and the researcher provided for open and honest answers to the interview questions; thus, supporting the credibility of the data collected during the study.

Additional credibility of the results was achieved using member checking, also known as participant validation (Birt, Scott, Cavers, Campbell, & Walter, 2016). Typically, participants are asked to read the transcription of their interviews. In this way, the teachers confirmed that the transcripts were accurate representations of what they said during the interview.

Transferability

Transferability is dependent on the "fit between the contexts" of the settings (Guba, 1981, p. 81). The researcher used a rich description of the teachers' comments about their pedagogical transformation to achieve transferability. The rich descriptions made the results more realistic and aided in establishing the study's validity (Creswell, 2014). An accurate and appropriate analysis of the quantitative data provided another layer of credibility to the study.

Dependability

The ability of a study to be replicated establishes the study's dependability (Guba, 1981). The researcher provided a clear description of the processes used to select the teachers who participated in both the survey and the interviews. The researcher also provided detailed descriptions of how both the quantitative and qualitative data were analyzed. The survey data were checked for missing data and examined for violations to assumptions of the statistical procedures used to answer the first three research questions. The interviews were transcribed and checked for errors. Throughout the qualitative data analysis, the researcher compared the data with the codes to ensure no drift in the code definitions occurred.

Confirmability

The confirmability of qualitative research corresponds to how objective a quantitative study is. Guba (1981) stated, "Naturalists shift the burden of neutrality from the investigator to the data, requiring evidence not of the verifiability of the investigator or his or her methods but of the confirmability of the data produced" (p. 81). In order to provide confirmability of the study, the researcher cited literature that supported the findings. The researcher included teachers' comments to support interpretations and conclusions. Finally, the researcher clarified biases brought to the study. Reducing bias during data collection was important to this study. The researcher was careful not to impose views and biases during the interviews and analysis of the qualitative data.

Summary

Teachers from two middle schools were recruited to respond to a questionnaire and volunteer to participate in a focus group interview with the researcher. Data collected from both of the qualitative and quantitative procedures were analyzed to explore middle school teachers' transformation as they learn to integrate one-to-one laptop technology in their classrooms. Chapter IV contains a description of the methods and procedures used to achieve that goal.

CHAPTER V

ANALYSIS OF DATA

The purpose of this mixed methods study was to explore middle school teachers' pedagogy and their transformations as they learn to implement one-to-one laptop technology in their classrooms. This chapter presents results of the analysis of the data collected from teachers in two rural middle schools. In this study, the researcher assessed the questionnaire responses from 48 teachers and transcripts of semi structured, focus group interviews of four teachers to create a framework of how middle school teachers perceive their self-efficacy in using one-to-one laptop technology, their preparedness within Professional Learning Communities (PLCs) to implement one-to-one instructional laptop technology, and how their pedagogical practices may have changed.

Description of the Sample

Twenty-nine teachers from School A and 19 teachers from School B completed a questionnaire that assessed their self-efficacy to use and preparedness to integrate one-to-one laptop technology in their classrooms. Three fourths of the teachers were female, 40% held specialists or doctoral degrees, and 43% had been teaching 15 years or longer (see Table 3). Nearly half of the surveyed middle school teacher's (45%) indicated that they taught languages arts and approximately 25% indicated that they taught mathematics, science, or social studies.

Table 3

Description of Teachers Responding to Questionnaires (n = 48)

Characteristic	<i>n</i>	%
Gender		
Female	36	75.0
Male	12	25.0
Highest degree earned		
Bachelor's	9	18.8
Master's	20	41.7
Specialist	15	31.3
Doctorate	4	8.3
Subjects taught (<i>multiple responses possible</i>)		
Language arts	21	44.7
Mathematics	10	21.3
Science	13	27.7
Social studies	10	21.3
Grades taught (<i>multiple responses possible</i>)		
Sixth	19	39.6
Seventh	24	50.0
Eighth	20	41.7
Years of teaching experience ($M = 13.0, SD = 7.0$)		
1–4	6	12.8
5–9	8	17.0
10–14	13	27.7
15–19	11	23.4
20 or more	9	19.1
Teaching experience in a one-to-one instructional technology classroom ($M = 2.9, SD = 2.0$)		
Less than a year	2	4.3
1–2	25	53.2
3–5	16	34.0
More than 5	4	8.5

Half of the teachers indicated they taught seventh-grade students. Moreover, half (58%) indicated that they had been teaching in one-to-one instructional technology classrooms for 2 or fewer years.

Reliability of the Scales

Two instruments were used to measure teachers' perceived self-efficacy to use and their perceived preparedness to integrate one-to-one laptop technology in their classrooms. The reliability of the 10 items in the self-efficacy scale and the seven items in the preparedness scale were assessed based on the 48 participating teachers using Cronbach's alpha coefficient (see Table 4). The values obtained were above .70 and indicated an acceptable reliability (Nunnally, 1978).

Table 4

Reliability of Scales

Scale	# items	Cronbach's alpha
Perceived self-efficacy	10	.94
Perceived preparedness	7	.87

Item Analysis of Scales

The 48 participating teachers responded to the 10 items in the perceived self-efficacy scale using a 5-point Likert scale that ranged from 1 (*strongly disagree*), 2 (*disagree*), 3 (*neither disagree nor agree*), 4 (*agree*) to 5 (*strongly agree*). The following table 5 contains the percentage of teachers who either responded in the negative or neutral (*strongly disagree*, *disagree*, or *neither disagree nor agree*) or responded in the

affirmative (*agree* or *strongly agree*). Of the 10 items on the self-efficacy scale, only four garnered more than 70% of the teachers' confidence. Approximately 60% of the teachers were confident about the remaining six items (see Table 5).

