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Administrator Beliefs and Their Impact On One-To-One Technology Initiatives and Instructional Practices in Elementary Schools

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The Dissertation Advisory Committee and the student's Department Chairperson, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty.

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ADMINISTRATOR BELIEFS AND THEIR IMPACT ON ONE-TO-ONE

TECHNOLOGY INITIATIVES AND INSTRUCTIONAL PRACTICES

IN ELEMENTARY SCHOOLS

by

KENA WORTHY

Under the Direction of Sheryl Cowart Moss, Ph.D.

ABSTRACT

While one-to-one technology initiatives continue to grow across the country and the world, district personnel are working diligently to measure their effectiveness. One of the key elements that is consistently missing from the literature is the impact of instructional leadership on one-to-one practices in the classroom. An exploration of instructional leadership with a close look examining *if* or *how* administrator beliefs have any impact on the use of technology in today's classrooms is warranted. Administrators are the key to the success or failure of any program initiative. However, there has not been much research to support how these beliefs impact instruction when one-to-one technology is used. The purpose of this research study is to describe the impact administrator perceptions and beliefs have on the instructional practices of teachers in

a one-to-one technology environment in a suburban, Title I school district. Four principals, one

instructional technology specialist, and twelve teachers participated in the study. The study is

underscored by a historical overview that justifies the purpose behind one-to-one programs and

the effects of proper training on teacher practices and program endurance, in addition to adminis-

trator support. The literature clearly supports how impactful one-to-one initiatives are and how

the beliefs of administrators can support or damage such programs. The analysis demonstrated

the correlation between teacher practices, student engagement, and student achievement. The

case study collected data including teacher observations, teacher and administrator interviews,

and lesson plan reviews. Collectively, three themes emerged from the data demonstrating: (1) a

need for additional training in the use of technology with instruction, (2) a sense of instructional

independence, where teachers felt the freedom to use it as it fit their lessons, and (3) the theme of

management versus true instruction with personal learning devices. These three themes high-

light how instructional practices were impacted by the beliefs of administrators based on the

teaching experiences of teachers in the study.   Recommendations from this research will assist

future school and district leaders in making informed decisions regarding the use of one-to-one

technology, instructional practices, and ultimately student achievement.

INDEX WORDS: Technology, One-to-one initiatives, Computer Initiatives, Instructional leader-
ship, Shared Leadership

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KENA WORTHY

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DEDICATION

"Better is the end of a thing than the beginning thereof: and the patient in spirit is better than the proud in spirit" Ecclesiastes 7:8 (KJV).   No journey ever starts or ends without my Lord and Savior Jesus Christ; so it is to him that I give all the glory, honor, and PRAISE for this work! I thank him for instilling in me patience, endurance, and strength to persevere until the end. I am thankful to my family for the sacrifices made so that I might further my education to this level. To my husband, I adore you for your prayers, love, and support. I am so thankful for the pause you placed on your life, so that I might complete the plans set before me. I am grateful for our children who have watched this work in place for the last few years and have inspired me to continue to press on. Especially to our unexpected blessing, you pressed the pause button on this entire process; I couldn't have made it without watching you grow simultaneously with my research.

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"*She believed she could, so she did!*" ~R.S. Grey

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1 ONE-TO-ONE TECHNOLOGY IMPACTS

Educators are entrusted with the responsibility to teach the basic academics of reading, writing, and arithmetic, and now there is the demand to effectively integrate technology. According to Lowther, Inan, Ross, and Strahl (2012), technology integration has been a challenge for researchers for over twenty years. Technology should be used as a framework for innovative and research-based teaching strategies that provide the necessary 21st century skills students need to be successful. These skills are defined as critical thinking, communication, collaboration, and creativity (Collins & Halverson, 2010; Dunleavy, Dexter, & Heinecke, 2007; Gibson et al., 2014; Lowther, Inan, Ross, & Strahl, 2012; Mouza, 2008). Research conducted by Collins and Halverson (2010) outlined the importance of how technology is able to customize student learning by responding to specific interests and difficulties students may have by providing digital supports and fostering "just in-time" learning experiences.

The major focus of this study was to determine to what extent administrator beliefs impact the instructional practices of teachers who teach in a one-to-one technology environment in a suburban school district. The study explored teacher and administrator beliefs on the uses of one-to-one technology in day-to-day instruction and the possible impact on instructional practices. While many programs define one-to-one in different manners, Sauers and McLeod (2012) defined it as: every student within a specific grade span being provided with a take-home laptop. For the purpose of this study, this definition of one-to-one was used.

Guiding Questions

The overarching research question to be investigated was: To what extent do administrator beliefs impact the instructional practices of teachers who teach in a one-to-one technology

environment in a suburban school district? The theoretical framework of change and instructional leadership guided the following research questions:

RQ1: To what extent do administrator perceptions or beliefs of one-to-one initiatives affect the instructional practices of teachers who are considered school level technology leaders?

RQ2: To what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices?

McLeod, Bathon, and Richardson (2011), stated that educational reform must come from administrators with an instructional vision for digital literacy and citizenship. The premise of instructional leadership, according to Hallinger (2009), is that it is centered on three dimensions: defining the school's mission, managing the instructional program, and promoting a positive school learning climate. Both instructional and change leadership support these three dimensions by providing administrators the grounds for managing an instructional program and promoting a positive learning environment, especially one that is grounded in the use of technology. According to Hall (2010), change leadership plays an important part in the implementation of new ideas through three critical approaches known as change leadership styles. These change leadership styles, *initiators*, *managers*, and *responders,* make an impactful difference in the adoption of technology innovations.

Additionally, shared instructional leadership involves an active collaboration of principals and teachers on curriculum, instruction, and assessment (Blase & Blase, 2000; Hallinger, 2003, 2009; Marks & Printy, 2003). While principals, as change leaders, can facilitate the introduction of innovative instructional practices, sharing the vision and collaborating with teachers is what assists in making the various change leadership styles as impactful as they can be. Categorizing instructional leadership as the principal's central role is a valuable first step in increasing

student learning according to Fullan (2002), but it does not reach far enough. This is because a cultural shift is needed that involves innovative learning practices. In an effort to better understand people's responses to change, a different perspective on leadership is needed, and that perspective is found in change leadership (Herold, Fedor, Caldwell, & Liu, 2008). How individuals are involved during a change process determines their reactions overall. This involves how such changes are communicated and the process in which input is received and utilized (Herold et al., 2008).

Thus, in order to answer the research questions above, the theoretical framework of change and instructional leadership combined were needed to demonstrate how the work of a principal and his or her teacher technology leaders can impact instructional practices in a one-to-one technology environment.

Significance of the Study

The overall research surrounding one-to-one initiatives has historically been centered on the introduction of such initiatives and its impact on students. As seen in the literature review, the research conclusively revealed a number of pros and cons for one-to-one initiatives. Most researchers support the importance of one-to-one technology to enhance student-learning opportunities and to prepare them for the ever-changing digital world with 21st century technology skills (Abele & Iver, 2010; Bebell & Kay, 2010; Buabeng-Andoh & Totimeh, 2012; Clausen, Britten, & Ring, 2008; Grimes & Warschauer, 2008). Research (Lowther et al., 2012; Mouza, 2008) supports the importance of these 21st century skills including: problem solving, creativity, analytic thinking, collaboration, and communication.

Research done by Donovan, Green and Hartley (2010) highlighted the limitations of one-to-one technology. Their research goes against the idea that increased access to technology leads

to increased student engagement (Donovan, Green, & Hartley, 2010). Instead, Donovan et al. (2010) found students to be more "off-task" than engaged, playing games on their devices and working toward other personal goals. Shapley, Sheehan, Maloney, and Caranikas-Walker (2011) found one-to-one technology programs can be successful, but in some instances they are not effective due to how they are introduced coupled with the lack of professional development for teachers when new skills are introduced. Furthermore, Shapley et al. (2011) discovered little change in student engagement, attendance, and discipline where students were immersed in technology.

Therefore, while the literature shows that one-to-one initiatives are becoming more and more widespread across the country in multiple school districts (Bebell & O'Dwyer, 2010; Maninger & Holden, 2009; Warschauer & Tate, 2015; Warschauer, Zheng, Niiya, Cotten, & Farkas, 2014), there is a need to look deeper into what makes them most impactful and leads to positive student outcomes.

This research study provided a more comprehensive look at the perceptions or beliefs of teachers and administrators utilizing one-to-one technology in education as opposed to just the capacity building of such initiatives. The beliefs of these individuals can drive a one-to-one program up or down the ladder of success, due to how they impact the instructional practices of technology related learning. Leadership in educational technology is a collective effort involving teachers and administrators who all embrace the potential of educational technology to enhance student learning (Ashbaugh, 2013; Blase & Blase, 2000; Brown, 2014). Ashbaugh (2013) further underscored the importance of the roles of such leaders and their ability to influence and exert power over others and tasks, thus defining leadership as a *mindset*.

The lack of research surrounding the phenomenon that shares the impact one-to-one has on instructional practices, further emphasizes the need to conduct a study such as this. The results of this study will help those considering one-to-one initiatives to prioritize the resources they will provide, including professional development or training on technology, as tools for instruction. The results will assist in identifying how leaders shape the type and use of instruction in individual schools, thus impacting student learning.

<div align="center">**Review of Literature**</div>

Introduction

One-to-one technology initiatives are growing across the United States, and even the world, popping up in vast numbers (Bebell & O'Dwyer, 2010; Maninger & Holden, 2009; Warschauer & Tate, 2015; Warschauer et al., 2014). The reason for this growth is attributed to the belief that increased access to technology and a variety of digital tools will lead to improved instruction and improved learning, thus developing critical skills for students and greater efficiency of their work (Bebell & O'Dwyer, 2010; Dawson, Cavanaugh, & Ritzhaupt, 2008; Holcomb, 2009). While there is much research surrounding technology, there is little related to teacher and administrator beliefs and their impact on the use of one-to-one initiatives. Regardless of this fact, a computer in the hands of every child is no longer a "far-fetched" idea but will be the norm for the majority of American classrooms in the near future (Bebell & O'Dwyer, 2010; Spires, Oliver, & Corn, 2012). Many research topics surrounding one-to-one studies have found outcomes related to absentee rates, motivation, student interests and achievement (Holcomb, 2009; Warschauer & Tate, 2015; Ziphorah, 2014); however, there are still a number of questions surrounding the overall effectiveness of such programs. This literature review closely evaluated the historical perspectives of technology, specifically one-to-one, the effects of administrator support

on the success of these programs, and the impact these programs have on the instructional practices of teacher technology leaders in K-12 schools that ultimately affect students.

Molnar (1997) explained how technology has evolved over the years, and especially since its inception in the early 70's with the first PCs and the birth of the World Wide Web. The rapid progression of computers has transformed education, science, and the world all at the same time. While it has been producing a new form of knowledge, the world of education has been trying to keep up with this fast-moving pace ever since. Technology, as we know it, has increased not only in popularity, but also in accessibility forcing a need for alternative means for children to effectively learn and teachers to effectively teach (Ziphorah, 2014). We know that the presence of computers and software connected to the Internet alone doesn't imply effective uses for technology (Ramig, 2014; Valiente, 2010). As stated previously, just placing a machine in the hands of today's students doesn't impact their instruction; therefore, a more in-depth look is needed to identify additional circumstances that potentially make a difference in teaching and learning.

Ziphorah (2014) states the use of information and communication technology (ICT) in implementing a standards-based curriculum has brought about a number of changes in teaching methods and product delivery to students. Researchers (Bebell & O'Dwyer, 2010; Collins & Halverson, 2010; Watson, 2001) have discovered that information technologies provide access to a number of different expertise sources; yet, the demand for technology innovation in today's schools requires skilled instructional leadership. Leadership in educational technology includes a multitude of individuals. This shared leadership must involve technology leaders at all levels who embrace the potential of technology to enhance the experiences of student learning, regardless of the delivery path (Brown, 2014). Technology leadership represents all activities about the

technology in school including organizational decisions, implementation, and policies because leadership is a concept of behavior and a mindset (Ashbaugh, 2013; Sincar, 2013). Successful one-to-one computing environments have included committed leaders with a clear vision, a change in classroom practice (Maninger & Holden, 2009), and a change in learning approaches (Watson, 2001).

