A CASE STUDY EXPLORING EFFECTIVE LEADERSHIP IN TECHNOLOGY INTEGRATION IN THREE SOUTHEASTERN U.S. ELEMENTARY SCHOOLS

by

Lauren Dawson Woodward

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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APPROVED BY:

Joan Fitzpatrick, Ph.D., Committee Chair

Bruce Martin Kirk, Ed.D., Committee Member

Fred Milacci, D.Ed., Committee Member

ABSTRACT

The purpose of this qualitative multiple case study was to explore the characteristics of effective leadership in technology integration for school leaders and staff members in three southeastern, U.S. elementary schools. The theoretical framework that guided this study was based on Spillane's (2005) distributed leadership model and Kouzes and Posner's (2012) model of transformational leadership. These theories provided an understanding of leadership practices and characteristics that fostered an environment**,** which successfully supported the process of technology integration. The rationale for the study was that there is a gap in the literature that addresses effective leadership and practices for technology integration. The central research question was "What leadership practices are demonstrated by elementary school administrators who facilitate effective technology integration in the school?" The study was conducted in three southeastern U.S. elementary schools, and the sample consisted of specific staff members who have proven to be effective leaders for technology integration. The participants included the: (a) instructional technology specialist; (b) the administrator, (c) teacher, and instructional resource teacher at each elementary school. Data was collected from interviews, surveys, artifacts, and the researcher's journal. The collected data was analyzed to identify and describe the techniques used by administrators to successfully integrate the use of technology. Data analysis occurred through the use of: (a) induction, (b) thick case description, (c) coding, (e) cross-case analysis, and (f) pattern identification. The data yielded three themes which are as follows: technology action plans, professional development, and collaboration. Effective leaders utilized these strategies to integrate technology at their respective school sites.

Keywords: leadership, technology, integration practices, administrator elementary education

Dedication

This dissertation is dedicated to my brother, Morgan Byrd Dawson, who went to be with the Lord on February 12, 2012. My brother taught me to fight for your dreams, have an authentic relationship with Jesus, and serve others unconditionally with love and a smile.

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I would like to thank Jesus Christ, my Savior and Lord for giving me strength and guidance to complete this study. I would not have made it without His strength, love, and grace. First and foremost, I am thankful for the endless love, support, encouragement, and understanding from my husband, John. I could not have made it without you by my side. To my son Dawson, my little buddy, thank you for understanding when momma had to write and focus on her paper. I am grateful for the continuous support, encouragement, and prayers from my family. I am thankful for the support, prayers, and kindness of my initial dissertation chair, Dr. Joan Fitzpatrick. She passed away unexpectedly in the middle of this journey. She made a significant impact during this process and I will forever remember her kindness, grace, and Biblical encouragement. I appreciate and am grateful for Dr. Milacci who was serving on my research committee and graciously took over as my chair. I knew I was in the "best" hands with you guiding me through this final process. Thank you to Dr. Kirk for your support, prayers, and guidance. I am thankful for all the support and prayers from family and friends.

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List of Abbreviations

Assistive Technology (AT)

Augmentative and alternative communication (AAC)

Effective Technology Integration Public Schools (ETIPS; pseudonym)

Florida Alliance for Assistive Services and Technology program (FAAST)

Free and Appropriate Public Education (FAPE)

High Technology (High Tech)

Individuals with Disabilities Education Act (IDEA)

Individuals with Disabilities Education Improvement Act (IDEIA)

Innovative and Digital Instruction (IDI)

Institutional Review Board (IRB)

International Society for Technology in Education (ISTE)

International Society for Technology in Education: Administrators (ISTE-A)

International Society for Technology in Education: Teachers (ISTE-T)

Low Technology (Low Tech)

National Educational Technology Standards (NETS)

National Educational Technology Standards for Administrators (NETS*A)

Technology-Related Assistance for Individuals with Disabilities Act (Tech Act)

Technology, Pedagogy, and Content Knowledge (TPACK)

Technology Standards for School Administrators (TSSA)

CHAPTER ONE: INTRODUCTION

Overview

In the field of public education, there are continually new trends and changes in pedagogical practices, which can also be described as "disruptions" (Christensen, 2011, p. 44.) The American Heritage Dictionary (2011) defined disruption as:

- to throw into misunderstanding or disorder,
- to interject or hinder the development of,
- to break apart or change so as to thwart usual or probable performance.

These disruptions represent issues, which are related to systemic changes that require changes or transitions from previous practices to new ones (Rogers, 2005). Currently, school leaders and educators experience disruptions when innovative technologies are implemented as learning tools in the classroom. According to Christensen, such innovations have been demonstrated to be an effective strategy to educate students. Typically, administrators are the focus of this technological and pedagogical shift in schools, and they must be provided with the requisite skills and knowledge to effectively lead this change (McLeod & Richardson, 2011).

This researcher used a qualitative, multiple case study design to identify the leadership practices and characteristics of effective leaders who encourage and support technology integration in elementary public schools. During the data collection phase of this study, the participants were interviewed, administrators completed a survey, and relevant artifacts and documents were analyzed. It was anticipated that the findings from this study would contribute to the gap in the literature, which is related to administrators' leadership practices and characteristics for effective technology integration.

Background

Use of the multiple case study design enabled the researcher to collect perspectives from effective elementary school administrators who have successfully integrated technology, and they were the focus of the study. In Chapter One, the following topics were addressed: (a) background information, (b) situation to self, (c) problem statement, (d) purpose statement, (e) significance of the study, (f) research questions**,** (g) definitions, and (h) summary. In subsequent chapters, the theoretical framework was presented with a comprehensive review of literature and the research methodology.

Historical

With the introduction of computers in classrooms in the 1980s, technology became a presence in many school systems (Davies, 2010). In 1998, a conglomerate of educational stakeholders**,** a part of the International Society for Technology in Education, worked together to develop student standards (Brooks-Young, 2007). The standards were titled National Educational Technology Standards (NETS), and they defined the technological skills that students should possess and be able to utilize in their educational experience (Brooks-Young, 2007). Subsequently, standards for educators and administrators were developed in 2000 and 2001. In 2001, the publication Technology Standards for School Administrators (TSSA Collaboration, as cited in Schrum et al., 2011) was developed, because it was necessary for administrators to acquire the requisite skills, knowledge, and practices to address and support effective technology integration in order to prevent disruption in classrooms (Christensen, 2011). According to Schrum et al., (2011) the TSSA was developed by a collaboration of groups, which included:

> The National Association of Secondary School Administrators, the National Association of Elementary School Administrators, the American Association of School Administrators, the National School Board Association, the North Central Regional Educational Laboratory, the International Society for Technology in Education, two state departments of education, two universities, and other interested parties. (p. 242)

Schrum et al. (2011) reported that the TSSA addressed, "visionary leadership, learning and teaching, professional practice, support and improvement, assessment and evaluation, and promoting ethical and social use" (p. 242). Subsequently, the guiding principles have been integrated into the International Society for Technology in Education National Educational Technology Standards for Administrators and have also been adopted and implemented by the majority of states (International Society for Technology in Education [ISTE], 2015; Schrum et al., 2011). The technology standards were updated in 2009 to reflect the skills, knowledge, and roles necessary for administrators along with the ever-changing area of 21st century teaching (ISTE, 2015; Schrum et al., 2011).

Social

Due to the innovative disruption in schools and every changing 21st century teaching strategies, stakeholders involved with the U.S. Department of Education recognized a need to "strengthen leadership" (Schrum, Galizio, & Ledesma, 2011, p. 241) in the area of technology implementation and integration (Berrett, Murphy, & Sullivan, 2012). The provision of funding, modification of teacher preparation programs, and training have been made available to teachers; however, similar provisions have not been made to prepare administrators for the possible disruptive effects of technology integration in the schools (Schrum et al., 2011). Regardless of the training and preparation teachers receive, if administrators are unable to demonstrate

effective leadership for technology integration, teachers may be unable to successfully implement it in their classrooms to improve student learning (Berrett et al., 2012; Davies, 2010; Schrum et al., 2011). In order to be effective change agents and implement technology integration for the 21st-century learning for students, administrators need to receive: (a) preparation, (b) knowledge of practices, and (c) a deeper understanding of the change factors (Davies, 2010; Greaves, Hayes, Wilson, Gielniak, & Peterson, 2010; Levin & Schrum, 2014; Schrum et al., 2011). Currently, school leaders need to know how *technology-savvy* administrators have learned to successfully: (a) lead, (b) facilitate, and (c) implement technology in the 21st-century world of learning (Berrett et al., 2012; Levin & Schrum, 2014; McLeod & Richardson, 2011; Schrum et al., 2011).

Theoretical

Schrum et al. (2011) conducted a mixed-methods research study on the topic of administrator preparation programs and the adoption and practices of these technology standards. They found that less than 5% of educational leadership preparation programs included courses and material on technology integration for school improvement. Equally problematic is the current lack of information on current and successful administrators' practices and experiences with integration technology and skills as well as the knowledge necessary to lead 21st -century schools (Davies, 2010; Levin & Schrum, 2014; Schrum et al., 2011). Part of the problem is that the topics of educational leadership and technology have become a new unified field of study, even though Davies (2010) and McLeod and Richardson (2011) found only limited information and studies on this subject. The scholarly arena of school technology leadership is underrepresented, and searches dating back to 2010 produced only approximately 100 results on the topic (McLeod & Richardson, 2011). Prior to that, Davies (2010) conducted a search in

Google Scholar with the descriptor of educational technology leadership; a list of 10 articles between the timeframe of 1998 and 2008 were produced. Administrators are at a disadvantage because, too often, those who struggle with technology integration do not have the necessary resources to draw upon for recommendations and support (Levin & Schrum, 2014; McLeod & Richardson, 2011). Since technology is implemented from the top down, it is vital to study and understand the leadership practices related to successful planning and execution of technology in schools (Berrett et al., 2012). It is anticipated that the findings from this study on school leaders will provide effective leadership perspectives on elementary school administrators' practices and methods as they plan and implement instructional technology to foster technology integration.

In addition, the findings from this current study will expand the literature gap on the topic of school leadership and technology integration; simultaneously, it will be based on Spillane's (2005) distributed leadership model and the Kouzes and Posner (2012) model of transformational leadership. For this reason, the findings from this study may have an impact on the theoretical studies of the distributed leadership model as well as the model of transformational leadership. Although Spillane's distributed leadership model and Kouzes and Posner's model of transformational leadership have been applied to various types of school leaders, the findings from this current research may provide an extension of these theories into the effective practices of school leaders, that is, administrators when they facilitate technology integration.

Situation to Self

As a school leader, I constantly examine the bigger picture in relation to technological pedagogical practices that will positively impact staff and student achievement. Within the primary and secondary education levels, the focus on 21st-century learning has impacted the curriculum, and technology is being used as tools for learning. Therefore, there is a need to

determine how administrators effectively integrate technology into the learning environment. I became interested in technology as a tool to enhance learning, because I had the opportunity to serve as a leader in charge of the implementation of technology at the school in which I worked. The school where I served was utilized as a pilot school for the Chromebook initiative in the district. This initiative included the provision of a Chromebook to every student in order to support in coordination with teaching students the procedures to utilize the tool in the classroom. I worked directly with other leaders, staff, and students to facilitate technology integration at the secondary level. I have a pervasive interest in technology integration and the need for this shift in learning.