Table 5

Teachers' Perceived Self-Efficacy to Use One-to-One Instructional Laptop Technology
(*n* = 48)

Item	Disagree	Agree
I feel confident that I understand how to use a computer well enough to use it in my classroom.	27.1	72.9
I feel confident that I can successfully teach relevant subject content with appropriate use of one-to-one laptop technology.	29.2	70.8
I feel confident that I have the skills necessary to use the computer for one-to-one laptop instruction.	27.7	72.3
I feel confident that I can use correct computer terminology when directing my students' computer use.	39.6	60.4
I feel confident I can regularly incorporate one-to-one laptop technology into my lessons when appropriate to student learning.	35.4	64.6
I feel confident about selecting appropriate technology for instruction based on curriculum standards.	40.4	59.6
I feel confident about using technology resources (such as spreadsheets, electronic portfolios) to collect and analyze data from student tests and products to improve instructional practices.	43.8	56.3
I feel confident in my ability to evaluate software for teaching and learning.	35.4	64.6

Table 5 (continued)

Item	Disagree	Agree
I feel confident I can help students when they have difficulty with their laptop computer.	36.2	63.8
I feel confident I can consistently use one-to-one instructional technology in effective ways.	27.1	72.9

Between 70% and 73% of the teachers agreed that they understood how to use a computer in their classroom, could teach relevant subject content using the one-to-one laptop technology, had the skills to use the technology, and could consistently use the technology in effective ways. However, only 60% to 65% of the teachers felt that they could use correct computer terminology, could incorporate the technology into students' lessons, could select appropriate technology, and could help the students when they had trouble with their laptops. Additionally, the teachers also were less confident that they could use technology resources to collect and analyze data to improve instructional practices or evaluate software for teaching and learning.

On the questionnaire, 38 teachers reported that they participated in a Professional Learning Communities (PLCs) that supported the implementation of one-to-one laptop technology into instruction. Those teachers responses to the seven items in the perceived preparedness to use scale using a 5-point Likert scale that ranged from 1 (*strongly disagree*), 2 (*disagree*), 3 (*neither disagree nor agree*), 4 (*agree*) to 5 (*strongly agree*). The teachers could also indicate that the item was not part of the PLC.

Table 6 contains the teachers' response on the survey related to their preparedness in using instructional technology. Fewer than 10% of the 38 teachers indicated that their PLC did not use lecture-style, hands-on, or modeling workshops to support their use of the technology, nor did they include individual coaching or modeling by an instructional coach.

Table 6

Teachers' Perceived Preparedness to Use One-to-One Instructional Laptop Technology
(*n* = 48)

Item	Disagree	Agree	NA
Lecture-style workshops (informational or skill development) support my classroom practices.	42.1	50.0	7.9
Hands-on style workshops where new skills are introduced and practiced (skill development) support my classroom practices.	43.2	54.1	2.7
Observed demonstration of skills via video or attending a workshop (modeling) supports my classroom practices.	39.5	52.6	7.9
PLC reflections on classroom experiences support my classroom practices.	52.6	57.4	0.0
PLC collaboration to incorporate new strategies into lessons support my classroom practices.	39.5	60.5	0.0
Individual modeling of strategies in my classroom by trainer/coach with my students supports my classroom practices.	36.8	60.5	2.6

Table 6 (continued)

Item	Disagree	Agree	NA
One-to-one coaching inside and outside the classroom through training on new skills/strategies supports my classroom practices.	31.6	63.2	5.3

Fewer than 60% of the teachers agreed that the lecture-style workshops, hands-on style workshops, or modeling workshops, nor that reflected on how current classroom experiences supported their use of instructional technology. Between 61% and 63% of the middle school teachers agreed that their PLC collaborations, and individual modeling and coaching supported their classroom instructional practices.

Analysis of Quantitative Research Questions

Research Questions 1, 2, and 3 were designed to determine statistical relationships between teachers' perceived self-efficacy and preparedness to use one-to-one instructional laptop technology in their classrooms. Forty-seven teacher respondents provided their years of teaching experiences. Continuous variable, total years of experience ranged from 1 to 30 years. In addition, experience with one-to-one instructional technology was also a continuous variable and ranged between less than one to 10 years. Both scale scores were also continuous variables that ranged from 1 to 5, with high scores indicating higher perceptions of self-efficacy and preparedness. The means and standard deviations of the scale scores are presented in Table 7.

Table 7

Self-Efficacy and Preparedness Scale Scores

Scale	<i>n</i>	<i>M</i>	SD
Teachers' perceived self-efficacy to use one-to-one instructional laptop technology in their classroom	48	3.72	.83
Teachers' perceived preparedness to integrate one-to-one instructional laptop technology in their classrooms	38	3.50	.82

Variables of Interest

RQ1: What is the relationship between teachers' self-efficacy in using one-to-one laptop instructional technology and their perceptions about how professional learning communities prepare them to incorporate the new instructional strategies in their classrooms?

A two-tailed Pearson's product moment correlation procedure using the responses from 48 teachers found a moderate, positive, and statistically significant correlation between two scales ($r = .57, p < .01, n = 48$).

RQ2: What is the relationship between teachers' self-efficacy in using one-to-one laptop instructional technology and their years of teaching experience?

A two-tailed Pearson's product moment correlation procedure using the responses from 47 teachers found no statistically significant correlation between total years of teaching experience ($r = .04, p = .78, n = 47$) or with years of experience with one-to-one instructional technology ($r = .18, p = .23, n = 47$).

RQ3: What is the relationship between teachers' perceptions about how professional learning communities prepared them to incorporate the new instructional technology in their classrooms and their years of teaching experience?

Only the responses from 37 teachers were used to determine the answer to this research questions. A two-tailed Pearson's product moment correlation procedure found no statistically significantly correlation between total years of teaching experience ($r = .25, p = .13, n = 37$) or with years of experience with one-to-one instructional technology ($r = .19, p = .26, n = 37$).

Qualitative Analysis of Research Question 4

Four middle school teachers were interviewed using a focus group format. A set of interview questions (see Appendix C) was used to answer the final research question:

RQ4: To what extent has one-to-one instructional technology (laptop) program influenced middle school teacher's pedagogical transformation from a traditional classroom to a technology-rich classroom?