One-to-one initiatives are only able to thrive with the presence and support of administrator and teacher technology leaders who do not inhibit innovative outcomes. No matter how much training one provides, a lack of interest on the part of a teacher technology leader, principal, or other administrator can bring technology infused practices to a halt before they begin (Ashbaugh, 2013; Clarke & Zagarell, 2012). While the previous statement includes teachers, Richardson, Flora, and Bathon (2013) noted that school leaders are responsible for leading, navigating, and changing schools within this modern digital context. Modern technologies are creating new challenges in the classroom, along with new learning opportunities, and as a result, are prompting the adoption of educational technology standards (Richardson, Flora, & Bathon, 2013). According to Brown (2014) and Ashbaugh (2013), technology leaders have the potential to enhance teacher and student outcomes simultaneously. This potential to enhance teacher and student outcomes can also lead to addressing the technological divide, a gap that exists in our schools because of the lack of knowledge by teachers, as how to address what students are missing, outside of general academics (Clarke & Zagarell, 2012).

This technological divide is a fact that exists amongst 21st century learners. Whether it is mere exposure or access to certain digital tools, the divide causes a gap that spans socio-economic status, ethnicity, and cultural awareness (Clarke & Zagarell, 2012). Providing all students with better and more equitable access to computers gives them equal access to up-to-date

resources and learning opportunities that otherwise are only available to those students who live close to libraries or who benefit from school budgets that are able to provide such resources (Larkin & Finger, 2011). Clarke and Zagarell (2012) further affirm access is not important if teachers are not properly trained. Limited budgets cause teachers to seek out training on their own or collaborate with others who may be more technology savvy. Teachers, if improperly trained, are unable to implement technology standards to meet the basic needs of students, thus furthering the technological divide (Clarke & Zagarell, 2012; Larkin & Finger, 2011).

Finally, while the impact of one-to-one initiatives on instructional practices begins with administration, it does not end there. One of the critical points, as stated by Gibson et al. (2014), contended that if teachers are to be required to integrate technology into everyday teaching practices, along with information and communicate technological knowledge, they must have positive beliefs towards technology as well. While administrator beliefs have an impact on classroom practices, the beliefs of teachers make a difference as well (Gibson et al., 2014). The attitudes and beliefs of teachers are key to the integration of technology and the engagement of students. These teachers find ways to not only integrate technology into the classroom, but also to provide many opportunities for students to engage with technology for educational purposes. When technology is integrated into everyday lessons, students are able to see not only its impact, but also its importance. Integrated lessons allow for more effective student engagement (Gibson et al., 2014; Hughes, 2013). Although the impact of the current digital revolution is hard to measure, it is felt city to city, state to state, and nation to nation (Collins & Halverson, 2010).

Teaching no longer is centered on the old school thought of transferring knowledge from teacher to student. Today, this learning is combined with a technological skill set that is grounded in the 21st century skills students must have in order to be successful. These skills include

problem-solving, critical thinking, and student inquiry based on information that is accessed from a variety of sources (Varol, 2013; Ziphorah, 2014).

Many teachers have become school-level technology leaders or, as Sugar and Holloman (2009) stated, instructional technology specialists. Specialists have the role of providing effective technology integration within lessons and serving as experts who are able to provide advice on how to incorporate technology into a lesson (Johnston, 2015). Such roles are important, as they are able to provide specific training to other teachers on how to use technology in innovative ways. The relationship between the beliefs and the level of technology integration of school level technology leaders contributes to the learning environment in which students are exposed, thus impacting the outcomes of technology on teachers and students (Mouza, 2008).

If one-to-one is defined by Sauers and McLeod (2012) as every student within a specific grade span being provided with a take-home laptop; and if it is true we live in a digital age, then what is the general purpose of one-to-one technology? How impactful are such initiatives? Different school districts have adopted such programs for a variety of reasons, yet most have the same goal: to expose students to as much technology as possible in an effort to better prepare students for the future (Argueta, Huff, Tingen, & Corn, 2011; Dawson et al., 2008; Hsu & Geist, 2012). It is evident by the lack of literature supporting instructional impact that there is a need for more than just exposure. Lowther et al. (2012) described that the future will require students to have 21st century knowledge and skills such as collaboration, agility, and critical thinking. Exposure to technology, coupled with appropriate preparation to use it effectively, are critical components in equipping students to master 21st century knowledge and skills.

Historical Context

While schools across the nation are expanding their use of educational technology through one-to-one technology initiatives, there is still the challenge of teaching and learning to use the technology available (Warschauer et al., 2014; Ziphorah, 2014). Implementation alone is not what makes a successful one-to-one technology program (Ramig, 2014; Valiente, 2010). Over the last ten plus years, there has been research surrounding the programs of seven major initiatives from the states of Florida, Maine, North Carolina, Michigan, Pennsylvania, Texas, and Virginia (Argueta et al., 2011). Each of these initiatives returned varying results around the outcomes for students, instructional practices, and implementation; however, all of the programs generally reported positive results. Some even found correlations between laptop results and student achievement (Argueta et al., 2011; Dawson et al., 2008; Ramig, 2014). Some of the documented benefits of one-to-one are improved writing and revision skills for students; engaging in more project based learning; and enhanced relationships between teachers and students and between home and school (Lei & Zhao, 2008; Warschauer & Tate, 2015).

The research repeatedly supports that access alone will not increase student knowledge or skills in the use of technology, although it may be the first step (Ramig, 2014; Warschauer et al., 2014; Watson, 2001). While students today are skillful with the use of computers as related to personal and social experiences, they lack the necessary knowledge in activities related to research and word processing (McLoughlin & Lee, 2010; Storz & Hoffman, 2013). Today's students and young teachers are known as "digital natives," according to Clarke and Zagarell (2012); while they appear to be knowledgeable of technology because of their regular use, there is much they truly do not understand. For example, Clarke and Zagarell discovered that many of these "digital natives" are able to word process and social network, but they have no deep un-

derstanding of how technology truly works. A great number of teachers are "complete novices" and only focus on commonly used software. This leads to the need for effective training, which is the only way for teachers to learn how to utilize technology to augment their lessons (Clarke & Zagarell, 2012).

Educators are constantly challenged to use technology in an effort to support innovative teaching and learning that greatly benefits students (Lowther et al., 2012). The research upholds that just having the technology available doesn't change the way teachers teach or the way students learn. Storz and Hoffman (2013) found the implementation of one-to-one has a significant impact on the way teachers teach. There are more opportunities for students to have autonomous learning along with group and individualized work with teachers. Maninger and Holden (2009) stated that positive teacher attitudes translated into more frequent and efficient use of computers, and ultimately led to more positive work environments. These results indicate that the beliefs of teachers do in fact influence the outcomes of technology on instruction along with the general learning environment.

Ziphorah (2014) found a set of essential conditions that must be in place in order for technology to have the impact desired on improved teaching and learning. This set of essential conditions included:

- Shared vision - A vision that is shared amongst all education stakeholders including teachers, support staff, school and district administrators, teacher educators, students, parents and the community. Each of these stakeholders must be empowered to be leaders that effect change.
- Equitable access - Technology access must be strong and reliable.

- Skilled personnel - All educators, leaders and support staff must be skilled in how to effectively use the various technologies available. This requires more than just "passive observation," it involves professional learning opportunities and dedicated time assigned to practicing and sharing ideas.

- Technical support, curriculum framework, engaged communities and support policies would help an effective, useful one-to-one program initiative maintain its existence through partnerships and collaboration that support funding the program and supports the curriculum integration. (Ziphorah, 2014, p. 3653-3654)

Educational Technology Leaders

Technology leadership standards have been identified by The National Education Technology Standards for Administrators (NETS-A). Researchers noted the following five standards in their work in an effort to pinpoint the necessary skills needed for administrators to lead school in an "ever-increasing technology-infused society":

1. Technology leaders provide a technology-focused vision for all stakeholders in the education system.

2. Technology leaders create and sustain a digital-age learning culture.

3. Technology leaders promote an environment of professional practice through the implementation of technology and digital resources.

4. Technology leaders manage their organizations with the effective use of technology.

5. Technology leaders model and understand social, ethical, and legal issues related to digital technologies. (Richardson, McLeod, & Sauers, 2015, p. 3)

Communication about change can come from any number of people who provide techno-logical support. When the recipients are receptive to what is being provided, acceptance of change is easier. According to Clarke and Zagarell (2012), this support is one of the biggest is-sues that teachers and schools face when integrating new technology. Without the necessary support, teachers are unable to adopt new innovations. Apprehension is another cause of reluc-tance to new innovations. When apprehension accompanies a lack of support, teachers may not be able to see the positive elements that are already in place, much less those benefits that may come (Clarke & Zagarell, 2012).

All that we currently know about one-to-one programs points back to the buy-in of teach-ers and administrators. Teachers with a willingness to lead in the field of educational technology understand there has to be a shift in their pedagogy. This requires more than believing that im-plementing technology is giving worksheets a new electronic appearance (O'Mara & Laidlaw, 2011; Richardson et al., 2015). In the words of Clausen, Britten, and Ring (2008), "without a well-articulated and supported vision of technology integration by teachers and administrators, adding new technologies to the school and classroom will have minimal effect on changing teachers' instructional practice and their technology use with students" (p.19).

Ashbaugh (2013) stated that leadership is a concept of behavior, a mindset, or a choice of *who to be* and *what to do* in a work setting. With the right mindset, a leader is able to influence and employ power over others, helping them to better understand and believe in the value of the vision. Technology leaders find a way to make an immense impact on learning environments using technology as a true learning tool. This impact comes as a result of technology leaders in-tegrating their beliefs with how much technology is included in the school, and ultimately expos-

ing students to a more interactive learning environment (Tondeur, Hermans, van Braak, & Valcke, 2008; Varol, 2013; Wagner, 2013).

The instructional practice of teachers is most enhanced by professional development, which plays a key role in both teacher and student engagement. It is the responsibility of teachers to ensure the implementation of one-to-one technology (Bebell & O'Dwyer, 2010). With the right resources, teachers are able to support students and their different styles of learning. Teachers who plan differently find they are able to stimulate the cognitive engagement of students through their manner of questioning and the tasks they are able to provide (Tanner, Jones, Beauchamp, & Kennewell, 2008).

Students today cannot be expected to process information in the traditional educational environment that just includes drill, practice, and a lecture. There must be a change in teacher pedagogy to keep up with the students who are now a part of the digital generation (Donovan et al., 2010). The attitudes of teachers along with their beliefs toward the use of technology in the classroom will influence the extent to which computers are integrated and students are provided the opportunity to engage with technology as a whole (Holcomb, 2009; Johnston, 2015; Kim, Kim, Lee, Spector, & DeMeester, 2013).

When teachers are not comfortable and confident with technology they will not utilize it in the classroom, eventually causing a program to fail (Holcomb, 2009; Lei & Zhao, 2008; Puckett, 2014; Rosen & Beck-Hill, 2012). The implementation of these programs must include proper training. Mouza (2008) revealed that helping teachers develop the expertise needed "to harness the power of technology" (p. 450) is the hardest challenge of any one-to-one initiative. Instructional leadership can spark the need for training of teachers contributing to student learning in the end (Marks & Printy, 2003).

Administrator Impacts on Educational Technology

As previously stated, Rogers' Theory of Change (as cited in Sorenson, Shepherd, & Range, 2013, p. 74), stated that the success of any innovation is dependent on the communication channels used to transmit information about that innovation; how receptive the social system is to receiving information about the innovation; and the recognition of that social system that the innovation will provide an advantage to what is already in place. Sorenson, Shepherd, and Range (2013) noted that these change agents, often administrators, are respected individuals, whose positions of power impact adoption of new innovations, furthermore communicating ideas about technology integration based on authority or influence. These ideas go beyond just communication, but also require a level of support. According to Clarke and Zagarell (2012), administrator support of technology implementation influences teacher participation in training programs. These same administrators can also be barriers by not providing effective training programs.

Research has shown that instructional leadership has four implications in schools where learning and teaching are strong collectively. These four implications include: (a) developing the mission and goals of the school; (b) coordinating, monitoring, and evaluating curriculum, instruction, and assessment; (c) promoting a climate for learning; and (d) creating a supportive work environment (Ashbaugh, 2013; Blase & Blase, 2000; Brown, 2014; Hallinger, 2003, 2005). Shared instructional leadership is an inclusive concept that is compatible with competent and empowered teachers. In the practice of shared leadership, teachers assume leadership responsibilities when they interact with other adults in the school community in order to improve their own professional practices and learn together. This leadership becomes a part of the roles of

teachers, principals and even technology leaders, thus forging an effective leadership relationship (Blase & Blase, 2000; Marks & Printy, 2003).