There are several assumptions related to the study. The philosophical assumption that led to my choice of topic was axiological, because as an educational leader I feel I can bring my own perspective and interpretation of technology integration into the field of education (Creswell, 2013). As a researcher in education, I can use my experience and knowledge as a leader in technology integration and weave this expertise into the study. The worldview that helped shape this research study is biblical. As a leader in the field of education, I have the obligation to lead others and implement God-driven revelations to notably affect staff members and, specifically, the pupils. As a leader, who works to positively impact my staff members, the environment I create is one that will be based on honesty, integrity, and doing what is right based on Christian principles (Stanley, 2005). As Christians, God has called us to operate differently than the norm of what people might expect. Leaders are called to give and offer more than what the industry offers people. In Colossians 4:1 (New International Version; NIV), workers are to be provided with what is just and right. Just as people are under the authority of leaders for the time being, I am under Jesus.

The change in the 21st-century of education is a shift toward digital learning; however, the onset of digital learning presents some challenges and resistance to technology integration (Blackaby & Blackaby, 2001). As a leader and Christian, it is part of my role to address the challenges and resistance present in the work environment. It is vital to determine the cause and purpose of the resistant staff and why it is difficult for some staff to accept the course of change. According to Bohn (2014), staff members are resistant because:

- they do not have the confidence to accept the change,
- prefer customary teaching techniques,
- feel administration will not provide the tools and support needed for the change**,** and
- absence of motivation to change.

In the book, *Leading in a Culture of Change*, Fullan (2007) stated, "resisters deserve respect both because they present ideas we might otherwise miss and because their influence is crucial to navigating the politics of implementation" (p. 41). In my role as leader, it is vital to strongly encourage and support the new innovative revolutions presently in place in education because staff must understand the urgency of transformation, which necessary for success.

Problem Statement

In education, there is a shift in traditional pedagogy toward a new focus on technological pedagogy (Collins & Halverson, 2010; Greaves et al., 2010; Levin & Schrum, 2014; McLeod & Richardson, 2011; Schrum et al., 2011). This 21st-century technological shift in school curricula requires leaders to be prepared to lead change and integrate technology with fidelity and success (Bebell & O'Dwyer, 2010; Greaves et al., 2010; McLeod & Richardson, 2011; Schrum et al., 2011). School leaders need information and data from those administrators and administrative

leaders who have used effective leadership practices in order to facilitate the process of successful technology integration in schools (Christensen, 2011; Hsieh, Yen, & Kuan 2014; Inan & Lowther, 2010; Lafont, 2011; McLeod & Richardson, 2011; Sincar, 2013). The problem is that there is only limited empirical knowledge in regard to the processes and practices of effective, school-wide technological integration led by administrators in the elementary school setting (Bebell & O'Dwyer, 2010; Greaves et al., 2010; McLeod & Richardson, 2011; Sincar, 2013). Another problem is that some studies (Dexter, 2011; Goodwin, 2011; Greaves et al., 2011; McLeod & Richardson, 2011) have shown a relationship between the failed efforts of technology integration and school leadership practices. Therefore, it is vital to identify the effective leadership practices of school leaders and staff in order to obtain a comprehensive understanding of technology integration at the elementary school level.

Purpose Statement

The purpose of this qualitative multiple case study was to identify the effective leadership practices of school leaders in technology integration in three southeastern U.S. elementary schools. More specifically, the practices and characteristics**,** which foster an environment that successfully supports the process of technology integration**,** was explored. This study was guided by the theoretical framework of Spillane's (2005) distributed leadership model and the Kouzes and Posner (2012) model of transformational leadership. These theories provide an understanding of: (a) leadership practice, (b) distributed leadership, and (c) how educational leaders become effective as they foster the process of technology integration in the schools (Abu-Tineh, Khasawneh, & Al-Omari, 2008; Angelle, 2010; Davies, 2010; Kouzes & Posner, 1995; Mezirow, 1994; Spillane, 2005; Spillane, 2015; Valentine & Prater, 2011). I selected the ETIPS school district as the setting for the study because the district leaders and stakeholders have been

consistently acknowledged as national leaders for 21st -century learning and technology use for education. For this study, effective leadership practices in technology integration were defined and based on the 2014-2017 District Board of ETIPS Technology Strategic Plan (District Board of ETIPS District Technology Strategic Plan, 2014), the ETIPS Leadership Evaluation Model based off Marzano's evaluation model, and the adoption of the International Society for Technology in Education standards (ISTE, 2015; McLeod & Richardson, 2011; Sincar, 2013).

Significance of the Study

In order to make the workplace, community, and world a better place, it is important to develop and promote those leadership practices and characteristics that can be used to inspire others and lead them effectively (Maxwell, 2007). Constantly, leaders are in the process to develop leadership skills as they navigate through different circumstances and seasons. The more leaders learn, the more knowledgeable and prepared their people will be. Information can be like tools, ready to be picked up and used to help people achieve dreams and add value to others. Currently, school leaders are in need of knowledge, recommendations, and data in order to develop effective leadership practices for technology integration (Christensen, 2011; Hsieh et al., 2014; Inan & Lowther, 2010; Lafont, 2011; McLeod & Richardson, 2011; Sincar, 2013). Garland (2009) maintained that school leaders must be at the forefront of: (a) technological changes, (b) implementation, and (c) academic integration. Along with the 21st -century changes in curriculum, leaders must assume the responsibility to lead technology reform; Kowch (2013) stated that "technologies are found to be the most crucial resource leading to transformative organizational innovation in any high-capacity 21st century learning organization" (p. 26). The results from this study may be of empirical value because of the lack of high-quality, data-driven information on this topic; in addition, I identified the administrators' experiences and effective

practices for technology implementation. McLeod and Richardson (2011) reported that there is a *dearth* of articles on the topics of technology leadership, which appeared in scholarly journals.

> [They] found 2.12% of American Educational Research Association presentations had a technology leadership focus, compared to 2.94% for the University Council for Educational Administration and 7.40% for the National Council of Professors of Educational Administration. After determining the 25 most often-cited journals in the field, we found that 43 articles in these journals had a focus on technology leadership, most often centering on technology integration, staff development, and technology policy. (p. 216)

This study is significant because it will potentially contribute to the practical components of leadership and technology integration in schools. Administrators are at the forefront of this techno-pedagogical movement in schools, and their experiences are needed to fill the scholarly literature gap and, most importantly, to make more informed decisions about the integration of future technology practices (Bell, 2011; Berrett et al., 2012; Garland, 2009; Levin & Schrum, 2014; McLeod & Richardson, 2011). However, both Levin and Schrum and McLeod and Richardson noted that there is insufficient information about what effective facilitation of technology looks like in school settings, and information is limited in regard to the informed best practices to guide leaders in this current movement in schools.

I focused on effective technology leaders in three elementary settings. The study was conducted at Effective Technology Integration Public Schools (ETIPS); the district is considered a thriving and successful technology-driven school region (ETIPS, 2017). This setting is important because the district stakeholders have effectively integrated technology in the schools and can provide support and research for leaders who are in the process of shifting toward

technology pedagogy (Levin & Schrum, 2014). Hopefully, the findings from the study will contribute to the literature on school technology leadership in elementary school settings (Bebell & O'Dwyer, 2010; Dexter, 2011; Greaves et al., 2010; McLeod & Richardson, 2011; Sincar, 2013).

Potentially, the results from this study will contribute to the theoretical paradigms used in this study. Kouzes and Posner (1995**,** as quoted in Abu-Tineh et al., 2008) reported that, according to transformational leadership theory**,** "leadership is not a position, but a collection of practices and behaviors. These practices seem to be essential components of the concept of transformational leadership" (p. 650). The characteristics associated with the Kouzes and Posner transformational leadership theory correlates with effective leadership practices for successful technology integration, which could potentially strengthen the theoretical component of this research area. The focus of this current study was on administrators' practices and behaviors, which are specifically related to the effective planning and implementation of technology in schools. The researchers Spillane, Camburn, and Pareja (2007) indicated that use of Spillane's (2005) distributed leadership model can provide a construct to understand effective leadership, which can transform the school setting and motivate staff through shared distribution of leadership tasks. The research knowledge about Spillane's distributed theory is limited, and the results from my study could potentially add theoretical contributions to this theory (Spillane et al., 2007). It was anticipated that the analysis of the collected data from this study effective leadership practices and behaviors could support the guiding theories.

Research Questions

Several research questions guided this study on effective leadership for technology integration in three southeastern U.S. elementary schools**.** They are as follows:

RQ1: What leadership practices are demonstrated by elementary school administrators who facilitate effective technology integration in the school?

Some researchers (Bebell & O'Dwyer, 2010; Dexter, 2011; Greaves et al., 2010; McLeod & Richardson, 2011; Schrum et al., 2011; Sincar, 2013) have investigated effective leadership practices for technology integration; however, the researchers found there were an inadequate number of studies in regard to best practices on this topic.

RQ2: What characteristics do elementary school administrators identify as being necessary in order to perform their role in effective integration of technology in their schools?

Educational learning in the 21st century is transforming into a technological learning field**,** which transforms jobs and responsibilities due to the technological pedagogy shift, especially the role of the principal. It is important to identify the characteristics that administrators utilize in order to carry out their responsibilities, especially since leadership roles have been transformed during the 21st century (McLeod & Richardson, 2011; Valentine & Prater, 2011).

RQ3: What characteristics do elementary school teachers identify as being necessary for the administrator to effectively facilitate technology integration in his or her schools?

Northouse (2012) maintained that it is critical for organizational members to share ideas and be able to: (a) express themselves freely, (b) listen to others, and (c) to foster interactions among others. This allows members to feel they are a part of the organization (i.e., the school) so that they can become colleagues and contribute to the larger vision, while individuals are provided with guidance, security, and some balance. The leader should be able to: (a) diversify the group through structural change, (b) create structure, (c) bring members together, (d) establish norms, (e) improve group cohesiveness, and (f) encourage standards of excellence. It is

important to obtain insight from the faculty in order to understand how they perceive the role of the school technology leader such as the administrator (McLeod & Richardson, 2011).

RQ4: What resources do administrators and teachers identify as necessary to effectively implement the integration of technology and how are those resources made available?

In order for technology integration to be successful in schools, it is vital to understand what resources are necessary for this to occur (Sincar, 2013). The answer to this question will provide insight into what resources are available to effective technology leaders for implementation in schools because Sincar (2013) reported that one of the challenges to successful technology integration is due to lack of resources.

RQ5: What do administrators and teachers identify as needs to support technology integration in their schools?

In order for administrators to effectively lead and implement technology, it is important to understand the needs that are necessary to support this techno-pedagogical shift in schools (Berrett et al., 2012; Schrum et al., 2011). Effective leadership of technological implementation requires more than just skills and knowledge, and it is important to identify the needs in order to successfully support this movement (Schrum et al., 2011).

Definitions

1. *Assistive Technology* – Assistive technology is "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of a child with a disability" (Individuals with Disabilities Act, 2000, 20 U.S.C. 1401). Technology ranges from low to high technological equipment, which are utilized to promote,

uphold, and develop the functional growth of individuals with disabilities in the areas of school, home, community, and work (Akpan & Beard, 2013).