A description of the four teachers who participated in the focus group is presented in the following table. All of the participants taught sixth grade. Two teachers taught science and two teachers taught social studies. Three were females. Their responses to the focus group interview questions were coded, categorized, and then grouped into four themes: (a) administrative issues, (b) effect of one-to-one instructional technology on teachers, (c) effect of one-to-one instructional technology on students, and (d) effect of PLCs on use of one-to-one instructional technology in teachers' classrooms. Each theme

was explored in further detail in the narrative below. Comments from teachers were included to illustrate each theme (see Table 8).

Table 8

Description of Focus Group Participants

Participant	Gender	Grade taught	Subject taught
Teacher 1	Female	6	Science
Teacher 2	Female	6	Science
Teacher 3	Female	6	Social studies
Teacher 4	Male	6	Social studies

The direct quotes from Teachers 1, 2, 3, and 4 were obtained during a focus group conducted by the researcher on December 1, 2017.

Administrative Issues

The middle school teachers in this research indicated that the laptop technology was easily accessible in their schools and in their classrooms. Teacher 2 reported, “Yes, they [students] all have their laptops...[unless] they don’t have them due to damages that they themselves create.” Teacher 2 also indicated that her classroom had a desktop available for student use. The teachers indicated that a benefit of the instructional technology was that it saved paper and time. Teacher 2 reported, “If you needed to adjust something on the fly, [it is/the technology] really easy to do without having to go and run copies.” On another note, Teacher 2 further indicated that the instructional laptop technology allowed students to access and use the information at the same time and that

students do not have to rely on a textbook that may be “missing some pages because it’s old or it’s outdated.”

Effects of One-to-One Laptop Technology on Teachers

The participating teachers indicated that they used the technology because it was provided by the school district. Although they would have wanted to use it if the school district did not provide it, they probably would not because “I wouldn’t have the resources or access to it.” The teachers use the instructional laptop technology between 75% (Teacher 1) and 90% (Teacher 4) of the classroom teaching time during the week.

When asked how the one-to-one instructional laptop technology had changed their role as teachers in the classroom, Teacher 1 reported, “I became a facilitator rather than a leader. The kids are on their own.” Teacher 2 also responded,

I really like the laptops because it changed my role from...a lecturing kind of teacher to a facilitator. Instead of it being centered on me and my daily lesson and my words, it’s centered on the students and their learning and how they engage with the materials.

Teachers also reported that the instructional technology helped them differentiate their lessons. Teacher 1 reported, “It helps me with my differentiation because...I can easily adjust what I need for each individual student.” Teacher 4 also indicated that the instructional laptop technology made differentiation easier:

If you have higher performing students and lower performing students, you don’t have to work as hard to differentiate for each of group. It’s a lot easier for us to

meet them where they are since you're able to provide so many different materials on the fly to them individually.

Effects of One-to-One Laptop Technology on Students

The teachers reported that they believed the “technology is effective...because it’s able to reach all of my students.” Teacher 1 noted that the district benchmark and state-mandated testing was conducted on the laptops, “When they do well on state tests, it kind of reflects how they might do in the classroom.”

Teacher 3 indicated that one benefit of the technology as an instructional tool was that the students “are more excited to partake in or engage in classroom activities when you’re using the laptops.” Teacher 2 further noted that students’ engagement increased because they “like getting on the internet.” The teachers noted that the school’s use of instructional laptop technology “was bringing the classroom into the 21st century, which obviously we needed to keep bringing home because the kids use electronics all the time” (Teacher 2).

However, Teachers 1 and 2 both noted that their sixth graders are not very well “versed” in the use of technology. Teacher 2 noted, “You’d be surprised how many students don’t know how to use Word or don’t know where *File* was or how to save something.” Teacher 1 also noted that students “don’t know how to type those types of things [mentioned by Teacher 2]. Teacher 1 reported that the use of the instructional laptop technology was “really preparing them for the future and being global. We can motivate them using the laptops because they’re able to play more interactive things and

play while they learn rather than just write answers.” This statement provided support for more active learning strategies.

Effects of PLCs on Use of One-to-One Laptop Technology in Teachers’ Classrooms

Although teachers like the technology, they reported that they have not received adequate training to use it. Teacher 3 reported, “As a first-year teacher, I really don’t feel like I was provided any help with one-to-one instruction.” Teacher 1 reported the following:

I do not feel like I learn [how to] integrate technology in my PLC...if they do try to teach us, it’s only one time they’ll touch on it...and then they never come back for a follow up. We might get introduced to a software...[but] it occurs when we discover learning things on our own to become proficient at it and then we must teach the kids. So, I don’t think as far as training from my PLC, I don’t think that I have been trained. I had to kind of train myself.

Teacher 2 reported,

We get some group instruction as far as how to deal with the technology...how to roll it out to our students...there’s some cursory kind of overarching...instruction on how we can integrate it into our classes. However, I wouldn’t say that we were given enough instruction or given enough practice that we could...implement it with confidence.

Teacher 2 also reported,

We do have opportunities for individual learning sessions, but you have to schedule it and be able to actually catch your person at your school who is in charge. That's hard to do because honestly they're split amongst 2 or 3 different schools.

Teacher 3 reported that they [the administration] "don't really make it a priority when they're come to you to discuss how your session had gone, was it okay with the one-to-one and how to facilitate that in your classrooms." Teacher 3 stated,

We have some software that is required of us to use. However, it was never taught to us how to use it so I don't really feel confident in using it even though it's required for me to do so with our students. So, that's a big issue that I'm having.

Teacher 4 also pointed out that training in the use of required software is lacking:

We have some software programs that they say we must use at certain times during the week and I know personally I never got any instructional support whosoever other than from fellow teachers. Nothing from the school or anybody like that about even how to use the program at all.

Teacher 1 further noted the lack of individual support, "A lot of the strategies I end up using through my one-to-one device come from me having to take things home or try things out on my own before giving to the students."

The teachers indicated that English/language arts and mathematics teachers have many software resources, but Teacher 3 reported, "For the most part, a lot of the software was not catered to my content (social studies). Teacher 4 clearly stated that software was

inadequate for social studies and noted, “Definitely as far as resources, I know math has so many things that they can use as a teaching resource and it just feels like we just have to grope and try to find it on our own.” Teacher 2 reported that the software choices in science are so many, that “I’m not really able to use them with fidelity long enough that I can see how beneficial it is in my class.”