Technology programs with the strongest implementation and sustainability have committed leadership (Shapley, Sheehan, Maloney, & Caranikas-Walker, 2010; Sugar & Holloman, 2009; Wagner, 2013). Leaders with effective technology programs provide a vision of how technology supports teaching and learning, as well as the needed professional development to assist teachers in achieving the vision. During the first few years of any technology related program implementation, there should be a focus on integrating technology in the curriculum where teachers are able to develop lesson plans, assignments, and assessments that are all enriched with technology (Hughes, 2013; Lei & Zhao, 2008). One-to-one technology initiatives should always be monitored and evaluated frequently to determine how well such an initiative *is* or *is not* enhancing the learning environment (Maninger & Holden, 2009; Penuel, 2006; Shapley, Sheehan, Maloney, & Caranikas-Walker, 2011).

The inclusion of both instructional and shared leadership does not obliterate the influence of transformational leadership. According to Marks and Printy (2003), when principals as leaders are able to share leadership responsibilities, a natural transformation occurs because transformational leadership plays a critical role in triggering change. Transformational leaders motivate followers inspiring them to give way to the needs of the organization by giving up their own. They do this by embracing one of four characteristics: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Transformational leaders practice integrated forms of leadership (Marks & Printy, 2003).

Hallinger (2003) further discovered that it is through instructional leadership practices that school principals contribute to school effectiveness, and the results of this effectiveness are

attributed to the various other roles they possess. These roles include managerial, political, human resource, and symbolic roles in addition to that of instructional leader. Well-balanced leaders are able to manage them all, adjusting as they see fit. However, it is the combination of an instructional and change leader that can have a meaningful impact on instructional practices and student achievement (Burns, 2010; Hallinger, 2003, 2005).

One clear indicator of successful one-to-one implementation is the commitment to the integration of technology that is communicated, understood and promoted by administration. Therefore, whatever the administrators communicate has a direct correlation to the success or failure of any innovation (Topper & Lancaster, 2013). The development and sharing of a vision, for the role of technology, and its participants, helps align it with the overall vision of a school and the commitment of the leadership therein. The National Education Technology Standards for Administrators (NETS-A) is comprised of five standards representing skills deemed necessary for administrators to lead in a technology infused society. They are listed in the aforementioned section, Educational Technology Leaders. These standards help hold administrators accountable and can shape their views of technology infused lessons.

Administrators have the ability, through their own beliefs and the vision of the school, to make a one-to-one program successful or not (Puckett, 2014; Sugar & Holloman, 2009). Research conducted by Sauers, Richardson, and McLeod (2014) indicated the importance of superintendents as leaders of innovative change, the same applies to building level administrators. Sauers et al. (2014) recognized the various roles leaders, specifically superintendents, serve in being managerial, instructional, and even political in nature. However, it is through these roles that beliefs are shaped and shared. Sauers et al. indicated in their research that because leaders can influence teacher technology use, they must become tech savvy. Leadership at the top mat-

ters, whether it is analyzing student data or facilitating student achievement. According to Sauers et al., one must not only understand the technology being used, but one must use it as well, in order to make a true impact. When school technology leadership changes, adapts, and matures at the individual level, we can better understand how a vision without those same characteristics may impede the progress in creating innovative learning environments (Richardson et al., 2013; Shapley et al., 2011).

Conclusion

No matter the direction education may take, it seems likely that some form of one-to-one computing will be the norm in the majority of American classrooms at some point in the future (Bebell & O'Dwyer, 2010). Policy makers and school leadership will determine how technology is tailored and implemented. When technology programs are introduced for implementation, districts have the choice to move forward with such implementation or be a pit stop, causing the failure of the technology program they are trying to use (Brenneman, 2014).

One-to-one initiatives have the potential to benefit students through increased classroom engagement, academic achievement, and technology literacy. This is done by providing more effective learning opportunities for all students, including those with special needs or other disadvantages (Argueta et al., 2011). It is the implementation of effective leadership strategies that will drive the successes of technology-integrated programs.

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2 ADMINISTRATOR BELIEFS AND THEIR IMPACT ON ONE-TO-ONE TECHNOLOGY INITIATIVES AND INSTRUCTIONAL PRACTICES IN ELEMENTARY SCHOOLS

The literature guides this study to take a closer look at administrators and the impact their beliefs about instructional roles have on the use of technology in one-to-one classrooms as well as the perceptions of teachers considered to be technology leaders. The guiding questions that led this research are:

RQ1: To what extent do administrator perceptions or beliefs of one-to-one initiatives affect the instructional practices of teachers who are considered school level technology leaders?

RQ2: To what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices?

This study is founded on a qualitative approach to discovery that appropriately frames the phenomenological exploration of experiences. This qualitative case study was used to explore the experiences of individuals so as to examine the phenomenon of successful one-to-one technology initiatives. Such success is heavily reliant on the leadership; therefore, a blended focus on instructional and change leadership is the lens of the theoretical framework. Horng and Loeb (2010) stated instructional leadership was once viewed as hands-on leaders engaged with curriculum and instruction issues, unafraid to work with teachers and often seen in classrooms. Horng and Loeb further noted that this definition has evolved and now has an emphasis on organizational management for instructional improvement rather than the day-to-day teaching and learning. However, this does not minimize the importance nor the impact administrators have on the day-to-day instruction in the classroom. With the right staff in place, administrator impact on student learning is optimal. Staffing a school with high-quality teachers and giving them the ap-

propriate supports and resources to be successful reflects organizational management for instructional improvement (Horng & Loeb, 2010).

In further reviewing leadership from the technology perspective, one must look at theories developed by McLeod, Bathon, and Richardson (2011), technology experts in the field of education. McLeod et al. (2011) stated school technology leadership intersects at three major domains for future research. The first domain is researching how digital technologies are used to teach traditional educational leadership content; the second is focused on training school administrators how to better use digital technologies; and the third is focused on how to prepare school administrators to be technology leaders (as cited in Richardson, Flora, & Bathon, 2013). Preparation is key to influencing beliefs. Hence, all three domains underscore why the focus on instructional and change leadership is paramount. McLeod et al. further stated that educational reform must come from administrators with an instructional vision for digital literacy and citizenship, thus the purpose of instructional leadership The frame of instructional and change leadership identifies how impactful the beliefs of administrators can truly be. Not only this, but such impact and change leads to greater changes in others. Providing the necessary preparation for change, allows instructional leaders to make such an impact on innovative ideas such as one-to-one.

Administrators have the duty of determining how to manage their staff in constructive ways, engaging and motivating them to learn more and do more. Such leaders are decisive and direct. Administrators and technology leaders both have the charge to motivate those who struggle with implementation (Puckett, 2014; Shapley, Sheehan, Maloney, & Caranikas-Walker, 2011; Sugar & Holloman, 2009; Topper & Lancaster, 2013). Richardson, Flora, and Bathon (2013) stated there has been limited research on how school administrators learn about or even

navigate effective school technology leadership. These studies indicate that principals should be purposeful in ensuring that technology is a tool to enhance learning, teaching, and leadership; otherwise, there is a risk of wasting valuable student and teacher time, along with school and district resources (Abele & Iver, 2010; Ashbaugh, 2013; Brown, 2014).

Methodology

Research design

This study is a qualitative exploratory case study that looked at the instructional practices of teachers from their own perspectives and that of their administrators. Yin (2014) defined a case study as an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-world context, although the boundaries between the phenomenon and context may not be clearly evident. This study included: (a) a review of lesson plans related to technology instruction, (b) observations of teachers during technology infused lessons, and (c) interviews with teachers and principals. The data collection took place between November 2016 and January 2017. A qualitative study allowed me, as the researcher, to discover the answer to a question by collecting evidence based on the experiences and perspectives of a relevant population (Creswell, 2014). This qualitative research allowed me to be the key instrument for observing participants in action, completing in-depth interviews, and reviewing documents. The study results helped me to explore the experiences of individuals in order to examine the phenomenon of the impact of beliefs upon instructional practices in one-to-one environments.

The study examined a small sample of teachers and their principals from four schools located in a Title I School District in Northeast Georgia. District-wide there was a five-year-old one-to-one technology implementation program for students in third through tenth grades. These students had been issued a laptop, also called a personal learning device (PLD), by the district

that they were allowed to take home. The use of these machines in the classroom for daily instruction was expected but not measured in a way that demonstrated the effectiveness of the program. Hall (2010) stated school leadership plays an important role, with the principal in a building having a pivotal role in the successful implementation of programs and new technologies. Therefore, examining the beliefs of administrators and teachers regarding their views of the impact of educational leaders on instructional technology in a one-to-one setting will provide valuable information for this district, and others who are in the beginning stages of such a program.

Theoretical Framework

The theories of instructional and change leadership frame this study, which sought to determine to what extent teachers and principals feel administrator beliefs about one-to-one technology initiatives impact the instructional practices of teachers in a suburban school district. According to Herold, Fedor, Caldwell, and Liu (2008), the manner in which leaders treat and involve employees during change has been shown to be a powerful factor influencing people's reactions. Hall (2010) identified three approaches to what he calls "change leadership." These three Change Facilitator Styles he speaks of are *Initiators, Managers*, and *Responders*. Each of these styles plays a critical part in the implementation of any idea at the school level, but especially for innovative changes that incorporate technology. Hall further defined each style in this way: Initiators have a strong sense of what their school should be like and what it should evolve into. Their passion will drive them to push teachers to do what is needed. Managers, however, focus on following rules and controlling resources, in an effort to keep things organized. Responders, on the other hand, focus on listening to the concerns of staff. They do not feel they have to do it all alone, but they want to ensure everyone is getting along and is happy (Hall, 2010). Based on the findings of Hall, those in schools led by Initiators and Managers have the

most success in implementing new projects and programs centered on technology. Herold et al. (2008) further explained change leadership involves others for the sake of improving understanding and ownership of a specific change, which leads to an improved motivation to enact change.

Additionally, Hallinger (2003, 2005) surmised that through instructional leadership practices, school principals contribute to school effectiveness; hence, the results of this effectiveness are attributed to the various other roles they possess. These roles include managerial, political, human resource, and symbolic roles in addition to that of instructional leader. Well-balanced leaders are able to manage them all adjusting as they see fit. However, it is the combination of leadership styles that can have a meaningful impact on instructional practices and student achievement (Burns, 2010; Hallinger, 2003, 2005).

Research has shown that instructional leadership has four implications in schools where learning and teaching are collectively strong. These four implications include: (a) developing the mission and goals of the school; (b) coordinating, monitoring, and evaluating curriculum, instruction, and assessment; (c) promoting a climate for learning; and (d) creating a supportive work environment (Ashbaugh, 2013; Blase & Blase, 2000; Brown, 2014; Hallinger, 2003, 2005). Instructional leadership in this sense is key when integrating an innovative learning practice such as technology into everyday curriculum. Administrators who have a mission and vision that support such inventive ideas are able to foster teacher ideas that involve monitoring and evaluating the current curriculum to find new ways to include technology in common curricular activities. These studies further posited that positive learning climates and supportive work environments naturally occur because of the freedom to try new things that encourage student learning and inventive ways of thinking.

Fullan (2002) has examined "effective leaders and found them to be key to large-scale sustainable education reform" (p.16). Fullan further stated that instructional leadership alone is not enough to ensure student achievement and success that encourages problem solving and thinking skills, which in turn develop highly motivated engaged learners. Principal leadership, Fullan (2002) explained, must evoke change that transforms the working conditions of teachers. Therefore, the combination of both change and instructional leadership is the framework that best fits this study.

According to Hall, Dirksen, and George (2013), when any type of technology innovation is implemented, it is recognized as a change process. This theory uses the term change facilitator (CF), frequently abbreviated as CF, to identify individuals as teacher technology leaders and principals to district leaders, specialists, and more. The role of the CF, as expressed by Hord, Rutherford, Huling, and Hall (2006), is a two-part role. Part one consists of any person who offers support, help, or assistance to those attempting to adopt a new innovation, providing them with a level of support that gives them an opportunity to truly understand this new venture; while the second part includes nurturing individuals who may not need additional support to get on board but facilitating the transformation that allows them to accept, use, or adopt a new innovation (Hord, Rutherford, Huling, & Hall, 2006). Change facilitators play a pivotal role in the adoption of new innovations by working directly with individuals in the capacity that is needed for new innovations to not only be put into place, but also to be used efficiently.