2. *Assistive Technology Act of 2004* (2004) - Legislators approved this act to provide monetary support to individual states in order to cultivate and expand a statewide initiative of assistive technology and general access to the curriculum for people with disabilities (Dyal, Carpenter, & Wright, 2009; Individuals with Disabilities Act [IDEA], 2004).
3. *Assistive Technology Act of 2004* (*P.L. 108-364)* - Legislators modified the 1998 AT Act to support states in creating the necessary groundwork in order to offer assistive technology services to individuals with disabilities as well as constant, regular evaluation of the programs (Dyal et al., 2009; IDEA, 2004).
4. *Elementary school* - For this research design, an elementary school in the ETIPS district will consist of Grades K-5.
5. *High Technology* - High technology is high tech equipment that includes multifaceted digital components that necessitate training and effort for individuals to utilize the tools (Dyal et al., 2009).
6. *International Society of Technology Education: Administrators (ISTE-A)* - Stakeholders developed the standards which provide a framework for school leaders to utilize as they lead and foster 21st-century learning skills and transform the educational learning field from traditional to digital learning (ISTE, 2015).
7. *International Society of Technology Education: Teachers (ISTE-T)* - *S*takeholders developed standards which provide teachers with a guide for teaching technology and pedagogical 21st-century learning skills to students (ISTE, 2015).

8. *Low Technology* - Low technology are technology devices that tend to be: (a) inexpensive, (b) do not require a power source, (c) individuals do not have to be trained to use the device, and (d) less complex in nature (Dyal et al., 2009).
9. *Organizational culture* - Organizational culture is the collaboration of people, situations, and behaviors in organizations that share a collective set of values, attitudes, and beliefs (Berrett et al., 2012; Gardner, Reithel, Cogliser, Walumbwa, & Foley, 2012; Morgan, 2006).
10. *School leadership* - School leadership is "The identification, acquisition, allocation, co-ordination, and use of the social, material, and cultural resources necessary to establish the conditions for the possibility of teaching and learning" (Spillane, Halverson, & Diamond, 2004, p. 11).
11. *Technology leadership* - This term refers to participants in school administration, who are responsible for the management and implementation of technology in schools (Sincar, 2013).
12. *Technology integration* - The ETIPS district leaders do not have a published definition of this term, but perceive it as the perfect intersection of technology, pedagogy**,** and content knowledge (TPACK; B. Harvey, personal communication, November 18, 2015).
13. *Technology-Related Assistance for Individuals with Disabilities Act (Tech Act) (P.L. 100-407* - Legislators approved this act to provide financial support to create statewide information and programs to meet the assistive technology needs of individuals with disabilities (IDEA, 2004).

Summary

Presented in this chapter was an introduction to the multiple case study, which was used to explore effective leadership characteristics and practices for the process of technological integration in the elementary public school setting. In ETIPS, the three elementary schools from the same district, which have effective leadership and practices for technology integration, were measured by the 2014-2017 District Board of ETIPS Technology Strategic Plan (District Board of ETIPS Technology Strategic Plan, 2014), the ETIPS Leadership Evaluation Model based off Marzano's evaluation model, and the adoption of the International Society for Technology in Education standards (ISTE, 2015; McLeod & Richardson, 2011; Sincar, 2013). The effective leadership characteristics and practices demonstrated by the administrators of public elementary schools were identified and analyzed. In Chapter Two, the researcher provided an extensive review of the literature to document the current body of literature associated with the topic of this dissertation.

CHAPTER TWO: LITERATURE REVIEW

Overview

The purpose of this multiple case study was to explore the characteristics of effective leaders in the integration of technology for school leaders and staff members. This was accomplished through a multiple case study of three southeastern elementary schools, which are known to have effectively integrated technology. In schools today, "educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" (Kowch, 2013, p. 27). Specifically, the researcher explored the practices and characteristics that foster an environment that successfully supports the process of technology integration.

In the midst of a 21st-century digital revolution in schools, students across the United States have digital access to the world at their fingertips and technology tools within their reach to improve the quality of their learning and to support learning of the state standards and objectives (Greaves et al., 2010; Groff & Mouza, 2008; Inan & Lowther, 2010; Kopcha, 2010). Digital revolution in schools refers to technology that is used to transform traditional teaching and learning methods (Greaves et al., 2010). There are countless challenges associated with the presence of technology in the 21st-century learning curriculum and with students who have access to electronic devices as learning tools (Berrett et al., 2012; Greaves et al., 2010; Groff & Mouza, 2008; Inan & Lowther, 2010). Also, educational leaders face problems related to: (a) network failure, (b) frozen screens, (c) damage to devices, and/or (d) devices which do not work (Berrett et al., 2012; Crum & Sherman, 2008; Greaves et al., 2010; Groff & Mouza, 2008; Inan & Lowther, 2010). In addition, leaders' roles are complex, and many have not been prepared to address the issues that might occur at any given moment (Berrett et al., 2012; Greaves et al.,

2012; Inan & Lowther, 2010). These issues can cause problems that school administrators, teachers, IT specialists, and district managers are not trained or prepared to address or mitigate (Berrett et al., 2012; Greaves et al., 2012; Inan & Lowther, 2010). Consequently, it can be difficult to for school leaders and staff to facilitate the integration of technology (Berrett et al., 2012; Greaves et al., 2012; Inan & Lowther, 2010).

Presented in the following chapter is a review of the scholarly literature on the theoretical framework and pertinent topics related to this research study. The focus of the first part of the literature review is on the theoretical frameworks, Spillane's (2005) distributed leadership theory and the Kouzes and Posner (2012) model of transformational leadership. The focus of the second part of the review is on effective leadership for the integration of technology and the various components connected to this phenomenon. Finally, there is a focus on assistive technology and the legislation associated with this.

Theoretical Framework

The theoretical framework on which this study is based is Spillane's (2005) distributed leadership model and Kouzes and Posner's (2012) model of transformational leadership. The distributed leadership theory provides a conceptual framework "to understand the internal dynamics of leadership practice" (Spillane et al., 2004, p. 4) as well the understanding of how leaders such as school administrators, "act in situations that are defined by others' actions" and that its "routines, tools, and structures define leadership practice" (Spillane, 2005, p. 145). With the onset of 21st-century digital learning and the presence of technology in schools, administrators need to reorganize their roles to include the facilitation of effective integration of technology and be able to distribute responsibilities to other staff members (Angelle, 2010; Davies, 2010; Klar, Brewer, & Whitehouse, 2013). The distributed leadership theory is focused

on the interactions among leaders and followers as they share responsibilities (Spillane, 2015). A good example of distributive leadership is found in Paul's letter to the Galatians (Galatians 6:6, New International Version [NIV]) where it is stated, "Nevertheless, the one who receives instruction in the word should share all good things with their instructor." This theory was applicable for this study because it is focused on the distribution of leadership for school technology leadership practices and activity for successful integration of technology resources. Also, this theory can be used to provide awareness of how administrators learn and analyze practices from other effective leaders who have integrated technology (Spillane et al., 2004).

In addition, the Kouzes and Posner (2012) model of transformational leadership was applicable because these researchers have addressed the issue of challenges as well as the practices for leaders to utilize to implement change and reform. The practices are characteristics, which leaders are encouraged to implement so that they can motivate staff members to be involved in the initiative in order to make a difference and demonstrate extraordinary results, excellence, and success (Kouzes & Posner, 2012). In Psalm 32:8 (NIV), it is stated, "I will instruct you and teach you in the way you should go." Both Spillane (2005) and Kouzes and Posner (2012) provided a theoretical insight into how leaders address crises, facilitate changes and revolutions, and distribute roles within organizations.

Furthermore, according to Bredeson, Klar, and Johansson (2011), leaders do not need to be victims of change and the transformations that occur due to school reform but use their expertise, skills, and gifts to facilitate effective change. With the onset of the digital transformation as it occurs in schools, administrators can no longer just oversee and manage the daily operations (Angelle, 2010). Administrators have to know how to: (a) switch gears, (b) modify their roles and responsibilities, (c) embrace leadership practice as a collective effort, and

(d) facilitate technology integration (Angelle, 2010). Houchens and Keedy (2009) stated, "as school accountability pressures mount, understanding effective school leadership—both as cognitive and behavioral phenomenon—becomes increasingly important" (p. 58). It is important for leaders to: (a) study research based leadership practices, (b) interweave core leadership tactics, and (c) review leadership theories in order to address the changes that are occurring in education (Leithwood, Harris, & Hopkins, 2008; Louis et al., 2010).

Distributed Leadership Model

The theory of shared and distributed leadership has developed into a new phenomenon**,** which can be traced back to several centuries (Menon, 2011). The concept of shared leadership evolved from an Australian psychologist, Gibb (1954), who suggested leadership should be viewed as shared tasks among individuals. However, the theory of distributed leadership was inactive for quite some time, and empirical research was scant (Bolden, 2011; Menon, 2011). Brown and Hosking (1986) reactivated the distributed theory in their research and found it to be a successful phenomenon (Bolden, 2011). A distributed viewpoint can be utilized as a conceptual framework for the exploration of school leadership and practices (Menon, 2011; Spillane et al., 2004). In the distributed leadership theory, emphasis is placed on school leaders, stakeholders, and the situation (Spillane & Diamond, 2007). One of the guiding frameworks, which will be used this study, is based on Spillane's (2005) understanding of distributed leadership.

Spillane and Zuberi (2009) utilized the distributed leadership model as a framework to guide their research on leaders in the school setting. In this model, the focus is placed on leadership practices in order to produce effective outcomes, and the concept of an emergent inner team, wherein everyone takes responsibility to complete the task at hand. Depending upon the

situation, practices are formed by the exchanges that occur between the leaders and followers. Leadership practices are not associated with leaders alone**,** but they evolve from relations between leaders and staff members. In order to identify the effective practices modeled by leaders, it is vital to: (a) study the leaders' responsibilities, (b) examine the interactions that occur between the leader and staff members, and (c) examine the distribution of tasks (Hulpia & Devos, 2010). Practices demonstrated by leaders can be defined as actions, which are intended to influence the inspiration, knowledge, and action of followers in order to transform an organization such as schools. Maxwell (2008) stated, "Leadership is influence, nothing more, nothing less" (p. 13).

In order for leaders to reform the educational teaching methods, they have to motivate staff members to take ownership of the practices being exhibited (Devos & Bouckenooghe, 2009; Spillane & Zuberi, 2009). Hulpia and Devos (2010) conducted a study on the distributed leadership model and found the model to be effective when: **(**a) the leader is present and accessible, (b) the leader is supportive and provides feedback, and (c) the leader promotes a sense of collaboration (Hulpia & Devos, 2010).

In addition, leaders and faculty can work together to share and distribute leadership responsibilities in order to bring about school improvement, student academic success, and technology reform (Hulpia & Devos, 2010; Schrum & Levin, 2013). Schrum and Levin (2013) stated that there is an assumption that the use of effective distributed leadership in schools is "a set of direction-setting and influence practices potentially enacted by people at all levels rather than a set of personal characteristics and attributes located in people at the top" (p. 97). The emergence of distributed and collective leadership has supported the implementation of school reform, stability, and favorable results to occur (Berrett et al., 2012).

Transformational Leadership Theory

There are several theorists who addressed transformational leadership. These theorists are discussed below.

Burns. Burns (1978) introduced the transformational leadership theory in the 20th century and described it as when leaders and followers motivate each other to progress to a greater level of: (a) self-esteem, (b) self-fulfillment, and (c) morality. Burns (1978) identified two forms of leadership**,** which he characterized as contrary extremes on a scale: transformational and transactional. Transformational leadership involves interactions between leaders and followers in a manner that promotes organizational motivation and change whereas transactional leadership is defined as interchanges between the leader and follower. In turn, the followers of the organization comply with the leader for tangible rewards. The leader does not consider organizational change or development.