CHAPTER VI

FINDINGS, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to explore factors of middle school teachers' self efficacy and pedagogical transformation in implementing one-to-one instructional technology in their classrooms. The study also proposed to understand teachers' perceptions and preparation to employ instructional technology. In this study, the researcher used the questionnaire responses from 48 teachers and transcripts of semistructured, focus group interviews of four teachers to create a representation of how middle school teachers perceive their self-efficacy in using one-to-one laptop technology, their preparedness to use the technology, and how their pedagogical practices may have changed. The researcher chose to conduct a mixed method analysis to complete the research study.

Findings

Professional Learning Communities (PLCs)

Participants' feedback on the effectiveness of the identified professional learning communities highlighted two noteworthy findings for consideration and further study in the future. Implications addressed research question 1 as it relates to the relationship between middle school teachers' self-efficacy in using one-to-one laptop instructional

Technology and middle school teachers' perceptions about how professional learning communities prepare them to implement the technology in their classrooms.

- First, the results demonstrated a correlation between technology training and teacher efficacy in student engagement.

Training sessions, described as professional learning communities introduce new skills and allow participants to practice these new skills during the sessions, provide teachers with multiple sources of efficacy through mastery experiences, verbal persuasion, and vicarious experiences. Although teachers in this setting may practice and master a specific skill, the application to their classroom may be theoretical and only vicariously experienced during professional learning communities. Though variations in the delivery of these training occur, teachers that perceived these sessions to be of use, which inherently means they personally experienced them, resulted in higher perception of self efficacy in student engagement.

Teacher 3 indicated that a benefit of the technology as an instructional tool is that the students “are more excited to partake in or engage in classroom activities when you’re using the laptops.” Teacher 2 also noted the students’ engagement, reporting that the students “like getting on the internet.” The teachers also noted that the school’s use of laptop technology “is bringing it into the 21st century, which obviously we need to keep bringing home because the kids use electronics all the time” (Teacher 2). Participants also highlighted the need for time during the school day to be provided in order to share ideas and practice the skills picked up from these targeted and relevant trainings.

Those participants with high self-efficacy for technology held a high value for technology in general and use it outside of the school setting, making them more prone to set aside personal time outside of the school day to self-learn and practice using new tools. This creates a cycle of the strong getting stronger, as the increased use allows them to become more confident in their ability to incorporate a new technological asset during instruction.

Even though this study was based on self-reported perceptions and other factors may be present to impact the results, an inference of this finding is that hands on professional development workshops may result in stronger teacher efficacy in student engagement. This finding is consistent with previous studies that suggested vicarious experiences and social persuasion are most effective when joined with mastery experiences (Tschannen-Moran & McMaster, 2009).

Teacher 1 also reported that the use of the laptop technology is “really preparing them for the future and being global. We can motivate them using the laptops because they’re able to play more interactive games and learn.”

- A second noteworthy finding was the lack of experience that teachers reported for professional learning community formats that involved student modeling, student participation, student simulation videos, or adults role-playing as students.

Although the teachers like the technology, they reported that they have not received adequate training to use it. Teacher 3 reported, “As a first-year teacher, I really don’t feel like I was provided any help with one-to-one.” Teacher 1 reported:

I do not feel like I learn [how to] integrate technology in my PLC...if they do try to teach us, it's only one time they'll touch on it...and then they'll never come back for a follow up. We might get introduced to a software...[but] it takes us learning things on our own to be proficient at it and we also have to teach the kids. So, I don't think as far as training from my PLC, I don't think that I have been trained. I had to kind of train myself.

Conclusion and Implications

In an age where computers and one-to-one devices are being widely used in the classroom as instructional tools, it is important to determine what teachers perceive as keys to their effective implementation. This study examined teachers with varying levels of technology self-efficacy and the findings suggested those who value technology use in general were more inclined to invest time in learning about it while those who did not value it were less likely to invest their own time discovering and experimenting. In order for these new resources to be used effectively in the classroom, teachers must be willing to invest time in learning and becoming proficient in its use. Administrators should strive to provide teachers with experiences that help to build value for technology as an instructional tool. This study's findings suggest that teachers feel the most productive learning experiences are specific and relevant to their content area, with the preference being to learn in a small group setting, directly from their colleagues. School administrators must set the stage for a risk-free environment that encourages teachers to experiment with new teaching approaches without fear of failure.

Recommendations

The outcome of this section contributes recommendations based upon the findings, analysis, new knowledge, and conclusion presented in this study.

Recommendations for School Administrators and Educational Leaders

1. Place an emphasis on technology professional learning communities that are ongoing and job embedded by ensuring the following:
 - A. Invest time to build a sense of value for one-to-one instructional technology as an instructional tool prior to introducing it in the classroom. Place the devices in the hands of teachers well before they are expected to utilize it in the classroom in order to help them familiarize themselves with the new device.
 - B. Provide additional time during the school day for teachers with low technology self-efficacy to learn about and practice using the new tools just as we would provide additional time for struggling students to master a new skill or concept.

Recommendations for Teachers in One-to-One Instructional Technology Schools

1. Pursue opportunities for utilizing one-to-one instructional technology in a way that is transformative to current instructional practices. As technology continues to evolve, so will the opportunities for future application.
2. Examine the relationship of student's academic levels of achievement and teacher efficacy with regarding to one-to-one instructional technology.

3. Seek out colleagues who are responsible for similar content or curricular areas and share ideas about what instructional methods they are having success with while utilizing the one-to-one instructional technology.

Agenda for Further Research

1. Replicate the study with classroom observational data collected prior to participant interviews in order to minimize the potential impact of participants being sensitized to the nature of the study.
2. Analyze the relationship between student achievement levels and teacher efficacy with using one-to-one instructional technology.

Recommendations for the District

1. Establish professional learning days for newly hired teachers and those with low technology self-efficacy to practice using instructional technology tools.