This research identified the participating teacher technology leaders and principals as change facilitators, as defined by Hord et al (2006). These change facilitators not only have the ability to bring about change that impacts other teachers and building leaders, their beliefs about the changes they implement impacts instructional practice.

Several previous researchers, such as Hord et al. (2006), have identified six assumptions or conclusions about change. These assumptions include:

1. Change is a process, not an event – it takes time to happen.

2. Change is accomplished by individuals – individuals should be the focus; members must change before institutions do.

3. Change is a highly personal experience – the perception of the individual will strongly influence the outcome.

4. Change involves developmental growth – progress happens in stages.

5. Change is best understood in operational terms – those involved must be able to relate.

6. The focus of facilitation should be on individuals, innovations, and the context facilitators must work in a systemic way that understands how change lies within the grasp of a human being and no other component. (Hord et al., 2006, pp. 5–6)

Beliefs and ideals surrounding the use of technology integration in daily classroom instruction is met with the implementation of change. As previously stated, Sorenson, Shepherd, and Range (2013) demonstrated in their study how change agents are seen as respected individuals whose positions impact the adoption of new innovations with proper communication and a certain level of support. Therefore, the assumptions listed above support the process of change. Through the implementation of change leadership, the goal of the principal as the change agent is to ensure technology is a tool to enhance learning, teaching, and leadership (Abele & Iver, 2010; Ashbaugh, 2013; Brown, 2014) .

The demand for technology innovation in today's schools requires technology leadership. Richardson et al. (2013) noted that school leaders are responsible for leading, navigating, and

changing schools within this modern digital context; yet, there has been limited research on how school administrators learn about or even navigate effective school technology leadership. Leadership in educational technology is about teachers, administrators, and other technology leaders at all levels who have the ability to embrace the potential technology has to enhance the experiences of student learning no matter the path of delivery (Brown, 2014). Technology leadership represents all activities about the technology in school including organizational decisions, implementation, and policies (Sincar, 2013). One-to-one technology initiatives are only able to thrive with administrator and teacher technology leaders who do not impede innovative outcomes. Through the implementation of change leadership, which involves engaging in behaviors where the goal is to efficiently implement change, the goal of the principal as a technology leader is met. This goal is to ensure technology is a tool to enhance learning, teaching, and leadership; otherwise, there is a risk of wasting valuable student and teacher time, along with school and district resources (Abele & Iver, 2010; Ashbaugh, 2013; Brown, 2014)

Technology leaders are needed. Principals and teachers as technology leaders have the role of providing effective technology integration within lessons and serving as experts who are able to provide advice on how to incorporate technology into a lesson. According to Brown (2014), these leaders have the potential to enhance both teacher and student outcomes simultaneously. This potential can also lead to addressing the technological divide, a gap that exists in our schools because of the lack of knowledge by teachers as to how to address it (Clarke & Zagarell, 2012). The relationship between the beliefs of a technology leader and the level of technology integration contributes to the learning environment students are exposed to, thus impacting the outcomes of technology on teachers and students (Sugar & Holloman, 2009).

Administrators have the duty of determining how to manage their staff in constructive ways, engaging and motivating them to learn more and do more. Such leaders are decisive and direct. Administrators and technology leaders both have the charge to motivate those who struggle with implementation (Puckett, 2014; Shapley et al., 2011; Sugar & Holloman, 2009; Topper & Lancaster, 2013). Hall (2010) stated school leadership plays an important role, with the principal in a building having a pivotal role in the implementation success of programs and new technologies. Hall specifically takes the position that some leaders provide strong leadership and support, some attend to providing materials and resources, and others cheerlead and leave the details to their teachers. Whatever the position, each approach represents a different leadership style, and leadership is critical to the success of any implementation (Hall, 2010).

The instructional and change leadership theories naturally align with this particular study, because they look at leadership from multiple levels. This makes room for teacher technology leaders, administrator technology leaders and more. Either of these leaders has the potential to influence and transform individuals and even organizations, or as implied in this study, an entire school. In an effort to identify teacher perceptions of administrative beliefs and how those beliefs impact instructional practices in one-to-one classrooms, administrator leadership takes the helm and has helped to frame this research as well as provide implications for further research on the subject.

Role of the Researcher

As the researcher, I am the key instrument collecting data myself through examining documents, observing behaviors, and interviewing participants. My experience as an administrator, in a one-to-one setting, will help bridge the connection between the research and my role as the researcher. As a principal of an elementary school in the same cohort as the ones that are a

part of the study, I have my own set of beliefs pertaining to one-to-one technology. It is my be-

lief that technology has become a part of the everyday work we do in schools, and in order to

prepare students for jobs of which we may not yet be aware, we must bridge the technological

divide and incorporate as much technology as possible. I want my teachers to be as comfortable

as possible when using technology; therefore, I believe it is important that they be provided with

the necessary support, guidance, and freedom to explore and incorporate technology in a multi-

tude of ways. As one of the principals in the cohort, I am aware of the types of professional

guidance that is offered from the standpoint of the district and the building assigned instructional

technology specialist.

Although, my school was not used as a core part of the study, my role as researcher could

have its own biases. Creswell (2014) stated my experiences could possibly create unwanted bi-

ases towards certain themes, thus creating favorable or unfavorable conclusions about the sites or

participants. I ensured biases did not interfere with the validity of the study. This was executed

from the onset by establishing and following clear protocols that were pre-approved by my

committee and strictly adhered to throughout the study.

The selection process by which sites and participants were chosen helped to keep my own

biases from interfering. Participants were able to volunteer to participate and allowed to choose

the lessons they wanted to use as a part of the study. Most of the classrooms were ones I had not

visited previously, which also allowed me to view teaching and learning experiences without

prejudice.

Once the themes emerged, I had to ensure my own understandings and biases did not pre-

sent themselves in the conclusions by not sharing my own opinions of the research and the find-

ings. I also made sure the work presented was authenticated, by allowing the participants an op-

portunity to review their interviews and offer clarification where it was needed. This helped me not to formulate opinions, but instead ensure the results of the research were true to the research.

Site Selection and Participants

The following criteria were considered in the purposeful selection of the schools, teachers, and administrators:

1. The school was an elementary school using one-to-one technology in grades three through five.

2. The same district level instructional technology specialist was assigned to each of the participating schools providing the same support, and professional development opportunities.

3. The district level instructional technology specialist was able to identify teachers considered school level technology leaders based on their implementation of technology instruction as measured by district developed evaluation tools.

4. The administrators, teachers, and instructional technology specialist were willing to participate.

The purposeful sample of this study was comprised of four principals and twelve teachers located in a suburban Title I district in Northeast Georgia with one-to-one technology for students in third through fifth grades. The third through fifth grade bands were selected because these are the students assigned a personal learning device in elementary schools. The four elementary schools were chosen because they each shared one common district instructional technology specialist, who was available to offer professional learning and guidance at the building level for teachers. The participants who volunteered to participate included: (a) four principals, one per school, and (b) twelve teachers, four per school, whose experience ranged from one to

eight years. The four principals included: (a) three females: two African-American and one Caucasian, and (b) one Caucasian male (see Table 1 on the next page).

Table 1

Demographics of Site Participants

School Site Principal Participants	Teacher Participants	African American (AA)	White (W)	Other (O)
School A	Male	1	0	0
AA - Female Principal	Female	0	2	0
School B	Male	0	0	0
AA - Female Principal	Female	1	2	0
School C	Male	0	0	0
W - Male Principal	Female	0	3	0
School D	Male	0	0	0
W - Female Principal	Female	2	1	0

Participants were interviewed individually in an effort to understand their experiences with one-to-one technology and their beliefs of how instructional practices were impacted as a result.

The Instructional Technology Specialist, assigned to the participating schools within the same cohort, helped identify teachers who were technology leaders based on his observations and work with them. The principal of each of the four schools shared the research request with certified staff via email. A follow up email was sent to those agreeing to participate along with an informed consent for them to preview. Communication began from this point between the researcher and the participants to secure interview and observation times selected by the partici-pants. This purposeful selection of sites and participants was done to better help the researcher understand the problem and research questions (Creswell, 2014).

Instrumentation

An observation protocol (see Appendix E for the Observation Protocol) was adapted to record information while observing participants. The information recorded from observations

included portraits of participants, accounts of events and activities as well as reflective notes (Creswell, 2014). An interview protocol, (see Appendix F for the Interview Protocol), was created in accordance with guidelines prescribed by Creswell (2014) to ensure consistency in tone, introduction, and closing of each interview. Separate categories of interview questions (see Appendices A-C for Interview Questions) were also established for teacher, principal and instructional technology specialist participants with questions designed to gain a better understanding of the perceptions and beliefs of the participants as it relates to one-to-one technology. While the observation and interview protocols included the aforementioned activities, the reflective notes included the personal thoughts of the researcher along with impressions and even prejudices.

Data Collection Procedures

This study included interviews, observations, and a review of documents (e.g., lesson plans). Once schools were identified through the purposeful selection process previously listed, teachers volunteered for the study by replying to an email sent out on behalf of the researcher by their principal. Those interested in the study responded and were asked to send a copy of their best lesson plan that included technology. In addition to this, teachers selected an observation and interview time that was most comfortable for them.

The sequence of the data collection included a review of the documents (e.g., lesson plans), the observation of the lesson, and then the interview. However, in a few instances, interviews were held before the observations. The review of the lessons plans prior to anything else helped me as the researcher gain an understanding of what I would be seeing prior to the observations. Most lesson plan reviews took 30 – 45 minutes depending on the depth of the lesson. In addition to identifying the use of technology, I looked at the content selected for the technology integration and how it related to the standards. By looking at the standards that correlated, I was

able to see the direct connection between the use of technology and the general instruction components.

Observation times were pre-arranged with individual participants with the intent of me observing the lesson they had selected for my review. The observations lasted on average about one hour. This time allowed me to observe the interaction of the students and teachers, the comfort level of students in the learning environment, and the integration of technology. Using the observation protocol, (see Appendix E for the Observation Protocol), lessons were observed involving the use of technology for students in one-to-one classrooms. Both descriptive and reflective observation notes were taken of the physical setting including the room arrangement, the participant actions throughout the lesson, the specific lesson activities, interactions between teacher and student as well as student-to-student, and unplanned events. Observations of non-verbal behaviors were also noted. During the observations, I used the established protocol again to ensure consistency across all observations.

Interviews scheduled by the volunteer teacher participants were conducted to gather their perceptions or beliefs about the district's one-to-one program, its integration into their instruction, and their perception of administrator beliefs on their implementation of technology based instruction. Teacher interviews were generally conducted after the observations in an effort to allow for follow-up questions related to the lesson observations and lasted an average of 45 minutes. Data was collected during the interview (see Appendix C, for Teacher Interview Questions), on teacher use of technology and its impact on the instruction they provide. When needed, the interview times provided a perfect opportunity to ask follow-up questions about the lessons observed. The interview questions used were adapted with permission from Dunham's (2012) study *Principals Roles and Responsibilities in Technology Integration in Rural Georgia*.

Interviews were the only instrument used to collect data on principals. After principals agreed to participate, upon request of the researcher, interview times were set up at their convenience and each interview followed the interview protocol, and was digitally recorded for accuracy. Principal interviews lasted on average 45 minutes to an hour. Since this was the sole instrument for collecting data from this participant group, it was important to allow enough time to gather an adequate amount of information and allow each individual to speak freely when answering the questions. There was no specific sequence to the timing of teacher and principal interviews. Each interview was conducted as scheduled by the participants.

Finally, one Instructional Technology Specialist was also interviewed (see Appendix B for Instructional Technology Specialist Interview Questions). The role of the Technology Specialist was key to the site selection of the participants since all four sites shared this one person and received professional learning related to technology from him. His interview helped to clarify themes that later developed from the data analysis as well as offer insight to the perceptions and beliefs of the participants and how it affected the day-to-day instruction. His interview also helped substantiate the themes that became visible during the second set of coding.