Bass. In the 1980s, Bass (1985) proposed the theory of transformational leadership, in which he observed that transformational leaders motivate followers when they focus on the relationships and values of the organization and the people. According to Bass and Bass (2008), "Leadership is an interaction between two or more members of a group that often involves a structuring or restructuring of the situation and of the perceptions and expectations of the members" (p. 25). Thus, leaders are able to motivate members of the group and act as change agents. In addition, the apostle Paul in Philippians 2:13 (NIV) stated, "For it is God who works in you to will and to act in order to fulfill his good purpose." This verse can be applied to leaders and transformational leadership. Leaders motivate people when they: (a) model the desired behavior, (b) share the vision, (c) develop a positive perspective in people, and (d) encourage them to follow the leaders' goals (Kouzes & Posner, 2012).

Kouzes and Posner. Building on the theories of Gibb (1954), Burns (1978), and Bass (1985), Kouzes and Posner (2012) presented a paradigm that reflects transformational leadership.

Leadership is everyone's business**,** and true strengths and talents are not revealed until challenges arise, such as change and shifts in education (Kouzes & Posner, 2012). The issue is not the challenges, which occur, but how people respond to them. In Kouzes and Posner's (2012) leadership model, leaders utilize practices and behavioral styles to model how to handle challenges as they lead effectively. The authors stated, "Model the way, Inspire a shared vision, Challenge the practice, Enable others to act and Encourage the heart" (p. 15). In order for leaders to model the desired behavior, they must be transparent with their followers in regard to their principles and values and to encourage the mutual values of the organization. Leaders must be consistent with words, actions, and beliefs of the organization. In a personal interview with Kouzes and Posner (2012), Jiangwan Majeti stated, "Leading by example is more effective than leading by command. If people see that you work hard while preaching hard work, they are more likely to follow you" (as quoted in Kouzes & Posner, p. 17). Leaders need to be enthusiastic about the vision, share the vision to inspire others, envision the future, and understand the needs of the people (Kouzes & Posner, 2012). Leaders must have the courage to step out, accept the challenge of the initiative, and view it as an opportunity for growth (Blankstein, 2013; Kouzes & Posner, 2012). Leaders must be able to empower others to act, foster collaboration, and build relationships to support followers (Devos & Bouckenooghe, 2009; Kouzes & Posner, 2012). Leaders should create a culture that acknowledges excellence, values community, serves others, and encourages others (Blankstein, 2013; Crum & Sherman, 2008; Kouzes & Posner, 2012).

As Kouzes and Posner (2012) noted**,** leaders are encouraged to implement specific practices and characteristics in organizations so they can motivate staff to become involved in the initiative and make a difference in order to demonstrate extraordinary results, excellence, and success. Being an effective leader is not solely based on attributes and qualities but also "doing the right thing at the right time in the work environment" (McCaffery, 2010, p. 77). Kouzes and Posner (2012) provided applicable practices, models, and behaviors that leaders can mirror in order to address leadership challenges, promote growth, and excellence. Leaders can utilize these practices, conduct case studies to motivate followers, be mentors, teach leadership skills, communicate effectively, be trustworthy, and make sound decisions (Kopcha, 2010; McCaffery, 2010).

Transformational leadership. Administrators need guidance and knowledge of practices related to: (a) effective technology leadership, (b) staff buy-in and motivation, and (c) integration (Greaves et al., 2010). It has been found that the use of transformational leadership (e.g., such as Kouzes and Posner's model) is motivational and influential in practice (Abu-Tineh, Khasawneh, & Al-Omari, 2008; Valentine & Prater, 2011). Transformational leadership is linked to administrators' success in the implementation of school reform. Abu-Tineh et al. (2008) conducted a quantitative study with educational leaders and found that school administrators who used Kouzes and Posner's (2012) transformational leadership model were able to promote school reform. The Abu-Tineh et al. (2008) study demonstrated a positive and effective correlation between administrators who used this model and its relation to school reform. In addition, administrators who have experienced challenges due to the new innovation of technology, are in what Greaves et al. (2010) termed a technology implementation crisis. Abu-Tineh et al. (2008) and Valentine and Prater (2011) reported that use of these guided

frameworks have provided insight into the vital components related to the concept of transformational leadership.

Related Literature

School leadership, practices, and conditions are vital to innovation in schools (Spillane et al., 2004). In this section of the chapter, there is a focus on effective leadership for the integration of technology in elementary public schools. The strategies of effective leaders for integration of technology in an elementary school setting are addressed and include various subsections such as: (a) school leadership preparation programs, (b) technology leadership, (c) use of technology, (d) the International Society for Technology in Education-Administrators (ISTE-A) standards, and (e) school culture. The subtopics include: (a) teacher preparation, (b) the International Society for Technology in Education-Teachers (ISTE-T) standards, (c) adaption to technology, (d) limitations, and (e) benefits. Finally, the focus is on: (a) technology integration in schools, (b) leadership approach, (b) vision, (c) teamwork, (d) preparation programs, (e) barriers to technology, (f) benefits to technology, (g) resources, and (h) needs.

School Leaders and Technology

Administrators and additional school leaders have played key roles in the implementation of school reforms such as the institutionalization of technology integration (Klar et al., 2013). Not only do administrators carry the role of leadership, they are also viewed as technology leaders (Berrett et al., 2012; Davies, 2010; Schrum, Galizio, & Ledesma, 2011). Some people assume that because administrators have an important title, automatically they are a leader; however, this is not the case (Maxwell, 2007). Titles do not convey value, per se, or make one a leader; it is the ability to lead and influence others (Maxwell, 2007). In order for efficacious technology integration to occur, administrators must understand the process of technology

implementation and be able to act as change agents (Bass & Bass, 2008; Berrett et al., 2012; Davies, 2010; Schrum et al., 2011). According to Byrom and Bingham (2001), "leadership is probably the single most important factor affecting the successful integration of technology into schools" (p. 4). Effective administrators demonstrate leadership characteristics and strategies that foster the facilitation and implementation of school reform, such as technology integration (Klar et al., 2013).

Effective school leaders display the leadership characteristics, which are synonymous with the leadership model of Kouzes and Posner (2012) who identified five practices of efficacious leaders. In Kouzes and Posner's (2012) leadership model, leaders utilize practices such as: "Model the way, Inspire a shared vision, Challenge the practice, Enable others to act and Encourage the heart" (p. 15). According to Klar et al. (2013), administrators need to: (a) develop the vision and put it in place, (b) cultivate people's interests, (c) restructure the school, and (d) supervise integration of technology. It is not the strategies that facilitate success but rather the method in which leaders apply them to their school environment (Leithwood et al., 2008; Spillane et al., 2004).

Vision. In Habbakuk 2:2, it is stated: "Then the Lord replied: 'Write down the revelation and make it plain on tablets so that a herald may run with it.'" Prior to technology integration, the administrator has to: (a) define technology and its purpose in school, (b) develop a vision, (c) model it, (d) encourage staff interest, (e) promote staff ownership, and (f) move staff to become a part of the shared value of the school movement (Adamy & Heinecke, 2005; Berrett et al., 2012; Dexter, 2011; Klar et al., 2013; Leithwood et al., 2008; Schrum et al., 2011). In order for change to occur, such as technology integration, it is vital for leaders to model the way and set the direction of the organization (Klar et al., 2013; Kouzes & Posner, 2012; Leithwood et

al., 2008). Leaders who inspire a shared vision make a commitment to the followers to communicate the vision for the future, demonstrate how followers fit into the vision, and bring it to life (Devos & Bouckenooghe, 2009; Klar et al., 2013; Kouzes & Posner, 2012; Leithwood et al., 2008; Spillane et al., 2004). According to Greaves et al. (2010), "if technology is to be truly effective, it must be carefully and thoughtfully woven into the entire fabric of the school and learning" (p. 20). Leaders must help followers envision the future (Kouzes & Posner, 2012) must be aware of the school culture, realize the current status of the structure of the organization, and identify the trends and patterns to share with followers (Kouzes & Posner, 2012; Maxwell, 2007). If leaders effectively integrate technology, they can change both the presence and environment of instruction (Dessoff, 2011). Effective leaders will work strategically to incorporate technology into the infrastructure of the school and curriculum.

Enable others to act. Leaders have great influence in schools and upon students when leadership practices are broadly distributed among leaders, followers, and the school culture (Leithwood et al., 2008; Spillane et al., 2004). According to Spillane et al.,

> Leadership is not simply a function of what a school principal, or indeed any other individual or group of leaders, knows and does. Rather, it is the activities engaged in by leaders, in interaction with others in particular contexts around specific tasks. (p. 4)

In order to judiciously and attentively integrate technology into the school, administrators need a team to help them support the vision, encourage others to take ownership, and distribute tasks to others (Adamy & Heinecke, 2005; Berrett et al., 2012; Davies, 2010; Leithwood et al., 2008; Maxwell, 2007; Spillane et al., 2004). It is vital to have an inner circle of team members who can support the principal, model behaviors associated with the vision, and share responsibility to implement to the technology vision for the school (Berrett et al. 2012; Dexter, 2011; Kouzes &

Posner, 2012; Levin & Schrum, 2014; Schrum et al., 2011; Spillane et al., 2004). The inner circle should consist of people who are vital to the organization, influential, skilled in technology, and able to impact others (Maxwell, 2007). This circle should be based on teamwork and pulling each other's talents together to be effective. The members of the inner circle should: (a) value relationship development, (b) encourage peer mentorship, and (c) strive for growth and success in the organization. In order to build an effective team, one must "develop a dynamic culture, maximize diversity, love their people, maintain focus, foster healthy communication, and maximize their people" (Blackaby & Blackaby, 2011, p. 310).

In order to support technology integration and maximize the benefits from technological pedagogy, the team should include information technology leaders (Adamy & Heinecke, 2005; Kopcha, 2010; Schrum et al., 2011). It is vital that administrators, the administrative team, and instructional resource teachers share the same vision on technology integration, implementation, and management in the schools (Dexter, 2011; Kowch, 2013; Levin & Schrum, 2014; Schrum et al., 2011; Spillane et al., 2004). The relationship and communication on the inner circle team is pertinent for change and transformation to take place and for educators to take ownership of this movement (Kouzes & Posner, 2012; Schrum et al., 2011).

According to Dexter (2011), administrators should consider "school technology leadership as a school characteristic and applying a distributed leadership model to technology leadership practices demonstrates the significant influence of school leaders' vision for the use of technology" (p. 184). In a distributed perspective, the focus is on the interactions among leaders as well as leaders and followers (Spillane, 2015). Administrators cannot operate a school effectively, unless innovative leadership practices are viewed as a collective effort and suspended over staff and the context (Angelle, 2010; Spillane, 2015). According to Spillane

(2015), "taking a distributed perspective involves understanding how different configurations of school staff and school stakeholder in interaction, by design or default, constitute the practice of leading and managing instruction" (p. 282). Administrators have to be able to recognize the need for applications of technological pedagogy, understand their importance, and help staff to take ownership of this new innovative movement (Bebell & O'Dwyer, 2010; Christensen, 2011; Kopcha, 2010; Schrum et al., 2011). Effective leaders must depend upon, motivate, and support educators in the distribution of the technological roles in the school by the promotion of a collaborative environment (Adamy & Heinecke, 2005; Devos & Bouckenooghe, 2009; Leithwood et al., 2008; Schrum & Levin, 2013.). Dexter (2011) stated that the "key artifacts that organize important leadership practices include sharing a technology vision, providing instructional support personnel, aligning technology resources to the curriculum, and ensuring opportunities for teachers to learn, share, and provide input to the leadership team" (p. 166). Leaders at schools where integrated technology has been successfully implemented, attribute their success to: (a) commitment, (b) thorough preparation, (c) staff ownership, (d) shared technology leadership roles, and (e) professional development for staff (Bebell & O'Dwyer, 2010; Devos & Bouckenooghe, 2009; Kopcha, 2010; Schrum & Levin, 2013). Effective practices, which have fostered a positive result on school reform, the culture, and academic foundation, arise from a visionary and instructional leader, engager, learner**,** and collaborator (Angelle, 2010; Crum & Sherman, 2008; Hall, Childs-Bowen, Cunningham-Morris, Pajardo, & Simeral, 2016; Kopcha, 2010; Leithwood et al., 2008; Spillane et al., 2004).