Limitations

Analysis of this study's findings is presented with the understanding that limitations are inevitable. To begin, the research sample was small; with only 48 completed surveys, four participants elected to participate for interviews. Also, interviews were conducted following to the surveys, which may have sensitized the participants to the nature of the study and impacted their actions during the interviews. Although members in the focus groups were selected from the pool of possible survey respondents, participants had to express interest in joining the focus group by returning the consent form. The low return rate of consent forms led to participants ultimately self-

selecting for inclusion within the focus groups. Self-selection brings committed participants but also can intensify the results (Creswell, 2008).

In qualitative research the human element is both its greatest strength and its greatest weakness. The researcher recognizes the subjective nature of the preceding analysis and the claims made regarding the meaning of the data. This chapter serves as a presentation of how the researcher alone understands and comprehends the data.

Technology only provides one example of potential pedagogical transformations, and other changes may have different effects on teacher efficacy. The pervasiveness of technology can drastically impact relationships, alter perceptions, and interactions within a classroom (Newhouse, 2008). In addition, teacher efficacy is hard to generalize because it is context specific (Goddard, Hoy, & Woolfolk Hoy, 2000; Tschannen-Moran, Woolfolk Hoy & Hoy, 1998), meaning it can be high in one area and low in another. It is not a holistic view of the self, rather a perception of one's ability and preparedness to perform certain tasks and control the outcomes. Given this contextual nature, one-to-one instructional technology environments provide only one example of how one-to-one instructional technology may influence teacher efficacy and pedagogical transformation, exhibiting different relationships with all aspects of teacher efficacy.

Summary

“If you want to go fast go alone. If you want to go far go together.”

~African Proverb

Importance of relationship. Through this study I learned that relationship should be viewed as an essential factor in the education process. At first glance, it seemed that

one-to-one instructional technology is the mechanical delivery of instruction—that it would not have a part in furthering relationships. However, I found that one-to-one instructional technology implementation is not primarily a tool to teaching, but rather fulfilling learning objectives through the use of technology tools that can enhance the process of learning and the outcomes of that learning progression. It can bring people together in ways that in the past were unforeseen.

Education is part of the life experience. Brown (2006) spoke of 21st Century learning as “supply-push” with a focus on learning through enculturation and collateral learning. Enculturation means being immersed in the culture—which is a social construct (Grusec, Hastings, & Paul, 2007). In the 20th Century we saw “demand-pull” learning which was based on building knowledge that could be called upon when needed (Brown, 2006). With the participants of this study, I see a move toward 21st Century learning—they understand their students’ needs especially as they relate to becoming classroom teachers. They understand that education is part of the life experience of their students (Dewey, 1897) and therefore, a necessity for each student they teach.

Teachers need to understand how technology fits into their instructional delivery. The study participants continually questioned how technology fits into their goals for their students. These participants have not necessarily seen a change in their instruction, but they have seen a change in how they deliver the instruction—how they package the content and how students are able to interact with it. When asked how the one-to-one laptop technology has changed their role as the teacher in the classroom, Teacher 1 reported, “I became a facilitator rather than a leader...” Teacher 2 also

responded: “I really like the laptops because it’s changed my role from...a lecturing kind of teacher to a facilitator.”

Otte and Benke (2006) addressed the focus on pedagogy in technology emphasizing that to see change in instruction; teachers do not need to know how to use the technologies as much as to understand the technology’s place in instruction—how technology can help them accomplish their teaching goals and objectives and maintain the focus on the quality of the pedagogy rather than the delivery mode.

Teachers’ use of technology is most effective when applied to their own strengths and students’ needs. Four of the participants reported being seen as “pioneers” or the “technology expert” or even “the facilitator” in their department which was a continual surprise to them. Only one or two saw themselves in that light. Participants did, however, see the importance of being willing to try new strategies because they could see the possibilities that technology holds not to make their lives easier, to get better evaluations, but to focus on student learning and make sure students are prepared for their future. One participant put it this way, “Instead of it being centered around me and my lesson and my words, it’s centered around the students and their learning and how they engage with the material.” The teachers also reported that the technology helped them differentiate their lessons. Ertmer, Gopalakrishnan, and Ross (2001) concluded that exemplary teaching with technology was dependent on an individual’s strengths and perceived needs of students in their classrooms.

Slow growth over time is more effective than adopting technology that is not appropriate for the people or the situation. Basinger (2000) discussed the stages of

growth in using technology where the focus moved from self use to how to use of the technology for greatest impact on learning. She found that teachers moved from thinking about how to use the technology, to internalizing it and using it to meet students' needs. The participants in this study were foremost, educators. Their concern was to prepare students to move into life in the 21st Century where they would need to understand the culture, the skills needed to do their work, and how to pass on those skills to those who come behind. This made them willing to do what it takes to fulfill the objectives of the courses they teach and continue to pursue their own growth and learning as they teach with technology. Teacher 1 reported: "...it takes us learning things on our own to be proficient at it [technology] and we also have to teach the kids. So, I don't think as far as training from my PLC, I don't think that I have been trained. I had to kind of train myself."

In addition to learning about the research topics of the study, I learned lessons about conducting studies and about myself as researcher. Because of my role as an educator, I found implications for my own job in the interviews that I conducted. This brought with it challenges to listen and not to try to "fix" something or answer questions the participants raised throughout the interviews. I found it difficult at times to change my thinking from practitioner to researcher. For the future, I will have a better understanding of that process and what it takes to conduct good interviews.

I also learned substantially from conducting a mixed methods study. This methodology added a dimension to the study that allowed me to interview the participants about their practices without them having to list the types of technologies

they use. It offered me that data in the survey format which I believe was easier for the participants as well. If I were to conduct a mixed methods study in the future, I would have more clearly defined hypotheses in what I expected to find.

Agenda for Future Research

The experience of this study has highlighted interests that I have in future research. In addition to middle school teachers use of technology, this research could lead to studies on an exploration of student learning and technology, the pedagogy of technology, the context of teaching with technology, and relationships in the one-to-one environment. I am also interested in areas of professional learning communities for middle school educators teaching various contents, the role of the instructional coaches, and bridging the digital divide.