Data Analysis

Qualitative data analysis involves organizing, classifying and making sense of the data collected (Creswell, 2014). Observation notes, lesson plans, and interviews were reviewed as a part of the overall data analysis process. Lesson plans were selected by the teacher participants based on the lessons they chose for the researcher to observe. A preview of the plans helped the researcher identify what would be seen during the observation and how technology was used as it related to specific content areas. Observation notes were reviewed in an effort to relive the observation experience that highlighted technology in various lessons and how students and teach-

ers interacted with the technology and each other. Interviews were transcribed and coded by the researcher using an emergent method, as described by Ryan and Bernard (2003), as a series of coding used to induce themes. The coding method used helped to identify themes as the data were analyzed.

The first set of coding identified themes that were discovered by word repetitions and key terms from the transcribed interviews using the software program Dedoose. This coding method allowed me to make and interpret initial connections on a surface level. In an effort to gain more confirmation of the codes that emerged from the first set of coding, a second set of coding was completed. The second set of coding was done using a comparing and contrasting method by the researcher to make connections between the coded interviews. This allowed for general themes to emerge and for me as the researcher to look at how the themes were interrelated. The data collected from the lesson plans and observation notes, helped me to see how teachers integrated technology into a specific lesson that they previously selected. A review of the lesson plans initially showed me what level of comfort each teacher had in the use of technology with certain content. I was able to identify through the lesson plans what type of technology devices and software was planned for instructional use, the types of instructional strategies, as well as foresee the engagement of the students identified by the expectations for them within the plans.

The lesson plans and observation notes helped to confirm the themes that emerged from the secondary coding. The multiple sets of data collected including observation notes, lesson plans, and interviews helped to validate the data and the themes that emerged as a result. The reviews of the various data sources and the comparisons made between the multiple pieces helped me to understand the data as a whole and to justify the themes. Reviewing the lesson plans in advance of the observations helped to prepare me for the lesson I would observe, includ-

ing the content and how technology would specifically be integrated. The observation of the lesson in action showcased the ease of the lesson, the interaction between teacher-to-student as well as student-to-student and the connection between the lesson and the instructional standards. Finally, reviewing the interview data after transcribing truly helped align the data.

The interviews showed the correlations between the lesson plans and the observations. Participant responses helped me as the researcher gain a better understanding of their beliefs and perceptions as it relates to one-to-one technology. These perceptions along with those identified through principal interviews revealed the themes that emerged.

The development of themes, by identifying patterns, important findings, significant changes, and major differences add to the validity of the study itself (Creswell, 2014). Follow-up meetings with seven teachers and four principals from the four sites, along with the one instructional technology specialist were held for the purpose of member checking (Creswell, 2014). They were each given a copy of their individual transcripts to review responses, which helped me as the researcher fact check and do a final alignment of themes. A fact check was needed for clarification of perceptions and as a follow-up on the themes that emerged.

The follow-up with the instructional technology specialist helped to further explain his role in contributing to professional development for the teachers and administrators as well as identify other ways he too acted as a change facilitator throughout his work from school to school. The follow-up with the instructional technology specialist was necessary due to the emergence of one theme directly related to professional development. Teachers and principals noted in their interviews a need for more professional learning surrounding instructional technology and receiving it from the instructional technology specialist alone was not the most benefi-

cial. By analyzing the role of the instructional technology specialist and how he is able to support teachers and administrators, the theme was justified.

<div align="center">**Results**</div>

Information gathered from lesson plans, observation notes, and interviews from participants in four different Title I suburban schools, brought forth the emergence of three specific themes that support how the beliefs and perceptions of administrators and teachers may impact the use of one-to-one technology in instructional environments. In the sections below, I begin with an overview of the elementary teachers use of one-to-one technology as represented in their self-selected lessons. Then, I will present the themes: (a) instructional independence, (b) teacher management versus instruction with Personal Learning Devices (PLDs), and (c) the need for additional training**,** all representing the participants' perceptions of how administrators' beliefs impacted their use of instructional technology.

An overview of elementary teachers' approaches to integrating one-on-one technology in instruction

The twelve teacher participants selected lesson plans they wished to share with the researcher that included the use of technology. Allowing participants to choose the lessons for the observations enabled them to highlight examples that, in their perceptions, showed their most effective integration of technology within their self-contained classrooms. This strategy also increased the participants' comfort levels. Ten out of twelve selected lesson plans focused on English Language Arts, one teacher selected a Social Studies lesson plan, and another selected a Science lesson plan (see Table 2 on the next page for details).

Table 2

Lesson Observations

School Site	Teacher	Grade	Content	Technology Type
Site A	A1	5	Language Arts	PLDs; Google Docs
	A2	4	Language Arts	PLDs; Google Docs
	A3	3	Language Arts	PLDs; Google Docs
Site B	B1	3	Language Arts	PLDs; Google Docs
	B2	5	Language Arts	PLDs; Google Docs
	B3	4	Language Arts	PLDs; Google Docs
Site C	C1	3	Science	PLDs; Web Searches; Book Creator Software
	C2	4	Social Studies	PLDs; Interactive White Board; Video Camera; Google Maps/Earth
	C3	5	Language Arts	PLDs; Google Docs
Site D	D1	5	Language Arts	PLDs; Google Docs
	D2	3	Language Arts	PLDs; Google Docs
	D3	4	Language Arts	PLDs; Google Docs

Lesson plans demonstrating the implementation or use of one-to-one technology during instruction were reviewed. Ten out of twelve teacher participants selected English Language Arts (ELA) plans, indicating this content area is a common place across most teachers for utilizing one-to-one. These ELA lessons highlighted the use of Google Docs for writing, including peer editing, and conferencing teacher-to-student and student-to-student. The ELA lessons referred to the use of the Google Docs platform with student's own personal learning devices

(PLDs). Additional lesson plans used technology in the content area of Science and even Social Studies. The Science lesson was outlined to include research using the student's PLDs. The lesson included research sites to be used by students as well as an online presentation platform known as Book Creator, where students would assemble a final product.

The Social Studies lesson also included the use of PLDs for research but in this lesson students attempted to discover the location of another class in another part of the country based solely on clues given by the students there. The classroom teacher had identified herself in the plan as the facilitator of this lesson, and included additional higher order thinking questions and resources she planned to introduce to students as they ventured through the lesson.

Observations and interviews both followed the lesson plans to see the implementation of the lessons and the integration of technology in each. The level of comfort in using technology in ELA, based on the observations and interviews, was connected to the ease of use for research, word processing, and editing. Interviewee B1 stated, "Google Docs is great. Using ELT [Extended Learning Time] and ELA [English Language Arts] to restructure how we work on writing and grammar has been beneficial. Students can showcase work and collaborate and participate with each other." Word processing was the primary reason one-to-one technology was used in most lessons. Word processing was used for the purpose of informational and narrative writing in some instances, and in others for editing. Interviewee D1 stated,

> Students need their own devices to do research, type papers and complete other assignments. When I give assignments with pencil and paper, they are more apt to not do it or take their time, but using Google Classroom, they finish much faster.

Peer editing and teacher to student editing was common using Google Docs, a word processing tool as the platform of choice.

The observation done in the content area of social studies was of a mystery hangout. A hangout is a platform created by Google for the purpose of video chatting. The term mystery hangout does not always imply this particular platform is used, but that any platform can be used for the purpose of video chatting. The use of a mystery hangout was a higher order thinking activity with multiple technologies used throughout. The premise behind a mystery hangout is for two classrooms to work together in an effort to discover where each is located in the United States or world, using questions and clues as a jumpstart to research. This activity employed the use of personal learning devices, video technology, and communication skills for students to complete the activity. Student groups were given specific jobs for this lesson along with specific assignments for each job. The jobs included: greeters, inquirers, answerers, think tanks, question keepers, Google mappers, Atlas mappers, clue keepers, runners, photographers, clue markers, problem solvers, and closers. The details of the varying jobs were not only relayed in the lesson plan, but were also shared with the students throughout the lesson. Each job was important and its role was needed in keeping order and successfully navigating through the hour.

Students worked in pairs using their Personal Learning Devices (PLDs) or laptop computers to research where the other fourth grade class was located based on clues given. The video camera displayed, using the interactive board, made this possible and showed a high level of engagement from both classrooms. The level of noise in the classroom was high, but was filled with active learning as students hustled around the room to share their answers with the other class. Students were anxious to listen to the clues and use the given sites by the teacher to attempt to locate the other class.

The final lesson observed was in the content area of science. The classroom that selected a science lesson to be observed was studying habitats in Georgia. They were able to connect

the use of personal learning devices for the purpose of research of assigned habitats the students would in turn teach to their classmates. This particular lesson was clearly one that had been an ongoing project based on the directions given by the teacher at the beginning of the lesson reminding students of their previous goals and objectives.

Students took the information gathered from their research and transferred it to an online presentation format called Book Creator. This software allowed students to creatively display the information they learned while imploring 21st century technology skills, such as creative thinking, problem solving, and some collaboration to do so. Students researched facts about their assigned habitats and displayed these facts in the Book Creator program. They had to illustrate their findings by using pictures from the program and the internet as well as display their facts creatively to be later shared with the class. Their choice of creativity was in how they developed their end product. Some chose to thoroughly illustrate their book pages with scenery from their assigned habitats, while others opted to display their information using characters and speech bubbles.

Each of the lessons demonstrated the level at which teachers and students felt comfortable utilizing the type of technology they had invited the researcher to observe. The narratives that follow will further explain the use of technology in the different classrooms, as well as the perceptions and beliefs of both teachers and administrators and how they impact the instructional practices that occur in the classroom.

Participants' perceptions of the impact of administrator's beliefs on integration of one-on-one technology into instruction

Interview data provided a window into participants' views on how administrators' beliefs shaped the approach teachers used when integrating one-on-one technology into their class-

rooms.   The themes identified through multiple coding methods included: (a) instructional inde-

pendence, (b) teacher management versus instruction with Personal Learning Devices (PLDs),

and (c) the need for additional training.

The Importance of Having Instructional independence. The first guiding question of

the research asked: To what extent do administrator perceptions or beliefs of one-to-one initia-

tives affect the instructional practices of school level technology leaders? The teachers who vol-

unteered for this research were labeled school level technology leaders, by the researcher, be-

cause they had a level of comfort in using technology for instructional purposes. All of the par-

ticipants interviewed stated they felt the freedom to creatively instruct the needs of students with

or without technology because there was no existence of pressure from their principals. The data

making up the theme of instructional independence emphasized key words such as "freedom,"

"instruction," "engaged lessons," "creativity," and "experiences." These words were found

throughout interviews of teachers and principals and supported in the observations and lesson

plans. The notion of instructional independence was a very important concept because it allowed

teachers, in their interviews, to be even more open than they might have been otherwise. Inter-

viewee C2 said, "My principal's perception impacts us a lot . . . The freedom he gives in not hav-

ing certain requirements for usage allows me to find the best thing and not do things just be-

cause." Interviewee A3 commented, "The principal's impact on the use of technology within

their building determines the teacher's views of the importance of incorporating its use through-

out lessons."

One-to-one technology in this district has been around for at least five years prior to this

research. The teachers and principals alike, clearly stated there had been a great change in ex-

pectations of use from the beginning of the initiative to now. At the beginning of the initiative

the devices had to always be visible. According to Principal B, " . . . the computers better be on the student's desks, and they better be in use." This was the expectation when a district level person walked through the building and into classrooms to observe. However, now, principals and teachers both feel as though this thought process has evolved and that there is more recognition that digital technology does not naturally fit into every situation. There is a time and place for technology use and instruction. Principal C said,

> I have found that technology as a whole group instructional tool can help a teacher better and more efficiently guide a more engaging lesson than without technology. If you over rely on technology then it becomes about the show and you lose the content.

> The statement above resonated with comments made by most participants, in that most

emphasized that technology is a tool and has to be used as such. For instance, Principal B said,

> I think technology should supplement instruction. It's a tool, but it is not the process. I think when you go one-to-one sometimes you make it the process, and it needs to support the process . . . I don't think it should be your instruction.   There are times when it is not appropriate. Teachers need to be given permission to not use it when there is another way, or a more effective way to teach that content.

Similarly, Principal A perceived that technology has a benefit as "a tool, not just like paper and a pencil, but it is a tool to accomplish a task. We have to use the tool when it is appropriate to use with the group we have." According to Interviewee D2, " . . . The principal supports lessons centered on one-to-one technology when preceded by explicit instruction of the standards . . ." Comments such as these indicated that these administrators believed that technology must support the work teachers do, but not be the end all of the work itself. Principals felt that technology could be infused in so many different ways into everyday instructional practices but teachers

needed to have the freedom, or instructional independence, to use it as an additional resource in the classroom.