Leadership Preparation Programs

In Ezra 7:10 (NIV), Ezra set his mind on studying and understanding the law, practicing it, and teaching it to others in Israel as a leader would do. His dedication and discipline was

characteristic of Kouzes and Posner's (2012) model in terms of: (a) model the way, (b) inspire others, (c) provide training, and (d) encourage others. It is stated in Ezra 7:10 that "For Ezra had devoted himself to the study and observance of the Law of the Lord, and to teaching its decrees and laws in Israel." In order for school leaders to be effective in the integration of technology at schools, it is vital for leadership preparation programs to educate and prepare leaders in technology and how to be a technology leader and manager for schools (Howell, Reames, & Andrzejewski, 2014; Kowch, 2013).

Currently, many K-12 educational institutions, leadership programs, and administrator goals are aligned with 21st-century technology standards, skills, and goals (Howell et al., 2014). However, Kowch (2013) maintained that the developers of such programs do not provide adequate instruction for leaders about how to be technology leaders and managers of technology processes and resources. Although it is the role of leadership program staff to educate leaders on how to be technologically knowledgeable in schools in order to implement technology integration, researchers (Howell et al., 2014; Javeri & Persichitte, 2010; Schrum, Skeele, & Grant, 2003) indicated these programs are deficient in leadership preparation for the shift in technology education (Howell et al., 2014; Javeri & Persichitte, 2010; Schrum et al., 2003).

Schrum et al. **(**2011) found a relationship between the level of technology training that administrators receive and the level of teachers' response to the implementation of technology in their schools. Since they found that administrators' participation in leadership preparation programs did not, necessarily, lead to teachers' acquisition of the requisite knowledge; the administrators had to learn the information individually. Additionally, they acquired technology knowledge by previous experience as an educator in the classroom, clerical tasks, or by participation in professional development sessions offered in the district (Kopcha, 2010; Schrum

et al., 2011). Instead, administrators should have the opportunity to participate in: (a) technology training, (b) implementation, (c) the modeling of technology integration, and (d) the implementation process. It is vital for administrators to be involved in large-scale technology implementation in their schools in order to contribute and participate frequently in professional development to improve their effectiveness (Greaves et al., 2010; Kopcha, 2010). Furthermore, administrators should expand their knowledge of technology by immersion in the current literature as well as attendance at conferences on the subject (Schrum et al., 2010). Stanley (2005) cautioned that leaders (i.e., administrators) should be faithful and diligent, especially in a society where new technologies are ever advancing. Colossians 3:23 (NIV) states, "Whatever you do, work at it with all your heart, as working for the Lord and not men."

International Society for Technology Education

The National Educational Technology Standards for Administrators (NETS*A) were developed for administrators to help support effective technology leadership for integration in the schools and digital learning for students (ISTE, 2015; Howell et al., 2014; Sincar, 2013). According to Chang (2011):

> Technological leadership differs from traditional leadership theory in that it does not focus on the characteristics or actions of leaders but instead emphasizes that leaders should develop, guide, manage, and apply technology to different organizational operations so as to improve operational performance. (p. 328)

The NETS*A has five major themes: (a) visionary leadership, (b) digital age learning culture, (c) excellence in professional practice, (d) systemic improvement, and (f) digital citizenship (Howell et al., 2014; ISTE, 2015). These standards were developed to support schools in the process of technology reform (Schrum et al., 2011; Sincar, 2013). Also identified

in the standards are the new roles for which that administrators are responsible, such as the school technology leader who has to ensure effective integration in the school (Sincar, 2013). In order for technology integration to be successful in schools, administrators must be able to execute systematic transformation (Carter, 2005; Gershenson et al., 2015; ISTE, 2015). However, meeting the NETS*A standards does not ensure successful integration of technology in the schools, but it does provide a plan for the integration of exemplary technology practices (Howell et al., 2014; Sincar, 2013).

Leaders' Use of Technology

School leaders use technology for numerous reasons. Administrators are involved in the technological shift in schools, and they begin the promotion of technology by communication with digital tools (Levin & Schrum, 2014; Schrum et al., 2011). Administrators have used technology for communication purposes such as: (a) correspondence via email; (b) analysis of school data; (c) preparation of reports and spreadsheets; (d) budget, arrangement of meetings and professional development, presentations; and (e) personal and professional purposes (Levin & Schrum, 2014; Schrum et al., 2011)

Not only should administrators use technology to communicate to staff, community, and students, but also to promote digital learning (Levin & Schrum, 2014; Schrum et al., 2011). As in Kouzes and Posner's (2012) leadership theory, administrators have modeled new educational software to challenge the traditional practice, promote technology, and inspire others to integrate it into the curricula (Kouzes & Posner, 2012; Levin & Schrum, 2014; Schrum et al., 2011). Leaders encourage staff to use technology tools for learning and to evaluate students through formative and summative assessments. Also, leaders can use technology to promote and foster a

learning environment for school improvement that positively impacts students, staff, and the community (Dexter, 2011; Levin & Schrum, 2014).

Trust

Effective leaders are able to develop a climate of trust in the organization, which is vital in order to surmount a crisis or reform such as a digital shift in learning (Kouzes & Posner, 2012). Hurley (2012) defined trust as, "the degree of confidence you have that another party can be relied on to fulfill commitments, be fair, be transparent, and not take advantage of your vulnerability" (p. 1). Trust is necessary in order to establish organizational culture and nurture a climate of collaboration, foster relationships, and view leadership as a team effort (Angelle, 2010; Crum & Sherman, 2008; Devos & Bouckenooghe, 2009; Kouzes & Posner, 2012). Leaders develop trust in an organization when they: (a) demonstrate appropriate and consistent behaviors, (b) are accessible, and (c) trust others (Kouzes & Posner, 2012). Once trust is earned, a leader is able to create an organizational culture whose members possess a shared vision, "establish a consensus on appropriate behavior" (Birnbaum, 1988, p. 81), and distribute tasks among the staff (Adamy & Heinecke, 2005; Angelle, 2010; Crum & Sherman, 2008; Spillane et al., 2004).

School Culture

It is vital for leaders to understand the nature of school culture and its relation to reform (Angelle, 2010; Berrett et al., 2012). As technological education reform takes place in schools throughout the country, leaders need to be knowledgeable and understand school culture as an integral component to school success (Berrett et al., 2012; Crum & Sherman, 2008; Houchens & Keedy, 2009; Kopcha, 2010). Culture can be defined as synchronized patterns of behavior with a specific group of people who share similar values, beliefs, and attitudes (Berrett et al., 2012).

Knowledge of the school culture provides people with the organizational, structural, and political lenses to view and understand the field of education (Morgan, 2006).

According to Berrett et al. (2012), "the culture of the school dramatically impacts the successes and failures of the technology implementation at each school site" (p. 215). In order to effectively integrate technology, the administrator must acknowledge and comprehend the school culture and use a systemic approach to weave technology into the instruction (Angelle, 2010; Kopcha, 2010; Schrum et al., 2011; Schrum & Levin, 2013). The systematic approach, according to Schrum and Levin (2013), means:

> You have to build the capacity of the organization to sustain it and to move it beyond just the early adopters, and that systemic change takes an up-and-down-the-organization-vertically--and-horizontally level of distributed leadership support, that it can't be about any one person. (p. 101)

Therefore, the shift toward 21st-century instruction and technology integration should prompt administrators, staff, and all stakeholders to work together to refine and negotiate the culture of the school (Berrett et al., 2012; Crum & Sherman, 2008; Kopcha, 2010; Leithwood et al., 2008; Levin & Schrum, 2014; Northouse, 2012; Schrum & Levin, 2013; Schrum et al., 2011). The reason to involve all stakeholders is to: (a) gain insight, (b) let others share their perspective, (c) determine strengths, and (d) develop relationships (Crum & Sherman; Kopcha, 2010; Leithwood et al., 2008; Levin & Schrum, 2014; McCaffery, 2010). In order to change the school culture to adapt to technology integration, administrators will need to use a variety of strategies to motivate staff and encourage them take ownership of this new movement (Devos & Bouckenooghe, 2009; Howell et al., 2014; Maxwell, 2007; Schrum et al., 2011). Subsequently, the administrator works with members of the school community to model the way and set "the

example by aligning actions with shared values" (Kouzes & Posner, 2012, p. 29) to reflect the school culture. School culture should reflect the new standards and vision for learning that is inclusive of the overall school community (Berrett et al., 2012; Crum & Sherman, 2008; Leithwood et al., 2008; Levin & Schrum, 2014; Schrum & Levin, 2013; Schrum et al., 2011).

Organizational culture should be based on honesty, integrity, and doing what is right (Stanley, 2005). School leaders should display actions characteristic of Colossians 4:1 (NIV) which states: "Masters provide your slaves with what is right and fair, because you know that you also have a Master in heaven." A school culture must be built on trust, collaboration, and relationship building; this focus on learning will yield success (Angelle, 2010; Crum & Sherman, 2008; Devos & Bouckenooghe, 2009; Kouzes & Posner, 2012; Leithwood et al., 2008; McCaffery, 2010). Organizational culture is effective when "exemplary leaders bring others to life" (Kouzes & Posner, 2012, p. 276).

Relationships

In order to foster staff ownership, build relationships, and promote diversity within the school culture, it is vital to draw upon all the strengths of staff, students, and community members (Angelle, 2010; Devos & Bouckenooghe, 2009; Kopcha, 2010; Kouzes & Posner, 2012; Leithwood et al., 2008; Levin & Schrum, 2014; McCaffery, 2010; Northouse, 2012). Part of relationship development involves sharing with people, and leaders must have the natural tendency to share with others when discoveries are made (Kouzes & Posner, 2012; Stanley, 2005). It is important to allow members to share ideas and be able to: (a) freely express themselves, (b) listen to others, and (c) foster interactions among others (Kouzes & Posner, 2012; Northouse, 2012). This allows members to feel connected to the organization, make friendships, and contribute to the vision all while the leaders provide the people with guidance,

security, and some balance (Angelle, 2010; Devos & Bouckenooghe, 2009; Kouzes & Posner, 2012; McCaffery, 2010; Northouse, 2012; Spillane et al., 2007). The leader is able to diversify the group by: (a) the development of structure, (b) the formation of groups, (c) the establishment of norms, and (d) the encouragement of standards of excellence (Kouzes & Posner, 2012; Northouse, 2012). According to Northouse**,** "providing structure is much like giving group members an architectural blueprint for their work. The drawing gives form and meaning to the purposes of the group's activities" (p. 129). Subsequently, responsibilities and tasks can be distributed**,** and each participant can play a role to achieve the school mission of technology integration (Spillane, 2005).

Teachers and Technology Integration

As changes occur in education, educators must be educated, adept, and able to confront the challenges that arise. Several sections are presented in the following section:

- teacher preparation,
- adaptation to the digital world, and
- benefits and limitations.