APPENDIX A

Informed Consent Form

Middle School Teachers' Perceptions of Self-Efficacy, Preparedness, and Pedagogical Transformation to Implement One-to-One Instructional Technology

Researcher: Adrienne M. Redmond

Dissertation Chair: Dr. Barbara N. Hill

Introduction: I am a doctoral student at Clark Atlanta University conducting a mixed methodology study in partial fulfillment of the requirements for the degree of Doctor of Education in Educational Leadership. You are being asked to participate in this research study about your experiences as a middle school teacher during the one-to-one implementation process. Please carefully read this document and ask any questions you may have before agreeing to take part in this study.

Purpose: The purpose of this study is to explore middle school teachers' transformation from using traditional pedagogy to a one-to-one instructional technology-rich pedagogy. Middle school teacher who teach a core subject (English, History, Mathematics, or Science) will be asked to participate in the study.

Procedures: If you agree to participate in the study, you will complete a questionnaire about how teachers perceive their efficacy and preparedness to implement one-to-one instructional technology. You may also be asked to participate in a face-to-face interview with the researcher. The interview questions will focus on your perceptions and feelings about the one-to-one implementation process. Additionally, demographic data (gender, grade and subject taught, years of teaching experience, highest degree earned) will be collected. The interview will take approximately 45 minutes and be located in a private space of your choice. The interview will be audio recorded and transcribed by the researcher. You will have the opportunity to review the transcript to clarify any of your responses. After verification, all audio files will be deleted and any identifiable information in the transcript will be removed.

Risks and Benefits: There is minimal risk to you. Participation in this study may not benefit you personally. However, the researcher hopes to gain information about your perceptions/experiences as a teacher during the one-to-one implementation process, your methods of integrating one-to-one instructional technology in the classroom, as well as recommendations for Professional Learning Communities (PLCs) to support teachers' instructional needs.

Voluntary Participation and Withdrawal: Being part of this study is voluntary. You may decline participation, refuse to answer any questions, or end the interview at any time without any consequence to you. Participation will not be shared with the school administration, district administration, or other personnel. Your participation or choice not to participate is voluntary and separate from your role and function in the school district.

Confidentiality: Steps will be taken to protect you; identifiable information from the transcript will be removed, interview will be conducted in a private space, electronic documents will be stored in an encrypted file on a password-protected computer, and physical documents will be stored in separate files in a locked cabinet.

There are no monetary benefits to you if you choose to participate in study. You will have the opportunity to obtain an electronic copy of the dissertation upon completion.

Contact Persons: If you have questions or concerns about the research study or your participation, please contact Adrienne M. Redmond, adrienne.redmond@students.cau.edu, or chair Dr. Barbara N. Hill, bhill@cau.edu

Copy of Consent Form to Subject: If you are willing to volunteer for this research, complete a questionnaire, and be audio recorded, please sign below.

Signature of participant

Date

Researcher

Date

APPENDIX B

Questionnaire

Please respond to each of the statements by considering the combination of your current abilities, resources, and opportunities to do each of the following in your present position.

For each statement below, indicate the strength of your agreement or disagreement

- | | 1 = Strongly disagree | 2 = Disagree | 3 = Neither agree nor disagree | | |
|--|------------------------------|---------------------------|---------------------------------------|---|---------|
| | 4 = Agree | 5 = Strongly agree | | | |
| 1. I feel confident that I understand how to use a computer well enough to use it in my classroom | | | | 1 | 2 3 4 5 |
| 2. I feel confident that I can successfully teach relevant subject content with appropriate use of one-to-one laptop technology. | | | | 1 | 2 3 4 5 |
| 3. I feel confident that I have the skills necessary to use the computer for one-to-one laptop instruction. | | | | 1 | 2 3 4 5 |
| 4. I feel confident that I can use correct computer terminology when directing students' computer use. | | | | 1 | 2 3 4 5 |
| 5. I feel confident I can regularly incorporate one-to-one laptop technology into my lessons when appropriate to student learning. | | | | 1 | 2 3 4 5 |
| 6. I feel confident about selecting appropriate technology for instruction based on curriculum standards. | | | | 1 | 2 3 4 5 |
| 7. I feel confident about using technology resources (such as spreadsheets, electronic portfolios) to collect and analyze data from student tests and products to improve instructional practices. | | | | 1 | 2 3 4 5 |
| 8. I feel confident in my ability to evaluate software for teaching and learning. | | | | 1 | 2 3 4 5 |
| 9. I feel confident I can help students when they have difficulty with their laptop computer. | | | | 1 | 2 3 4 5 |
| 10. I feel confident I can consistently use one-to-one instructional technology in effective ways. | | | | 1 | 2 3 4 5 |

Have you participated in a professional learning community (PLC) that supported the implementation of one-to-one laptop technology into instruction?

- Yes (continue to Q11)
 No (Go to Q18)

Please indicate to what extent you agree with the following statements about the PLC in which you participated.

1 = Strongly disagree **2 = Disagree** **3 = Neither agree nor disagree**
4 = Agree **5 = Strongly agree** **NA = was not part of the PLC**

- | | | | | | | |
|---|---|---|---|---|---|----|
| 11. Lecture-style workshops (informational or skill development) support my classroom practices. | 1 | 2 | 3 | 4 | 5 | NA |
| 12. Hands-on style workshops where new skills are introduced and practiced (skill development) support my classroom practices. | 1 | 2 | 3 | 4 | 5 | NA |
| 13. Observed demonstration of skills via video or attending a workshop (modeling) supports my classroom practices. | 1 | 2 | 3 | 4 | 5 | NA |
| 14. PLC reflections on classroom experiences support my classroom Practices. | 1 | 2 | 3 | 4 | 5 | NA |
| 15. PLC collaboration to incorporate new strategies into lessons support my classroom practices. | 1 | 2 | 3 | 4 | 5 | NA |
| 16. Individual modeling of strategies in my classroom by trainer/coach with my students supports my classroom practices. | 1 | 2 | 3 | 4 | 5 | NA |
| 17. One-to-one coaching inside the outside the classroom through training on new skills/strategies supports my classroom practices. | 1 | 2 | 3 | 4 | 5 | NA |

Please continue on the back 

All information provided will be used in the aggregate. No information will be used to identify you or your responses.