This freedom to choose how to use technology led to teachers who had independence in creating technology-infused lessons using a variety of methods. Participant A1 described,

> What I'm comfortable with and another teacher [is comfortable with] can be totally different. You have to know how much control you are willing to relinquish to students. You have to be comfortable as a teacher as well. Your own beliefs and experiences have a *huge* impact.

Interviewee B1 stated, "Students watch what we do; so our beliefs are truly impactful. Technology has to be purpose driven and makes room for a deeper connection and level of learning." The social studies mystery hangout was a prime example of a teacher having instructional independence to expand a lesson beyond the walls of a classroom. This lesson was so engaging for both the teacher and students alike, and was truly a model lesson for incorporating cross-curricular activities for instruction. During the observation students shared their excitement as they worked in small groups and pairs to attempt to discover the location of the other fourth grade class. They were given pre-assigned jobs and followed the instructions of their teacher very well when it came to thoughtful listening, writing down questions, and taking turns asking them so that everyone not only was able to have a chance but also so that everyone was able to gather information for their next clue. This teacher, interviewee C2, during her interview described how she and colleagues shared ideas such as this with each other so as to help each other find new, fun, and exciting ways to use technology. She analyzed,

> Sharing of resources is a great way to get people to use things they aren't comfortable
> with. Teachers are great at 'stealing' ideas and making it their own; even if people don't

use things the same way from classroom to classroom, the spark of an idea is there. In-

viting teachers to play around with ideas is a great way to share them.

Being able to generate ideas collaboratively and the freedom to implement them in personally

unique ways was a key emphasis underlying the theme of instructional independence. The be-

liefs and perceptions of the principals in terms of how technology should be used in the class-

room is what gave teachers the encouragement to engage freely with technology as they deemed

it appropriate. Teachers believed the perceptions and beliefs of administrators had a direct im-

pact on their instructional practices. Interviewee D2 detailed, "My perception is that the princi-

pal supports lessons centered on one-to-one technology when preceded by the explicit instruction

of the standards and accompanied with other hands-on learning activities." Another participant

revealed, "My principal isn't a huge controller. If we want to try something different, she allows

us to do that. She understands the devices are a privilege."

What the principal believes in, shares with the staff, and supports is quickly translated to

the classroom and the type of instruction that occurs on a daily basis. Principal A felt as though

her belief might not be "well known" to her teachers, simply because she felt the district still

pushed the use of technology by making it a part of the school improvement plan. Therefore, in

the mind of Principal A, the "district protocol" is what drives the use and purpose of one-to-one

in individual classrooms. However, interviewee A3 best summed up the concept of instructional

independence as she relayed her own perception as:

The principal's impact in the use of technology within their building determines the

teacher's view of the importance of incorporating its use throughout lessons. Teachers

must have support as well as expectations in order to fully implement any idea within a

classroom.

While Principal A believes her thoughts are not "well-known," one of her teachers feels what she thinks has indeed made its way into the instruction of her teachers. This belief is felt across the board. The direction that teachers choose to go in as it relates to one-to-one use was impacted by what the building administrators believed.

Focusing on management versus instruction with personal learning devices (PLDs).
The next theme to unfold out of the data collection was juggling between managing one-to-one PLD's and implementing effective instruction with the devices. Technology has to be used appropriately in order for it to be effective. What is deemed appropriate is based on the perceptions and beliefs of teachers. The second guiding question for the research asked to what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices? Not only do administrator beliefs and perceptions impact instruction, but teacher perceptions of those beliefs also shape how lessons are implemented in the classroom.

Both teacher and principal participants recognized the change in student interest and the benefits of having technology as a part of lessons. The data indicated using technology to enhance learning was related to changing student interest. Interviewee B3 revealed,

I feel it [one-to-one technology] has a major impact on student engagement. It makes learning more fun and draws the kids in because of their interest. It is a common ground now for 21st century kids because they are used to everything being digital and using digital tools.

Finding the common ground between integrating technology to make a lesson more meaningful and ensuring the lesson has enough interest to keep students focused is the challenge.

Participant interviews and observations clearly highlighted having technology in the classroom can have a major impact on student engagement. In the observations of student inter-

actions using the observation protocol, student engagement was perceived to be high when technology was used for instruction. Prior to the technology use, students appeared less interested and were even involved in other activities, such as talking, writing things not pertaining to the lesson, and distracting others. However, once the instruction was given and students were allowed to begin their work using the technology, students showed more focus, and had conversations that were part of the learning experience.

Finding the time to teach students how to use technology in the most appropriate way was a management issue that was brought out by one interviewee and one principal. According to Interviewee A2, "In order for the technology to be meaningful, it needs to be specific to what's being taught . . . We need to have time to teach the students how to use it in meaningful ways." This thought was also supported by Principal A who believed that while technology was beneficial to creating products, it loses its luster with students after a while and " . . . moves from being highly engaging to being a management issue. Students begin to leave sites without permission. They email other people in the middle of class, and they are on sites they shouldn't be on."

In the Social Studies lesson observed, students were highly engaged as they worked together to problem solve and identify where the other class was located during the Mystery Hangout. Their level of excitement was felt around the room each time they were able to find the answer to a given clue. The teacher was there as a facilitator of instruction and not the leader of the lesson. It was truly a student centered and driven activity. During one of the Language Arts lessons where students worked on a writing assignment, the collaboration used during peer editing left students engaged in a different way. They worked quietly on their individual writing pieces, but when pairs began to peer edit, they were able to log on to their classmate's document

through Google Docs and offer suggestions in a different color. They used kid friendly language of the standards as they offered positive comments about the writings they read and comments of improvement.

While the tensions raised by needing to carefully manage student use of technology was mentioned by only one out of twelve teachers and one out of four principals, the point cannot be overlooked because other participants found management to not be a concern but instead a part of the teaching process.

Participant C1 plainly communicated her thoughts in that "It [technology] can be really wonderful when used appropriately and thoughtfully." She also added:

> Depends on how you are using it. I think when I try to create a lesson around any topic, if I'm going to use technology, I want to make sure it isn't just substitution for something a human could do. It should make the task more efficient, or help the student be more in-dependent, or offer some kind of extension you couldn't get in the classroom . . . It's great when used thoughtfully and can also be very motivating.

This point was further illustrated in how Participant C1 planned her Science lesson. During the observation, students showed excitement in researching their habitat through web research tools and not just their textbooks. Students recorded information through the use of paper and pencil, but also were able to copy and paste information they found, learning how to cite information and summarize it to fit their own words. The teacher in this instance acted as a facilitator and not a lead teacher. The students guided their own learning as they researched their individually as-signed habitat and placed their information in a presentation format that showcased their creativi-ty skills (FLDNTES: Nov 16). This experience allowed students a chance to research infor-mation on a Georgia habitat and prepare to present it to their classmates through a digital book.

This lesson was also an engaging one that helped students see past the use of a paper and pencil, and even a Power Point presentation. Here students were encouraged to use writing, science, research and social studies to share important information with classmates, but also to learn pertinent things themselves.

Management efforts can also be thoughtful and meaningful when planning lessons that support student interests and learning styles. The majority of the lessons observed, ten out of twelve, were centered on word processing and editing, where students were indeed engaged. The Science and Social Studies lessons observed were used for more creative purposes and had an entirely different level of engagement that did not require any level of negative management. It is also important to note the Science and Social Studies lessons observed came from the same school, where teachers felt they had creative freedom from their principals. While the science lesson focused on students creating a presentation for their classmates in an innovative way by using a platform that allowed students to be creative yet informative, the Mystery Hangout in Social Studies implored a level of excitement on the part of the observed class as well as the class on the other end that kept the students intrigued about learning more and identifying the location of each class. This was noted during the observation where students talked loudly as they conducted research to find answers to the clues given and how they cheered for each other when those answers were found (FLDNTES: Nov 10). "We need to have time to teach the students how to use it [technology] in meaningful ways . . . We're finding kids have access to all kinds of stuff, and I'm getting less work because I am having to do more management of what you are on," according to Interviewee A2. Meaningful and purposeful teaching can happen when planning for the use of technology. In both classrooms where word processing was not the focus, students demonstrated high levels of engagement and enthusiasm through their interaction

with each other, their teachers, and the lesson. This was also noted in the minimal level of management required to maintain student focus during both of these lessons.

To use one-to-one technology effectively there is a need for additional training. This final theme continually appeared throughout the interviews with teachers as they expressed their desire to have additional training as it relates to technology and instruction. This theme supports both guiding questions: To what extent does administrator perceptions or beliefs of one-to-one initiatives affect the instructional practices of school level technology leaders? To what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices? The beliefs of administrators surrounding additional training has spread throughout the building and is felt by and agreed upon by the teachers. Administrators understand teachers are only able to go as far as they are taught, or willing to be taught. The teachers themselves have adopted similar views and many have taken it upon themselves to reach out for the necessary training they need.

Teachers understand there is still so much more they don't know, and have admitted to needing the training to do more in the classroom. In this study, teachers seemed to stay centered on technology where they were the most comfortable.   The comfort level of teachers has a direct impact on the type of instruction they are able to provide in the classroom. This explains why so many lessons observed were centered around basic word processing and editing. The level of comfort in using Google docs as a platform for student writing so that students and teachers could edit work in real time was a level of comfort each teacher had to arrive at. According to Interviewee D2, "I wasn't always comfortable with Google Classroom, but now that I am more comfortable; they [students] can tell and can do more because of what *I* have learned." Inter-

viewee D3 added, "I believe teachers that are confident and proficient with technology utilize it more and students often follow that impression.

Principal B said, "I think our teachers do feel comfortable, but the bigger thing that I think we have to do to help with that comfort is provide training on new tools . . . giving them the diversity of tools, and helping them to stay abreast of those different resources." Providing in-depth training on new tools is necessary. Most principals agreed that the district introduced an abundance of new things, but teachers only used those things they were most comfortable with. This explains the multiple lessons involving word processing through Google docs.

Most teachers were limited in their levels of comfort as evident by the number of writing lessons observed. According to the Substitution, Augmentation, Modification, Redefinition Model (SAMR), these lessons were basic substitution and augmented lessons that were a great start to higher order thinking practices. In some lessons, teachers used peer editing and teacher-to-student editing. This "real-time" way of conferencing allowed students to receive feedback faster and more efficiently, but also allowed teachers the chance to see how students responded to each other.

Interview data indicated participants felt there was still a need in these schools to provide more preparation for teachers across multiple fields. Interviewee A2 narrated,

It has to start with us; we are the ones that design the instruction. We are the ones that have to model how to use it, and until we have a better handle or receive some better training, we are not going to be able to do that.

The district assigned an Instructional Technology Specialist to every four to five schools; this person is charged with working with teachers in planning for instruction with technology. However, being that this person was assigned to multiple schools, he was only able to spend one

day a week in each school, and even then, there were different expectations of him at each

school. Thus, his role changed daily.

Most teachers, ten out of twelve, felt comfortable with calling on this person to help with

specific lessons, or even asking him to share new ways of integrating technology into certain les-

sons. The ITS, according to Interviewee B1, "was always willing to find things and teach us."

Interviewee C2 said it best, "The ITS does a nice job of helping us make what we want to do,

work in our classrooms." A few were unsure of how in-depth they could go with his role, yet all

four principals felt due to the transient nature of the role, it was never as beneficial as it could

have been. Principal A believed each building needed to have an assigned individual that was

solely there to support teachers and instruction five days per week. She stated, "Having a person

in the building that owns the machine, the instructional part [not repairs] and not sharing that

person, is valuable."

To understand the context for the training that had happened in these schools, I inter-

viewed the Instructional Technology Specialist assigned to this area. The Instructional Technol-

ogy Specialist expressed in his interview that his role was limited in some schools but greatly

used in others, and that the impact of one-to-one in the classrooms "is only as good as the teach-

ers who create the lessons." In his role, though limited as it was, he felt it was his job to "evalu-

ate which technology is most impactful on the teacher's plans . . . It's not about direct impact,

it's about technology's ability to inspire, challenge, and magnify the art of teaching."