Teacher preparation. According to Proverbs 6:23 (NIV), "For this command is a lamp, this teaching is a light, and correction and instruction are the way to life." Due to the digital shift in education, it is vital that educators receive proper instruction in order to be successful in the classroom and in the role of technology teacher leader (Dexter, 2011; Kopcha, 2010; Schrum & Levin, 2013). All new teachers require instruction about how to integrate technology into curricular preparation and instruction (Adamy & Heinecke, 2005; Kopcha, 2010; Martin, 2011). Furthermore, most current and beginning teachers have not received appropriate instruction from formal education programs or professional development on the utilization of technology as an

instructional tool (Adamy & Heinecke, 2005; Kopcha; Martin). The focus in most educational undergraduate and graduate programs is on technological skills and attitudes; however, there is a need for training in software, educational applications, and even hardware, all of which are vital components in teacher education programs (Lei, 2009; Schrum & Levin, 2013). Participation in technology courses are important for educators so that they can integrate technology into the educational curriculum as an instrument and to "bring about school improvement and student achievement using technology as a key leverage point" (Schrum & Levin, 2013, p. 97; Lei, 2009). Furthermore, teachers need to learn how to integrate technology into the classroom and be prepared to assume technological leadership roles in the school (Adamy & Heinecke, 2005; Kopcha, 2010; Martin, 2011; Schrum & Levin, 2013).

According to Martin (2011), teachers, who were not born into the 21st-century technological pedagogy have become a part of unfamiliar territory in regard to this age of technology, digital learning tools, and students' new learning styles. Some teachers do not have the necessary skills, knowledge, and experience with technology, which is essential to teach students (Kopcha, 2010; Lei, 2009). The issue is not whether teachers have knowledge of technology but rather whether they know how to integrate it into their pedagogy and are aware of the marked impact it can have on students' ability to learn (Kopcha, 2010; Martin, 2011; Toledo, 2007). Subsequently, even with knowledge and professional development related to digital technology as an educational practice, it will take longer than expected for some teachers to become operative users of technology in the classroom (Kopcha, 2010; Martin, 2011). If teachers see positive results from the use of technology in the classroom, they will be more likely to utilize it as an instructional tool (Lei, 2009; Toledo, 2007). Not only do teachers need to acquire knowledge about technology in the classroom but also how to use it as effective tools for

instruction and improvement in teaching methods (Berrett et al., 2012; Kopcha, 2010; Martin, 2011).

Teachers should assume the role of leaders in the classroom, but they need the skills and abilities to display the appropriate patterns of practices and behaviors for students to learn (Kouzes & Posner, 2012). In addition, teachers need to see examples of instructional applications of technology and have experience in regard to the use of content-specific technologies (Lei, 2009). The faculty of educational undergraduate and graduate programs need to be able to educate and provide opportunities for teachers' access to a variety of technological tools that can be used to support student instruction and for teachers to learn content-specific technology tools (Lei, 2009). The contents of teacher preparation programs should include: (a) coursework, (b) exposure, (c) practical applications, and (d) opportunities for student educators to learn how to integrate technology in the classroom (Lei, 2009). Furthermore, professors in educational programs need to model technology use and urge student teachers to create digital artifacts to better prepare them for 21st-century instruction (Kumar & Vigil, 2011). In educational programs, students need to be taught how to make connections between technology and instruction in the classroom (Lei, 2009). The purpose is to help teachers learn how to "model digital citizenship and responsibility, and design and develop digital-age learning experiences and assessments to help students become digital citizens" (Kumar & Vigil, 2011, p. 144). If these kind of changes can be made in teacher preparation programs, they will help new educators learn how to address students' digital interests and learning styles in order for educators to provide an active learning environment that is customized to students' needs (Duhaney, 2012).

Adaptation to the World of Digital Learning

In the Song of Songs 6:11 (NIV), it says, "I went down to the grove of nut trees to look at the new growth in the valley, to see if the vines had budded or the pomegranates were in bloom." This scripture can be applied to leaders who conduct observations in classrooms to determine whether technology development has occurred and the teachers have adapted to the use of digital tools for learning. The new educational technologies can be utilized in various ways for improved student learning (Vassileva, 2008). Therefore, teachers must modify their instructional techniques and styles to accommodate the digital shift in learning (Barton & Skiba, 2006; Groff & Mouza, 2008). Historically, educators have taught by the use of the traditional, lecture-based model in which the focus was on: (a) rote learning, (b) proximity theory, (c) repetition, and (d) recall (Albugarni & Ahmed, 2015; Barton & Skiba, 2006; Johnson, Levine, Smith, & Haywood, 2010). This mode of instruction has been comfortable for teachers because it has been the customary mode since the start of education, and they are familiar with these strategies (Albugarni & Ahmed, 2015). According to Barton and Skiba (2006), the traditional classroom teaching styles are ineffective, and many educators have not been trained to teach students with use of digital tools. Furthermore, it is important for teachers to adapt to the digital shift and promote technology instruction that is: (a) image rich, (b) innovative, (c) creative, (d) interdisciplinary, and (e) active (Barton & Skiba, 2006; Johnson et al., 2010). In addition, teachers need to implement experiential and engagement techniques that promote discovery education and utilize simulation technologies to promote education. The students of this current generation thrive on interactive and collaborative instruction and need immediate connections and communications in order to learn content (Barton & Skiba, 2006). If teachers are able to adjust their instructional environments, the classrooms will become student centered and

digitalized and students will be prepared to be empowered and engaged in lifelong educational processes (Groff & Mouza, 2008; Johnson et al., 2010; Vassileva, 2008).

Technology Limitations and Benefits

As educational techniques shift toward digital learning, this change is a process that occurs across the schools in the U.S. Numbers 23:20 (NIV) states, "I have received a command to bless; He has blessed, and I cannot change it." Current and new teachers are challenged with a change in traditional teaching methods. Many educators have experienced these challenges as a teacher, but also they are learning about the digital shift in education and the issues that arise (Bebell & O'Dwyer, 2010; Groff & Mouza, 2008; Johnson et al., 2010). However, some teachers feel there are limitations in this shift toward digital learning (Albugarni & Ahmed, 2015; Howell et al., 2014). The cause of this problem is because, although many teachers may have grown up in the world of technology, they have not been exposed to technology as much as their students. That is, they have not been immersed in technology since childhood, and they are not familiar with technology, which has been transferred to the classroom (Groff & Mouza, 2008; Toledo, 2007). As a result, many educators have neither the skills nor the knowledge to successfully integrate technology into the classroom (Groff & Mouza, 2008; Inan & Lowther, 2010; Kopcha, 2010). Many teachers are reluctant to take the time and effort to learn use the technology, practice with it, and then implement it in the learning environment (Albugarni & Ahmed, 2015; Berrett et al., 2012; Howell et al., 2014; Inan & Lowther, 2010; Kopcha, 2010; Martin, 2011). Furthermore, often, there is a lack of accessibility to technology, and when technology is available for use in the classroom, technical issues may arise, and it is not always a reliable tool to use for learning (Adamy & Heinecke, 2005; Albugarni & Ahmed, 2015; Berrett et al., 2012; Dexter, 2011; Howell et al., 2014; Martin, 2011; Waycott, Bennett, Kennedy, &

Dalgarno, 2010). An additional problem is that some staff members feel the use of technology in the classroom promotes other issues such as students' ability to use it inappropriately (Waycott et al., 2010). However, if technology is readily available as an instructional and communication tool in the classroom to meet the instant learning needs of students, it sends the message that staff is readily accessible at all times to respond to messages sent via technology (Waycott et al., 2010). Again, some recalcitrant faculty may feel that there is too much priority given to this instructional strategy versus traditional academic instruction (Waycott et al., 2010). In addition, staff may feel that technology is mandated by the district, that it is an increase to their workload**,** and that the use of technology in education poses a concern for educators (Berrett et al., 2012; Duhaney, 2012; Howell et al., 2014; Waycott et al., 2010). If these limitations and problems are not addressed, it can lead to a failure of technological integration in schools (Berrett et al., 2012; Groff & Mouza, 2008).

Teachers may feel that there are benefits to technology utilization in the classroom (Albugarni & Ahmed, 2015; Martin, 2011). Many teachers feel that if they have access to technology in the classroom, they will be able to enhance student instruction and be able to do more with it (Albugarni & Ahmed, 2015; Martin, 2011). Technology is viewed as a way to support communication, and it can be used to provide accessibility to information and course resources (Waycott et al., 2010). Also, it is a tool that can be used to improve student instruction, which includes blended learning (Dexter, 2011; Duhaney, 2012; Waycott et al., 2010). The use of technology allows for face-to-face and online learning in order to facilitate instruction and incorporate differentiation strategies (Duhaney, 2012). The integration of technology in the classroom allows for customized education to occur that is focused on a student centric environment (Duhaney, 2012; Johnson et al., 2010).

Technology Integration

The presence of new initiatives and changes provide educators with benefits and challenges. The integration of technology, which is a new shift in learning, has brought about numerous: (a) challenges, (b) benefits, (c) success stories, and (d) areas of need. Presented in this section are the following topics: (a) successful technology integration, (b) the benefits of technology integration, (c) the barriers to technology integration, and (d) the areas of need.

Successful technology integration. In Joshua 1:8 (NIV), it states, "Keep this Book of the Law always on your lips; meditate on it day and night, so that you may be careful to do everything written in it. Then you will be prosperous and successful." This verse discusses keeping the Book of the Law on your lips and in your mind at all times in order to be successful. This verse can be applied to leaders and staff who must keep effective practices in mind at all times in order to be able to integrate technology. Successful application technology integration includes systemic and distributed leadership in order to support the use of technology in the classroom schools (Dexter, 2011; Levin & Schrum, 2014; Spillane, 2015). Administrators and school technology leaders must receive education and training to promote and support: (a) teacher ownership, (b) full realization of technology applications, (c) instilling best practices, and (d) the transformation of instruction through the development of a 21st -century environment for students (Greaves et al., 2010; Levin & Schrum, 2014). Administrators incorporate change management**,** and due to the shift in educational techniques, because of technological integration, administrators must provide educators with sufficient time for professional development in order to fully master the new educational techniques (Greaves et al.; Groff & Mouza, 2008; Kopcha, 2010). When sophisticated technology is incorporated into core and intervention classrooms, several benefits may be visible such as student online collaboration and the use of online

formative and summative assessments (Greaves et al., 2010). It is vital for leadership to offer support, stability, comfort, and endorsement of technology integration among staff because this technological shift is still in the early stages of development and research (Adamy & Heinecke, 2005; Berrett et al., 2012; Kopcha, 2010; McCaffery, 2010).

Benefits of technology integration. As stated in 2 Corinthians 4:15 (NIV), "All this is for your benefit, so that the grace that is reaching more and more people [and] may cause thanksgiving to overflow to the glory of God." New technologies have been customized for classrooms, and its use benefits not only students but teachers as well. Educators can use it for the purpose of instructional preparation, to deliver an academic lesson, or as an educational instrument (Groff & Mouza, 2008; Inan & Lowther, 2010). In addition, if technology is readily accessible and teachers have been trained to use the devices, they will be able to enhance student learning (Martin, 2011). Technology can be used to support staff and student communication, and it can promote accessibility to information and course resources (Johnson et al., 2010; Waycott et al., 2010).