18. What is your highest degree earned?

- _____ BA or BS
 _____ MA or MS
 _____ Education Specialist
 _____ Doctorate

19. Total years classroom teaching experience. (Please round to the whole year including the current school year)

20. Total years classroom teaching experience in a one-to-one instructional technology (laptop) classroom. (Please round to the whole year including the current school year)

21. Gender _____ Female _____ Male

22. What subjects do you currently teach? (Please mark all that apply)

_____ Language arts (grammar, literature, writing)

_____ Mathematics

_____ Science

_____ Social studies (economics, history, philosophy, religious studies, sociology)

23. What grades do you currently teach? (Please mark all that apply)

_____ 6

_____ 7

_____ 8

Thank you for your participation!

APPENDIX C

Teacher Interview Questions

1. How long have you been teaching?
2. What grade and content area do you teach?
3. Is one-to-one laptop technology easily accessible in your school?
4. Is one-to-one laptop technology easily accessible in your classroom?
5. Is one-to-one laptop technology easily accessible to your students?
6. Why do you use one-to-one laptop technology?
7. How often do you use one-to-one laptop technology in the classroom?
8. What other technology tools do you use, either for your administrative duties or for instruction with your students?
9. How do you know when to use one-to-one laptop technology in your lessons?
10. Over the course of a week, what percentage of time do you use the one-to-one instructional technology?
11. How has one-to-one laptop technology changed your role as teacher in your classroom?
12. Approximately how much of the time in a typical classroom period is the instruction teacher-centered and student-centered?
13. Have you included project-based learning in your lesson plans? If so, please describe a successful and unsuccessful attempt to do so.
14. Describe a collaborative learning experience you have used in your classroom.
15. How do you know when one-to-one laptop technology is effective?
16. What type of benefit is there in using one-to-one laptop technology?
17. Instructional support impacts development in teaching and learning. Is the administrative team effective with individual assistance (one-to-one support) in meeting your needs? Explain

APPENDIX D

Focus Group Transcript

The purpose of the focus group session is to understand middle school teachers' perceptions in preparation related to the use and implementation of one-to-one instructional technology. Hello. My name is Adrian Redman. Please call me Adrian. I'm going to be leading a discussion for the next half hour or so about your implementation of one-to-one instructional technology primarily with laptops. We'll also be discussing your perceptions of one-to-one technology and the ways in which you are prepared to use one-to-one instructional technology primarily within your professional learning communities. Since you may not have been given this topic too much thought before, I wanted to encourage you all to say what you think no matter what it might be. There are no right or wrong answers. In fact, the more honest you are, the better. I really need to know what you truly think. Again, today we'll be talking in general about one-to-one instructional technology.

Ground rules. Steps will be taken to protect your identity. This discussion will be audio recorded and transcribed by the researcher. As a participant, you will have an opportunity to review the transcript to clarify any of your responses. After verification all audio files will be deleted and any identifiable information in the transcript will be removed. I'd like to offer a few guidelines to keep us on the same track. Before you are name cards. In responding to questions, please refer to your name card such as Teacher 1, Teacher 2. First, it's very important that you try to talk to me, but talk at one time. Secondly, I'd like to hear from everyone today, but not all at the same time. Don't feel like you need to answer every question. And third, feel free to address all of your comments to me, and please don't interrupt one another or hold side conversations. And lastly, please speak clear so the recording may hear you.

Let's begin. Question one: How long have you been teaching?

Teacher 1: I've been teaching for six years.

Teacher 2: I've been teaching for six years as well.

Teacher 3: I've been teaching for one year.

Teacher 4: I've been teaching for one year as well.

Question 2: What grade and content area do you teach?

Teacher 1: I teach sixth grade science.

Teacher 2: Also teaches sixth grade science.

Teacher 3: Teaches sixth grade social studies.

Teacher 4: Also sixth grade social studies.

Question 3: Is one-to-one laptop technology easily accessible in your school?

Teacher 2: Yes, it is. Almost all of my students do have laptops. If they don't, it's as a result, honestly, of misuse on their part and then them not having access to it for it being damaged or something like that.

Teacher 3: Agrees with teacher 2.

Question 4: Is one-to-one laptop technology easily accessible in your classroom?

Teacher 1: Yes, very much so.

Teacher 2: Yes, they all have their laptops, besides when they don't have them due to the damages that they themselves create. And also my classroom has a desktop available for use.

Question 5: Is one-to-one laptop technology easily accessible to your students?

Teacher 1: Yes, all my students have laptops.

Teacher 2: Can you repeat that question and then...wait, what was the question before that one? I need to make sure that I'm not mixing up the answers.

Absolutely. So question 4 states, is one-to-one laptop technology easily accessible in your classroom? Question 5 states, is one-to-one laptop technology easily accessible to your students?

Teacher 2: Yes to both of them.

Question 6: Why do you use one-to-one laptop technology?

Teacher 2: Because it's available. I mean I use it....our county is able to afford one-to-one technology for our students so since it's available I use it. If it wasn't available, I'd still want to but I wouldn't have the resources or access to it. But that's why. I mean I'd like to say just because it's really efficient but that's not why I use it; if that makes sense.

Question 7: How often do you use one-to-one laptop technology in your classroom?

Teacher 3: I use it almost every day.

Teacher 4: I use it pretty much every day. It's rare when I don't use the one-to-one.

Teacher 2: Same. I attempt to use it every single day just because it's really useful.

Question 8: What other technology tools do you use either for your administrative duties or for instruction with your students?

Teacher 2: I also use a projector screen .?. a screen too, but a projector with a screen heavily every single day because that's where I show them what they're actually doing and then I can also model because what I'm doing on my laptop can be shown on the projector.

Teacher 3: I use a copier for like administrative things but I don't actually—you know, just to copy worksheets maybe out of a textbook or workbook or something like that.

Question 9: How do you know when to use one-to-one laptop technology in your lessons?