Principals all feel the role could be more useful if there was an ITS position in each

school. Principal C articulated, "We have never found the role to be valuable because of its tran-

sient nature." By having such a position in their own schools, teachers would be given even

more freedom to implement technology rich instruction. According to Principal A, "Not sharing

a person is valuable . . . Our ITS could not help teachers in this building and go to three other buildings. He was spread too thin."

A school-based ITS would mean a person dedicated to the support of instruction with more time to do so. This role would be more beneficial, according to principals, because the ITS would have the time to get to know the needs of the building, the students, and the goals for learning. For the time being, they identified tech leaders in their buildings and utilized the knowledge base of these teachers to share information pertaining to technology instruction.

The role of the Instructional Technology Specialist is important to teachers. They feel these roles support them in the development as well as implementation of technology infused lessons. Interviewee B2 expressed, "I believe the instructional technology specialist is here to help guide, teach collab[orative], and help staff and students . . . I believe their position is needed." Instructional Technology Specialists are able to do the leg work teachers do not always have time to do, in finding new programs and resources to support teaching and learning. Instructional Technology Specialists are able to not only find new resources, but also model new programs. Interviewee C2 explained, "The ITS does a nice job of helping us make what we want to do, work in our classrooms." Their roles have the potential to be invaluable when allocated in the right way. It was also discovered in this study that the ITS would be of more use across the board if their roles weren't shared across multiple schools. While most teacher participants found the current ITS role to be useful, principals found the need for an improvement in the role.

While the Instructional Technology Specialists' role did seem to be limited in some schools, principals and teacher participants realized there were tech savvy teachers in every building. These individuals, according to Principal C, " . . . have attended advanced trainings and figured out opportunities to use technology in more engaging ways . . . The more technology

works, the more they [teachers] use it." Principal D purposed, "I am a change agent . . . sustaining is the issue…making sure I strategically get people in the right places, so that I can get at every grade level a really strong one [tech leader] that will kind of pull on board the ones that are more resistant," is her key to sharing the knowledge and training. Interviewee D2 felt she had the greatest influence through sharing with colleagues, and " . . . sharing the amazing gains my students make through the use of technology. Showcasing student's technological achievement encourages other to use technology instructionally as well."

Participants felt the need for additional training was imperative with the amount of technology that is provided in this school district for one-on-one personal laptop devices. Teachers seemed eager for the opportunity, as plainly stated by Interviewee C1:

I am definitely still learning and would love any chance I can get to learn more. Knowing how to use it is one thing, but knowing how to teach with it is another. I am looking forward to having the freedom to figure things out, and I am always looking for more ideas. One-to-one is cool, whether you are into it or not; it is there if you want to use it.

These personal interviews provided evidence that administrator beliefs and perceptions do have an impact on the instructional practices of teachers. The environment that is created by administrators, including providing or supporting professional development with technology, can promote or deter technology integration in lessons. In a district that is as technology rich as the one used in this research study, there is still a need for more. The more that is needed is that of appropriate training that will allow teachers to take learning much farther and truly introduce students to the necessary 21st century skills they need to be successful in the world. The Instructional Technology Specialist revealed in his interview:

Technology makes it possible to remove the walls of the classroom. You can learn from

others and share your knowledge simply by using technology within your instructional

practices. If you were to never use technology, you are in a bubble and can only learn

from yourself. It's very inefficient and also difficult.

Teachers must be given the opportunities to learn from each other and from other avenues that

will unlock the possibilities. If a principal believes this to be true, he or she will provide such

opportunities and even allow the room for creativity and exploration in the classroom. What

these leaders believe is passed down through each classroom and into every student.

There is also a direct correlation in how teachers perceive the beliefs of administrators

and how this impacts their instructional practices. Teachers, who understand they have the capa-

bilities or freedom to explore new learning, do so without inhibition. Principal B described, "I

have tried to create an environment where they feel the freedom to do what they are comfortable

with and yet having to be cautious that there are some people who are intimidated by technolo-

gy." Principal C expressed, "I think if you didn't ever use it, you can still be a dynamic, engag-

ing, and good teacher." Both of these principals give the teachers the freedom to do what they

feel best benefits the needs of their students whether that is with or without technology. When

teachers are more comfortable with the instruction they provide, and believe their principal sup-

ports and trusts the work they are doing, they are more apt to try new things. The support of

their principal is what raises their comfort levels.

Discussions

The purpose of this study was to identify the extent to which administrator's beliefs im-

pact instruction on one-to-one classrooms. Information gathered in this study aligned with pre-

vious research by Clarke and Zagarell (2012) that stated administrator support of technology im-

plementation has a direct influence on teacher participation, and that of Sorenson et. al (2013) which stated innovation success is dependent on the communication handed down by respected individuals, in this case, administrators. Furthermore, these administrators are change agents whose positions of power impact adoption of new innovations. The themes discovered, as noted in the findings, were identified as: (a) need for additional training, (b) teacher management versus instruction with PLDs, and (c) instructional independence.

By reviewing the data collected from lessons plans, observations, and interviews with teachers and principals, the data results support the research questions surrounding use of one-to-one and the impact of various beliefs from all parties interviewed.

RQ1: To what extent do administrator perceptions or beliefs of one-to-one initiatives affect the instructional practices of school level technology leaders? The findings proved administrator perceptions or beliefs do impact what teachers, seen as tech leaders, do in their classrooms. Overall, administrators felt as instructional leaders, they have an influence on the instructional practices of teachers. The principals interviewed didn't have strong views on how much technology should be used in classrooms, but instead felt its use had to be appropriate for the grade level as well as the content. According to Hall (2010), leadership makes a distinct difference, and most leaders implementing innovative change fall under three change facilitator styles: *Initiators, Managers, and Responders*. The four principals interviewed held beliefs that most closely aligned them with the initiator style of change facilitation. Each had a similar view on how they perceive technology to impact instruction; yet, each was clear that they had a level of trust in their staff to implement it where it naturally fits.   Hall explains that initiators have clear decisive goals that transcend but also include the implementation of the current innovation. Managers demonstrate responsive behaviors in addressing people and situations, but they also

initiate actions in support of change efforts. Each of the principal interviews reflected their strong beliefs in supporting the technology initiative in classrooms and giving teachers what they need to be successful.   The principal participants all naturally possess characteristics of all three change facilitator styles, but it was the styles of managers and initiators that best embraced their beliefs. The interview data supports the principal participants as initiators because of their beliefs with implementing the initiative itself. They offered the necessary support to ensure proper implementation, which supports the role of managers.

RQ2: To what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices? Administrator perceptions or beliefs impact what teachers, identified as tech leaders, do in their classroom. The impact is mostly an indirect one. What teachers say, feel, and do is always under scrutiny, especially in the classroom. Interview data supports the impact administrator beliefs have on instructional practices in one-to-one settings; however, teacher beliefs on one-to-one, clearly impacts instructional practices in a different way. Teachers felt their comfort level with technology had an impact on how they integrated technology in their instruction. Most felt their principals supported the use of technology in however teachers chose to utilize it, and as it best fit the needs of the lessons and students. This made them more comfortable to use and try new things, thus giving them a sense of freedom in their instruction. Those who perceived they had the freedom to use technology as they saw fit, based on their principal's beliefs, did so with a greater ease.

The comfort level of teachers plays a key role in what their students are exposed to and able to do in their classrooms. Therefore, interview data revealed teacher perceptions of one-to-one have a large impact on technology related lessons. Teachers agreed they had the freedom to choose how to best utilize technology for instruction. Collectively, the participants interviewed

felt their principals' beliefs are that technology has an appropriate time and place, and it is not the expectation that it be used for every lesson, everyday. Instead, teachers felt respected as professionals to utilize it in the most beneficial manner and in a manner that will enhance the learning of students.

Overall, it takes the collective efforts of administrators and technology leaders to have the greatest impact in classrooms. Each of the participants recognized the value of the other. The data indicated that more efficient services could be provided if an instructional technology specialist (ITS) were assigned within each building, versus the current set-up where they are shared across buildings. Currently, the teachers from building to building rely on other teachers for instructional technology support when the ITS is not physically available.

The observations helped the researcher to see how technology was implemented in the classroom and to observe their comfort level in their use. The observations also helped to familiarize the researcher with the teacher in terms of their style of teaching and their use of technology to enhance instruction. This data demonstrated the use of various lessons ranging in style, depth, and expectation of students. It was clear that teachers were familiar with components of Google Apps for Education, as they used Google Docs and Google Classroom to facilitate instruction. While this is still a meaningful way to use technology, there is so much more that could be done if adequate training were provided.

During all observations, students were highly engaged and excited to be on their devices and using them to enhance their learning experiences. Behaviors were well managed in all observations, and it was clear that expectations, routines, and procedures had been previously modeled in all observations since students did not have to interrupt the lesson to ask a number of questions on what to do.

Limitations

The concept of one-to-one technology continues to evolve. While this study has many implications for future studies, there are a few limitations to consider. The limitations to this study include accessibility, depth of the study, sample size, and natural bias. The limitation of accessibility is centered on the observation of one self-selected lesson chosen by the teachers. This was done in this way so that teachers had an opportunity to share what they considered their best lesson. Allowing this freedom of choice, let participants select lessons they were most comfortable with and felt they had used technology in the best way. The scope of the observations, while appropriate for this study, limit the true look at the impact technology has on instructional practices on a regular basis. A more vivid picture might have emerged if the researcher had been able to review a number of lesson plans and observe more than one to experience true one-to-one engagement. While the sample size was appropriate for this type of study, it limits the generalization of the findings. One cannot generalize the overall research results to a larger group with a sample size so small, but it did allow for the deep exploration of a small sample.

Historically, research surrounding one-to-one technology has focused on capacity building and academic improvements. A deeper look at the Concerns-Based Adoption Model could have increased depth of the study by providing more information to substantiate the use of one-to-one for instruction (Hall, 2010). Lastly, the limitation of natural bias comes as a result of the work of the researcher in the field. Beliefs and perceptions of the researcher can inadvertently play a role in the results of the research. It was imperative that the researcher employed an unbiased opinion while conducting research and remained impartial throughout the process. This was executed from the onset by establishing and following clear protocols that were pre-approved by the research committee and strictly adhered to throughout the study. In addition to this, removal

of the researcher's personal opinions from the process helped keep the work as authentic as possible.

Implications for Future Research

This district is fortunate to have a wealth of technology at the fingertips of the individuals who teach and learn there. However, *access* is all there is based on the observation and interview data proving a need for training in order to be more effective and efficient in the technology integration. In order to make this initiative a total success, there must be more time and emphasis placed on professional learning for the teachers in order to maximize all there is to the technology available. The observation and interview data supports the fact that administrator perceptions and beliefs impact the instructional practices of teachers in a one-to-one setting; however, the perceptions are more centered on the freedom there is to use technology, when it is most feasible. Further research may explore the change process involved when implementing a major technology initiative such as one-to-one professional learning devices by drawing on a framework such as the Concerns-Based Adoption Model to help identify specific areas of improvement and offer suggestions for next steps for administrators and other technology leaders. The Concerns Based Adoption Model works well in identifying the implementation and impact of technology by exploring factors related to participants' Stages of Concern (SoC), their Levels of Use (LoU) of a new innovation, and the Innovation Configuration (IC) or descriptive components of what their implementation involved (Hall, 2010). The Stages of Concern would help to identify teacher concerns related to technology as it relates directly to them and to their instructional practices. The SoC are categorized by the effect of an innovation on one's self, the task, or the overall impact. Future research might include this model to look more in depth at how to meet the needs of teachers in one-to-one classrooms. Concerns are an important dimension in

working with individuals who are directly involved in a change process (George, Hall, & Stiegelbauer, 2008). Such concerns are experienced at various levels for different individuals. By incorporating this model in its totality, one might be able to research a more in-depth relationship between both teacher and administrator perceptions as it relates to technology instruction.

Conclusions

This study was designed to investigate how administrator beliefs and perceptions impact instructional practices of teachers in one-to-one settings. This research provided a comprehensive look at factors outside of capacity for the success of these initiatives with a direct focus on the perceptions or beliefs of teachers as technology leaders and administrators in education. In this study, principals and teachers were interviewed and observed in an effort to identify the extent to which this impact occurs and how individual roles have the ability to impact one-to-one technology initiatives. The beliefs of these individuals can drive a one-to-one program up or down the ladder of success due to how they impact the instructional practices of technology related learning.