The broad array of technological instruments are simply tools that can be used to improve student knowledge (Duhaney, 2012; Groff & Mouza, 2008; Inan & Lowther, 2010; Waycott et al., 2010). The use of technology allows for face-to-face as well as online instruction in order to facilitate learning and incorporate differentiation strategies for specific student needs (Duhaney, 2012; Johnson et al., 2010; Levin & Schrum, 2014). The integration of technology in the classroom allows for a more interdisciplinary curriculum, which can foster customized and blended instruction as well as the development of student-centric environment (Duhaney, 2012; Johnson et al., 2010; Levin & Schrum, 2014; Schrum et al., 2011). Furthermore, if students have ready access to electronic devices and tools in the technology-transformed classroom, it can lead

to**:** (a) positive academic results, (b) improved discipline, (c) increased attendance, and (d) increased graduation rates and achievement (Greaves et al., 2010; Groff & Mouza, 2008). Lastly, if technology is integrated effectively into schools, it can have a positive financial impact on the school at the federal, state, and local levels (Greaves et al., 2010).

Barriers to technology integration. There are numerous barriers to technology integration in schools such as a lack or absence of effective administrative support and leadership (Adamy & Heinecke, 2005; Bebell & O'Dwyer, 2010; Inan & Lowther, 2010; Schrum et al., 2011). According to Schrum et al.:

> After a review of 50 state licensure/certification websites, we found that all states except 2 are not explicitly requiring that administrators demonstrate knowledge of technology use, promotion, or integration in order to earn their initial licensure; however, even these 2 states have vague requirements: Michigan requires that leaders be aware of technology for teaching and learning, and New Mexico requests that applicants use technology and data. (p. 243)

The barriers to technology begin with the two states where technology preparation and courses in their leadership preparation programs are not required (Adamy & Heinecke, 2005; Schrum et al., 2011). In addition, 48 of the 50 states do not mandate technology training for leaders (Schrum et al., 2011). Administrators and school technology leaders who have not received proper instruction and have only limited knowledge about technological skills restrict their faculty and students from access to 21st -century learning benefits (Schrum et al., 2011). If administrators are not involved with the technology department staff in the development of information and communication preparation, process, and implementation, it can pose a notable

barrier to staff ownership and integration of the new tools in the classroom (Dexter, 2011; Levin & Schrum, 2014; Schrum et al., 2011).

In addition, funds play a vital role in technology integration, but they can be viewed as a barrier if not budgeted correctly or unavailable (Albugarni & Ahmed, 2015; Schrum et al., 2011). Other barriers to technology integration include: (a) bureaucracy; (b) lack of resources; (c) opposition to modernization; (d) lack of professional development session; and (e) deficiency in staff technological skills, beliefs, and readiness (Adamy & Heinecke, 2005; Albugarni &Ahmed, 2015; Inan & Lowther, 2010; Johnson et al., 2010; Kopcha, 2010; Sincar, 2013).

Needs. Devos and Bouckenooghe (2009) stated, "transformational leadership seeks to build the organization's capacity to select its purposes and to support the development of changes to practices of teaching and learning" (p. 174). Philippians 4:19 (NIV) states, "And my God will meet all your needs according to the riches of his glory in Christ Jesus." In order for technology integration to be effective, administrators will be required to have more than just the basic skills to lead others in this pedagogical technology movement (Schrum et al., 2011). Currently, states are not mandated to adopt the International Society for Technology in Education Administrators (ISTE:A; formerly known as the National Educational Technology Standards) and International Society for Technology in Education Teachers (ISTE:T) standards, and it is necessary for all state legislators and educational leaders to be committed the development of 21st -century learning in the schools (Schrum et al., 2011). In the higher education institutions of the U.S., there should be specific programs for school administrators to prepare them for their role as educational leaders in the pursuit of the goal of technological integration (Howell et al., 2014; Schrum et al., 2011). These programs should provide opportunities for leaders to learn technology software and be able to model it to staff along with

the requisite support, resources, and time (Adamy & Heinecke, 2005; Howell et al., 2014). Professional development and the time allotted to master the technological skills must be provided, which are vital to successful implementation (Albugarni & Ahmed, 2011; Dexter, 2011; Greaves et al., 2010; Inan & Lowther, 2010; Kopcha, 2010; Levin & Schrum, 2014; Schrum et al., 2011).

Assistive Technology

As the digital shift in learning occurs and educational techniques change, the area of assistive technology is being changed to address the pressing and complex needs of individuals with disabilities (Akpan & Beard, 2013; Groff & Mouza, 2008). The purpose of an assistive technology (AT) device is to provide educators and students with the requisite devices and equipment to: (a) augment academic outcomes, (b) facilitate inquiry-based learning, and (c) support student learning needs (Akpan & Beard, 2014; Petcu, Yell, & Fletcher, 2014; Simpson, McBride, Spencer, Lowdermilk, & Lynch, 2009). Assistive technology consists of tools, which educators and individuals can use to support and develop academic growth of individuals with and without disabilities in various settings such as at home, work, school, and the community (Akpan & Beard, 2013; Akpan & Beard, 2014; Groff & Mouza, 2008; Moore, 2012; Petcu et al., 2014). In 1977, the Individuals with Disabilities Education Act (IDEA) law was changed to include amendments that require equal access and ensure assistive technology in schools, which would be funded by federal legislation (Davis, Barnard-Brak, & Arredondo, 2013; Edyburn, 2009; Rutledge, 2010; Petcu et al., 2014; Simpson et al., 2009). Assistive technology services were mandated in the IDEA (2004)**,** because these services have been shown to be a practical solution to support academic and functional success for students with disabilities and provides educators with a strategy and tools to enhance learning (Akpan & Beard, 2013; Edyburn, 2009;

Moore, 2012; Petcu et al., 2014; Simpson et al., 2009). Assistive technology services are part of the legislative plan for school stakeholders to provide individuals with disabilities with the tools and access to the general curriculum (Petcu et al., 2014). The use of AT has promoted hands-on learning and opportunities to "explore, explain, elaborate, expand ideas, evaluate, and actively participate in problem solving" (Akpan & Beard, 2013, p. 118). In addition, access to AT services: (a) promote technology mastery, (b) cultivate life skills, and (c) can improve cognitive functions (Akpan & Beard, 2013; Petcu et al., 2014; Simpson et al., 2009). Educators have used AT services to design instruction in a manner that results a personalized learning plan for students that: (a) is tailored to their needs, (b) is customized to students with various disabilities, and (c) promotes access to the general education classroom (Akpan & Beard, 2013; Moore, 2012; Petcu et al., 2014; Simpson et al., 2009).

Assistive technology legislation. During the 1970s, legislation was passed to protect individuals with disabilities and provide services and supports (P.L. 94-142). School leaders and staff members experienced challenges as they worked together to create special education programs to ensure: (a) a Free Appropriate Public Education (FAPE), (b) AT service, and (c) that appropriate laws and policies are in place (Petcu et al., 2014).

The legislative laws, which were passed to protect and support students with disabilities as related to FAPE and AT services, are: (a) the Education for All Handicapped Children Act (EAHCA, 1975), which mandates a Free Appropriate Public Education; (b) the Technology Related Assistance for Individuals with Disabilities Act (1988); (c) the Individuals with Disabilities Education Act (2004), and (d) the Assistive Technology Act (1998). In 1975, the members of Congress passed the Education for All Handicapped Children Act (EAHCA), which mandated that public school staff provide all students with disabilities equal access to education

and one free meal a day via an individual educational plan (IEP;). The EAHCA provided protection for the legal rights of students with disabilities and parents' rights as well (Rutledge, 2010). In 1982, the *Board of Education of the Hendrick Hudson Central School District v. Rowley* (1982) was a landmark case, and it was a notable date in history (Drasgow, Yell, & Robinson, 2000). This date is of note because the case was centered on IDEA and Free Appropriate Public Education (FAPE). This case was an educational landmark case because it was the first special education case to reach the U.S. Supreme Court (*Board of Education of the Hendrick Hudson Central School District v. Rowley*, 1982). After several appeals, the U.S. Supreme Court overturned the ruling of the U.S. District Court and Court Appeals (*Board of Education of the Hendrick Hudson Central School District v. Rowley*, 1982; Hazelkorn, Katsiyannis, & Yell, 2007). Since the student had an IEP and received special education services, the U.S. Supreme Court Justices determined that she had received a free**,** appropriate public education (*Board of Education of the Hendrick Hudson Central School District v. Rowley*, 1982). In this ruling, the Justices of the Supreme Court defined the meaning of FAPE as special education and related services as:

1. provided at public expense, under public supervision and direction, and without charge; (b) meet standards of the State educational agency; (c) include an appropriate preschool, elementary, or secondary school education in the state involved, [and]
2. provided in conformity with the individualized education program. (IDEA, 2004, 20 U.S.C. § 1401(a)(18)

In Free Appropriate Public Education (FAPE), students with disabilities must have access to an education that meets their social, physical, and educational needs (Drasgow et al., 2000).

Students' education is paid for by the public, meets state educational standards, and mirrors the student's IEP (Drasgow et al., 2000).

In 1990, the EAHCA (1975) was renamed to Individuals with Disabilities Education Act (1990). The 1990 Amendments to P.L. 94-142 mandated all public schools to provide access and use of assistive technology to students with disabilities (IDEA, 2004). In 1997, the members of Congress amended and reinstated IDEA (2004). The 1997 IDEA amendments included a mandate for IEP teams to consider the use of AT services and supports for students with disabilities to increase learning opportunities (Davis et al., 2013; Judge & Simms, 2009). In 2004, IDEA was reauthorized and is now referred to as The Individuals with Disabilities Education Improvement Act (IDEIA, 2004). IDEIA is a special education law that mandates equity, access, and accountability for all students with disabilities. Also, the IDEIA requires educators to: (a) be highly qualified in the content area they teach, (b) utilize evidence-based practices to support students in instruction and retention of state learning objectives, and (c) be knowledgeable about AT.

Tech Act. In 1988, the Technology Related Assistance for Individuals with Disabilities Act (1988) was passed and referred to as the Tech Act. The purpose was to provide fiscal support in order for states to develop a consumer program of assistive technology for individuals with disabilities (Dyal et al., 2009). In 1998, the Assistive Technology Act (1998) replaced the 1988 Assistive Technology Act. Legislators approved the act to provide monetary support in order for states to cultivate and expand a statewide initiative of assistive technology for people with disabilities (Dyal et al., 2009). Also, the modified Assistive Technology Act also provided a new focus on AT access to the general curriculum for students with disabilities (Dyal et al., 2009). In 2004, the 1998 Assistive Technology Act was modified to support states in creating

the necessary groundwork in order to offer assistive technology services to individuals with disabilities as well as incessant evaluation of the programs (Dyal et al., 2009). These amendments provide legal protection of students with disabilities rights in relation to: (a) FAPE, (b) student evaluations, (c) IEPs, (d) least restrictive environments, (e) IEP team involvement, and (f) procedural safeguards (Hill, 2007). Judge and Simms (2009) stated that "these mandates create the need for professionals to develop adequate competencies for providing effective services to those requiring AT" (p. 33)**.**

Technology Act in Florida. In Florida, AT is required and utilized in schools to guarantee students with disabilities have an opportunity and be afforded with the right to a free and appropriate public education (Fla. Stat. § 1003.575). Assistive technology provides students with disabilities access to the general curriculum, participation with their peers, and support in the achievement of academic, social, and emotional goals. The Florida Alliance for Assistive Services and Technology program (FAAST) is a component of the Florida Department of Education and serves as a resource to those that need assistive technology, AT support, and funding (Florida Alliance for Assistive Services and Technology Program [FAAST], 2017).