Teacher 2: I try to build the lessons so that the students are using their laptops from the beginning of the day to the end. So I try to have their warmup or opening or do-now, bell-ringer, whatever you want to call it, with their laptops. Their work period typically involves their laptops. If not, at the beginning after we've done sort of the I-do part of it, which is .?. showing them in modeling, the second part of it will be them using their laptops and typically the closing involves them using their laptops as well.

Teacher 3: I try to use the laptops at least four days out of the week. I try to have one day where they're actually not using the laptop just to give them a break from the technology really.

Question 10: Over the course of a week what percentage of time do you use the one-to-one technology?

Teacher 1: I probably use it more than 75% of the time per week.

Teacher 2: I would say I use it at least 85% of the time.

Teacher 4: I'd say between 85 to 90 percent probably.

Question 11: How do you know when one-to-one laptop technology is effective?

Teacher 1: Our students usually test on laptops or computers, so using the benchmark testing, the milestone state given testing, they do that on the computer. So when they do well on those tests, it kind of reflects how they do in the classroom.

Teacher 2: They also take a lot of classroom assessments on there as well, and I would say I know that it's effective just because it's able to reach all of my students. Like I can see that they're accessing the information and that they can all get to it at the same time and there's no like your textbook is missing these pages because it's old or it's outdated because of this.

Question 12: What type of benefits have you experienced using one-to-one laptop technology as an instructional tool?

Teacher 3: One of the benefits that I see is that they are more excited to partake in or engage in classroom activities when you're using the laptops.

Teacher 2: I agree about the engagement. Also unfortunately, the other side of it is the distraction piece. But mostly though it seems that they like to use them. So that part of it, just because they get to be using keys and looking things up, they like getting on the internet and that kind of thing.

Question 13: How has one-to-one laptop technology changed your role as the teacher in your classroom?

Teacher 2: Can I go back to the last question?

Absolutely.

Teacher 2: Also it saves paper so that's really, really nice and not only does it save paper, it also saves time because we're able to plan and if you need to adjust something on the fly, really easy to do without having to go and run copies for that thing. It's bringing it into the 21st century which obviously we need to keep bringing home because the kids use electronics all the time. They actually aren't really burst in electronics oddly enough. You'd be surprised how many students don't know how to use Word or don't know where File is or how to save something.

Teacher 1: Also students don't know how to type those types of things. So it's really preparing them for the future and being global. We can motivate them using the laptops because they're able to play more interactive things and play while they learn rather than just write answers.

Teacher 2: Teacher 2 agrees, so which goes back to that engagement piece as well, says Teacher 2.

Question 13: How has one-to-one laptop technology changed your role as the teacher in the classroom?

Teacher 2: I really like the laptops because it's changed my role from sort of a lecturing kind of teacher to a facilitator. Instead of it being centered around me and my lesson and my words, it's centered around the students and their learning and how they engage with the material.

Teacher 1: Absolutely. Teacher 1 says that I became a facilitator rather than a leader of it. The kids are on their own. They can research, they can dig deeper. It helps me with my differentiation because the students—I can easily adjust what I need to for each individual student.

Teacher 4: As far as differentiation and learning styles, if you have higher students and lower students, you don't have to work as hard to differentiate for each of them. It's a lot easier for us to....

To meet them where they are since you're able to provide so many different materials on the fly to them individually.

Question 14. So instructional support impacts development in teaching and learning. So in what ways, if any, would you identify your professional learning community to be effective in providing individual assistance or one-to-one support in meeting your technology needs?

Teacher 1: I honestly don't feel like I get a lot of individual one-to-one support. A lot of the strategies I end up using through my one-to-one device comes from me having to take things home or try things out on my own before giving to the students.

Teacher 3: As a first year teacher, I really don't feel like I was provided any help with one-to-one. That's just my personal experience.

Teacher 2: We get a lot of—not a lot—we get some group instruction as far as how to deal with the technology that we have in how to actually role it out to our students. We do have opportunities for like individual learning sessions but you kind of have to like schedule it and be able to actually catch your person at your school who is in charge of that, and that's hard to do because honestly they're split amongst different schools.

Teacher 3: They don't really make it a point where they're coming to you trying to find you and to make sure that you're okay with the one-to-one and how to facilitate that in your classrooms.

I would say that every once in a while there is something that addresses my content which is science specifically, but for the most part a lot of software is not catered to my content. A lot of the programs that we have and software that we have is catered to math and ELA. I don't know if that's because those are like heavier hitting kind of content or I don't know if the market for that is just bigger but we don't have so many tools, I would say.

Teacher 3: Same with social studies.

Teacher 4: Definitely as far as like resources, like I know math has so many things that they can use as a resource and it just feels like we just kind of have to grope and try to find it on our own.

Question 15. That was actually an awesome segue into my last question. Do you learn about integrating one-to-one laptop particularly technology in your professional learning communities? And if so, can you explain. And I know several of you all answered that.

Teacher 1: I do not feel like I learn by integrating technology in my PLC's. Well, if they do try to teach us, it's only one time they'll touch on it one time and then they'll never come back for a follow-up. So we might get introduced to a software and, again, it takes

us learning things on our own to be proficient at it and we also have to teach the kids. So I don't think as far as training from my PLC, I don't think that I have been trained. I had to kind of train myself.

Teacher 2: I would say there's some cursory kind of overreaching sort of, like instruction on how we can integrate it into our class. However, I wouldn't say that we were given enough instruction or given enough practice that we could kind of implement it with confidence. And then the problem is that also we have so many programs and softwares that I'm not really able to use them with fidelity long enough that I can see how beneficial it is in my class.

Teacher 3: We have some software that is required of us to use; however, it was never taught how to use it so I don't really feel confident in using it even though that it's required for me to use with our students. So that's a big issue that I'm having.

Teacher 4: We have some that they say we must use certain times during the week and I know personally I never got any instruction whatsoever other than from fellow teachers. Nothing from the school or anybody like that about even how to use the program at all.

Thank you all for your time and consideration in being participants in this focus group. Do you have any other questions or concerns as it relates to one-to-one instructional technology? Thank you so much.

END.

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