The themes that emerged from this study included: (a) need for additional training, (b) teacher management versus instruction with PLDs, and (c) instructional independence. The research concludes that training is a missing component and management of technology can be an issue; yet instructional independence is present in one-to-one technology instruction. Teachers have the machines, software programs, and time, but do not always have the "know-how." Teachers and principals alike, stated a strong need for proper training through professional learning, workshops, or ITS support to enhance the technology that is present. Again, as previously stated, the access is there, but the support of principals and the beliefs of the teachers in the infu-

sion of technology learning is what impacts instruction. There are a number of teachers and principals who are tech savvy enough to be innovative in their lessons and in the building, but there are not enough district-wide to provide these experiences across the board to all students. Training for all teachers on how to instruct with technology is desperately needed.

While most teachers, according to their interviews didn't feel as though management was a major issue in using PLDs in their lessons, a few still did. The lessons observed and reviewed demonstrated the incorporation of technology across content areas with observable levels of engagement amongst students. The few that did have management concerns, incorporated technology in ways that required students to word process, where management did not have to be the key focus.

While administrator perceptions and beliefs have the ability to impact one-to-one technology classroom environments, it is apparent that leadership practices have driven those beliefs allowing teachers to feel a sense of freedom in instructional planning and implementation. The final theme was that of instructional independence. The majority of the teacher participants shared they believe their principal beliefs to be aligned with their own. These beliefs are that there is an appropriate time and place for all technology. Teachers know when and how to use it, and administrators support their judgment as professionals.

Based on this study, a number of factors can influence instructional practices in the classroom, however the beliefs of teacher technology leaders and administrators have a great influence according to the conclusions found in this study based on interviews and observations. No matter the innovation, administrators and teacher technology leaders have the influence over other teachers and especially students in how an innovation is received and implemented.

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APPENDICES

Appendix A

Interview Questions for Principals[1]

1. Describe any training you have had in the use of technology.

   Probe for understanding

2. What technology do you regularly use, either personally or professionally that most bene-

   fits you on a regular basis?

   Probe for understanding

3. What differences does the use or lack of use of technology make in the classroom?

   RQ1: To what extent do administrator perceptions or beliefs of one-to-one initia-

   tives affect the instructional practices of school level technology leaders?

4. How impactful do you feel one-to-one technology is on the instruction of students in third

   through fifth grades?

   RQ1: To what extent do administrator perceptions or beliefs of one-to-one initia-

   tives affect the instructional practices of school level technology leaders?

5. How important is it for teachers to utilize one-to-one technology in their classrooms?

   RQ2: To what extent do teacher perceptions of administrator beliefs impact initi-

   atives and instructional practices?

   What do you feel you can do, as the principal, to influence the use of technology

   for instructional purposes?

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[1] From *Principals Roles and Responsibilities in Technology Integration in Rural Georgia* (Doctoral dissertation) by Dunham, C (2012). Adapted with permission. http://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1788&context=etd

RQ1: To what extent do administrator perceptions or beliefs of one-to-one initiatives affect the instructional practices of school level technology leaders?

6. How do you your beliefs of instructional technology impact the actual instruction in the classrooms?

RQ1: To what extent do administrator perceptions or beliefs of one-to-one initiatives affect the instructional practices of school level technology leaders?

RQ2: To what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices?

7. What is your perception of the impact the instructional technology specialist has on lessons centered on one-to-one technology? What is your perception of the teacher's impact?

RQ1: To what extent do administrator perceptions or beliefs of one-to-one initiatives affect the instructional practices of school level technology leaders?

RQ2: To what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices?

Appendix B

Interview Questions for the Instructional Technology Specialist[2]

1. Describe any training you have had in the use of technology.

   Probe for understanding

2. What technology do you regularly use, either personally or professionally that most bene-

   fits you on a regular basis?

   Probe for understanding

3. What differences does the use or lack of use of technology make in the classroom?

   Probe for understanding

4. How impactful do you feel one-to-one technology is on the instruction of students in third

   through fifth grades?

   RQ1: To what extent do administrator perceptions or beliefs of one-to-one initia-

   tives affect the instructional practices of school level technology leaders?

   RQ2: To what extent do teacher perceptions of administrator beliefs impact initi-

   atives and instructional practices?

5. How important is it for teachers to utilize one-to-one technology in their classrooms?

   RQ1: To what extent do administrator perceptions or beliefs of one-to-one initia-

   tives affect the instructional practices of school level technology leaders?

   RQ2: To what extent do teacher perceptions of administrator beliefs impact initi-

   atives and instructional practices?

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tation) by Dunham, C (2012). Adapted with permission.
http://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1788&context=etd

6. What do you feel you can do, as the instructional technology specialist, to influence the use of technology for instructional purposes?

      Probe for understanding

7. How do you perceive your beliefs of instructional technology impacts the actual instruction in the classrooms?

      Probe for understanding

8. What is your perception of the impact the principal has on lessons centered on one-to-one technology? What is your perception of the teacher's impact?

      RQ1: To what extent do administrator perceptions or beliefs of one-to-one initiatives affect the instructional practices of school level technology leaders?

      RQ2: To what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices?

Appendix C

Interview Questions for Teachers[3]

1. Describe any training you have had in the use of technology.

    Probe for understanding

2. What technology do you regularly use, either personally or professionally that most bene-

    fits you on a regular basis?

    Probe for understanding

3. What differences does the use or lack of use of technology make in the classroom?

    RQ2: To what extent do teacher perceptions of administrator beliefs impact initi-

    atives and instructional practices?

4. How impactful do you feel one-to-one technology is on the instruction of students in third

    through fifth grades?

    RQ2: To what extent do teacher perceptions of administrator beliefs impact initi-

    atives and instructional practices?

5. How important is it for teachers to utilize one-to-one technology in their classrooms?

    RQ2: To what extent do teacher perceptions of administrator beliefs impact initi-

    atives and instructional practices?

6. What do you feel you can do, as a school based technology leader, to influence the use of

    technology for instructional purposes?

    RQ2: To what extent do teacher perceptions of administrator beliefs impact initi-

    atives and instructional practices?

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[3] From *Principals Roles and Responsibilities in Technology Integration in Rural Georgia* (Doctoral dissertation) by Dunham, C (2012). Adapted with permission.
http://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1788&context=etd

7. How do you perceive your beliefs of instructional technology impacts the actual instruction in the classrooms?

    RQ2: To what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices?

8. What is your perception of the impact the principal has on lessons centered on one-to-one technology? What is your perception of the instructional technology specialist?

    RQ2: To what extent do teacher perceptions of administrator beliefs impact initiatives and instructional practices?

Appendix D

Georgia State University

Department of College of Education and Human Development

Informed Consent

Title: ADMINISTRATOR BELIEFS AND THEIR IMPACT ON ONE-TO-ONE
TECHNOLOGY INITIATIVES AND INSTRUCTIONAL PRACTICES IN ELEMENTARY
SCHOOLS
Principal Investigator: Sheryl Cowart Moss, PhD
Student Principal Investigator: Kena Miller Worthy

I.   Purpose:
You are invited to participate in a research study. The purpose of the study is to investigate the
impact administrator perceptions and beliefs have on the instructional practices of teachers in a
one-to-one technology environment in a suburban Title I school district. You are invited to par-
ticipate because you are an educator in an elementary school with one-one-technology resources.
A total of eighteen participants will be recruited for this study. Participation will require two –
three hours of your time in the fall of 2016.

II.   Procedures:
If you decide to participate, you will be interviewed for one session of 30 – 45 minutes, asked to
provide sample documentation of technology based lesson plans or student work, and observed
(if applicable) once during instruction for an hour. You will only encounter the student research-
er during this study and access to the research will be made available upon completion.

III.   Risks:
In this study, you will not have any more risks than you would in a normal day of life.

IV.   Benefits:
Participation in this study may not benefit you personally, but could include the opportunity to
reflect upon your own practice and to make changes or to affirm beliefs based upon that reflec-
tion. Overall, we hope to gain information about administrator beliefs and their impact on in-
structional practices of teachers in a one-to-one technology environment.

V.   Voluntary Participation and Withdrawal:
Participation in research is voluntary. You do not have to be in this study. If you decide to be in
the study and change your mind, you have the right to drop out at any time. You may skip ques-
tions or stop participating at any time. Whatever you decide, you will not lose any benefits, such
as how you are treated in the workplace, or evaluations related to technology, to which you are
otherwise entitled.

VII.   Confidentiality:
We will keep your records private to the extent allowed by law. Dr. Sheryl Cowart Moss, and Kena M. Worthy will have access to the information you provide. Information may also be shared with those who make sure the study is done correctly (GSU Institutional Review Board, the Office for Human Research Protection (OHRP).   We will use a study number rather than your name on study records. The information you provide will be stored on a firewall protected computer. Information recorded during interviews will be stored for a period of 6 months after the date of collection. Your name and other facts that might point to you will not appear when we present this study or publish its results. The findings will be summarized and reported in group form. You will not be identified personally.

VIII.   Contact Persons:
Contact Dr. Sheryl Cowart Moss at 404-413-8277 or smoss13@gsu.edu and Kena M Worthy at 530-420-5362 or kworthy4@student.gsu.edu if you have questions, concerns, or complaints about this study. You can also call if you think you have been harmed by the study. Call Susan Vogtner in the Georgia State University Office of Research Integrity at 404-413-3513 or svogtner1@gsu.edu if you want to talk to someone who is not part of the study team. You can talk about questions, concerns, offer input, obtain information, or suggestions about the study. You can also call Susan Vogtner if you have questions or concerns about your rights in this study.
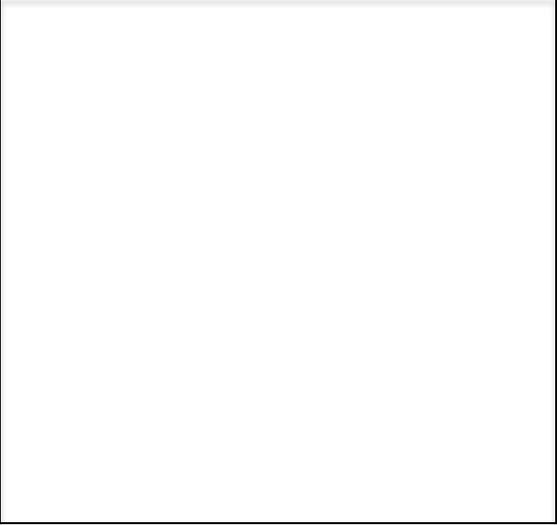
IX.   Copy of Consent Form to Participant:
We will give you a copy of this consent form to keep.

If you are willing to volunteer for this research and be audio recorded, please sign below.

_____   _____
            Participant   Date

_____   _____
       Principal Investigator or Researcher Obtaining Consent   Date

Appendix E

Observation Protocol[4]

Date: _____ Time: _____ Length of activity: ____ minutes Site: _____ Participant(s)_____	
Research Question: To what extent do administrators impact the instructional practices of teachers who teach in a one-to-one technology environment in a suburban school district.	
Descriptive Notes	*Reflective Notes*
Physical Setting: visual layout	Reflective Comments: questions to self, observations of nonverbal behavior, my interpretations
Description of participants Description of activities Description of individuals engaged in activity Sequence of activity over time Interactions Unplanned events Participants comments: expressed in quotes [The researcher's observation of what seems to be occurring]	[Reflective comments: questions to self, observations of nonverbal behavior, my interpretations]

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[4] Adapted from qualitative research protocols of Portland State University

https://www.pdx.edu/studentaffairs/sites/www.pdx.edu.studentaffairs/files/qualprotocols.pdf

Appendix F

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Interview Protocol[5]

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Title: Date: _____ Time: _____ Location: _____   Interviewer: _____ Interviewee(s): _____   Opening statement/brief description of project: The purpose of the study is to investigate the impact administrator perceptions and beliefs have on the instructional practices of teachers in a one-to-one technology environment in a suburban Title I school district. You are invited to participate because you are an educator in an elementary school with one-one-technology resources. A total of seventeen participants will be recruited for this study   *Review informed consent including: protection of respondents, including confidentiality, willingness to continue participation, use of data, access to final report, and permission to record interview.*
1. Research Question: To what extent do administrators impact the instructional practices of teachers who teach in a one-to-one technology environment in a suburban school district   2. See Interview Question List for appropriate participant   3. Researcher Thoughts
[Thank participants]