Leaders and assistive technology. Assistive technology devices and services have become a vital component to students' educational plans at schools (Petcu et al., 2014). School leaders have played a vital role in the facilitation, implementation, and decision-making of AT in school (Davis et al., 2013; Dyal et al., 2009). In order to be an effective leader who successfully supports and facilitates the use of AT in school, it is important to possess the knowledge, skills, and criteria related to AT (Davis et al., 2013; Dyal et al., 2009). School leaders must be trained and prepared to: (a) support student needs, (b) ensure equity and access, and (c) protect the rights of students with disabilities who require services (Dyal et al., 2009). This includes

provision of the necessary resources, such as AT, to students who qualify and to ensure that students are being serviced (Dyal et al., 2009). It is critical that educational leaders work with the IEP team to determine the appropriate and most effective AT tools that would be a good fit for school and students (Dyal et al., 2009; Edyburn, 2009; IDEA, 2004). In addition, leaders have to determine the nature in which these tools are delivered to students instructionally and how these devices will be funded (Dyal et al., 2009; Edyburn, 2009; Groff & Mouza, 2008). The law mandates school district personnel be responsible for the provision of AT tools, and cost is not an excuse for lack of accessibility (IDEA, 2004). Assistive technology tools can: (a) provide access to the general curriculum, (b) be used for learning, and (c) be used to support social and extracurricular activities (Alnahdi, 2014; Dyal et al., 2009). Lastly, leaders will need to determine how to provide AT training, professional development, and ongoing support for staff to obtain ownership and successful implementation (Davis et al., 2013; Dyal et al., 2009; Groff & Mouza, 2008). In schools, Dyal et al. (2009) stated, "standards-based professional development should be connected to how assistive technology is utilized to promote successful learning outcomes within the general education curriculum" (p. 559).

Barriers to AT. Several of the obstacles to AT are similar to the barriers of technology application in general. The number and variety of new technological innovations revolution has increased AT services and devices for students (Petcu et al., 2014). Furthermore, the growth of AT and digital shift in learning has caused some challenges for staff in education (Petcu et al., 2014; Simpson et al., 2009). Part of the challenge relates to staff members who receive inadequate AT training in school education programs as well as at the preservice level (Judge & Simms, 2009; Van Laarhoven, Munk, Chandler, Zurita, & Lynch, 2012). In addition, few colleges and universities provide training and certification in the area of AT (Judge & Simms,

2009). According to Van Laarhoven et al., (2012**)**, "approximately one-third of undergraduate programs and less than one quarter of master's programs required coursework in AT, which suggests that many teacher candidates enter the field without adequate knowledge and skills regarding AT" (p. 33). The largest obstacle in university course offerings of AT is the lack of faculty expertise on AT knowledge, delivery, and implementation (Davis et al., 2013; Van Laarhoven et al., 2012). In addition, staff members struggle with AT implementation to meet the FAPE requirements (Petcu et al., 2014). Other barriers relate to a lack of resources, limited number of staff to teach AT, time in the curriculum, and failure to implement AT professional development for staff (Edyburn, 2009; Van Laarhoven et al., 2012). Due to the lack of training, knowledge, skills, support services, and teacher preparedness, this has posed a major obstacle to the facilitation of effective integration and use of AT in the school setting (Davis et al., 2013; Judge & Simms, 2009; Simpson et al., 2009; Van Laarhoven et al., 2012). Additionally, staff may not be aware of the AT legal requirements or the technology supports and equipment that are available for use in the classroom to: (a) enhance student learning, (b) differentiate instruction, and (c) support students to be successful (Judge & Simms, 2009; Simpson et al., 2009).

In order for AT implementation to be successful at the school level, it is necessary to have an educational team who is well versed in technology facilitation and knowledgeable about the use of the tools (Simpson et al., 2009). As technology continues to be developed and redesigned, it is vital for school staff to: (a) stay current with technology updates, (b) attend training sessions, and (c) be knowledgeable about the manner in which to utilize the technology as a tool for differentiation and learning (Simpson et al., 2009). Lastly, leaders need to

continually think about how: (a) student needs will be met, (b) rights will be protected, and (c) services such as AT will be implemented with fidelity (Dyal et al., 2009).

High tech versus low tech. The range of AT is from no technology to high technology services according to the level of complexity, cost, training, and practicality (Apkan & Beard, 2014; Davis et al., 2013; Dyal et al., 2009; Edyburn, 2009). Assistive technology services and the types of devices in schools are determined by each student's IEP team (IDEA, 2004). Thus, AT services are based on student needs "for assistance in the selection, acquisition, or use of the device that the IEP team determines necessary to enable the student to receive FAPE" (Davis et al., 2009, p. 15).

According to the IDEIA (2004) law, this requires that team members need to address the secondary transition requirements in the IEP and be in effect for the individual with disabilities by his or her 16th birthday. Furthermore, the IEP team members must consider the student's appropriate measurable postsecondary goals, which are related to training, employment, education, and independence (IDEIA, 2004). The team members determine whether AT devices are necessary to support the postsecondary transition goals and, if so, are they: (a) low in cost, (b) require minimal training, and (c) simple in complexity (IDEIA, 2004, Alnahdi, 2014).

Low tech refers to services and tools, which are: (a) simple, (b) inexpensive, (c) do not require significant training for the user, and (d) on the low range of complexity (Akpan & Beard, 2014; Dyal et al., 2009). Examples of low tech devices include: (a) visual manipulatives (Riley, Beard, & Strain, 2004); (b) low pencil grips (Davis et al., 2013); (c) keyboards; and (d) headphones (Windman, 2013).

High tech devices include multifaceted tools that require training and effort for individuals to utilize them (Dyal et al., 2009). These devices tend to be expensive, complex, and

require planning to train and implement at the school level (Dyal et al., 2009). Examples of high tech devices include: (a) environmental control systems, (b) computers, (c) communication boards (Riley et al., 2004), (d) LCD writer, (e) WiFi pen, (f) livescribe notebook, (g) LCD handheld video magnifier, and (h) ipad (Windman, 2013).

High tech devices tend to not be as popular or used as frequently due to the cost, level of complexity, and the amount of training that is needed (Alnahdi, 2014). The IDEA (2004) requires IEP teams to determine the AT needs of individuals with disabilities and ensure accessibility to the devices. School district staff is responsible for funding AT devices and also to make AT accessible to students (IDEA, 2004).

Assistive technology and student achievement. Assistive technology is designed to support all students, with or without disabilities, in order to support learning and develop and strengthen academic and life skills (Akpan & Beard, 2013, 2014; Petcu et al., 2014). As a result of the digital revolution, it is important to ensure the availability and accessibility of technology in the class to enhance academic learning and student success (Alnahdi, 2014). Alnahdi (2014) stated that the use of "technology has the potential to contribute to a better quality of life for students with intellectual disabilities, which is more than just a matter of convenience" (p. 18). Educators have utilized AT to support student functionality in the classroom, because access to AT allows students to perform tasks they were previously unable to complete (Akpan & Beard, 2013, 2014). In addition, the use of AT technology provides opportunities to: (a) support students to overcome barriers and challenges, (b) save time and effort, and (c) maximize student learning potential (Akpan & Beard, 2013, 2014; Alnahdi, 2014; Petcu et al., 2014).

In the pilot study conducted by Cullen, Richard, and Frank (2008), a positive relationship between the use of AT and academic achievement with students with disabilities was found.

Another example of the positive impact of AT technology in academic development was the study conducted by Bouck, Doughty, Flanagan, Szwed, and Bassette (2010). The findings indicated a positive relationship in AT technology and academic development, because students were able to demonstrate gains in written expression after their use of these devices (Bouck et al., 2010). Retter, Anderson, and Kieran (2013) conducted an action research study to test high school students with disabilities with the use of an iPad 2 to support reading comprehension, fluency, and vocabulary. According to Retter et al. (2013), the results from the study

> Discovered that the use of the iPad did increase reading comprehension and vocabulary. There was no correlation between using the iPad and increasing fluency. The classroom teacher saw a dramatic decrease of off-task behavior, noise level, and inappropriate behaviors while informally observing her class. (p. 459)

Students with other disabilities can benefit from AT also. For example, AT can be used to support students with speech disabilities and communication needs as well as provide the necessary accommodations to: (a) help students complete tasks, (b) aid in independence, and (c) motivate students to succeed (Ganz et al., 2012; Rackensperger, 2012). Use of AT has supported students who are nonverbal and autistic, which has aided augmentative and alternative communication (AAC) AT devices that have been provided to help communication and behavioral needs (Ganz et al., 2012). Also, AT devices are used to support students with visual impairments (Bouck, Flanagan, Joshi, Sheikh, & Scheppenback, 2011) and severe disabilities (Cook, Adams, Volden, Harbottle, & Harbottle, (2011). The appropriate use of AT not only facilitates and supports learning but also supports students in the refinement of the quality of their academic and life skills and increases student achievement (Akpan & Beard, 2014; Alnahdi, 2014; Petcu et al., 2014).

Summary

Educators have experienced a disruption as changes occur, and transformations have taken place since 21st-century instructional skills have become the basis for education (Christensen, 2011). Currently, school leaders have the responsibility to effectively integrate technology and to prepare staff and students for the utilization of digital tools. If staff and students are technologically efficient and prepared to engage in the 21st-century skills, they will be successful. Since access to technological innovation has altered the traditional framework of education, administrators are in need of support, guidance, and effective research to help them lead their staff. Furthermore, there is a lack of empirical research on the topic of technological integration for school leaders and staff so they can foster successful pedagogical technology implementation.

In the preceding chapter, the researcher discusses the research design. In addition, the methods of data collection and data analysis procedures of the multiple case study are provided.

CHAPTER THREE: METHODS

Overview

The purpose of this multiple case study was to identify effective leadership for technology integration in three southeastern U.S. elementary schools. The researcher attempted to identify the practices that effective elementary school administrators use to create a setting that is conducive to a successful process of technology integration. Presented in this chapter are: (a) the research design, (b) the structure of the design, (c) the basis for the site selection, and (d) the sampling procedures. Also, a discussion of the methods, procedures, trustworthiness, and ethical considerations for data collection and data analysis are addressed.

Design

This qualitative study utilized a holistic, multiple case study design (Yin, 2014). A multiple case study design allowed the researcher to focus on several cases in order to explore the issue across three different schools and show the various perspectives on effective leadership and practices for technology integration (Creswell, 2013; Yin, 2014). The personal experiences and perspectives of the participants were explored with the use of multiple methods of data collection and the logic of literal replication for procedures for the three cases (Creswell, 2014; Gall, Gall, & Borg, 2007; Yin, 2009; Yin, 2014). This type of design was appropriate for the study because it allowed the researcher to: (a) identify effective leadership characteristics and practices for technology integration across three cases, (b) address the practices of the phenomenon, and (c) provide additional information to literature (Yin, 2014).

Research Questions

Several research questions guided this study. The first question was the central, overarching query.

RQ1: What leadership practices are demonstrated by elementary school administrators who facilitate effective technology integration in the school?

RQ2: What characteristics do elementary school administrators identify as being necessary in order to perform their role in effective integration of technology in their schools?

- **RQ3:** What characteristics do elementary school teachers identify as being necessary for the administrator to effectively facilitate technology integration in his or her schools?

RQ4: What resources do administrators and teachers identify as necessary to effectively implement technology integration, and how are those resources made available?

RQ5: What do administrators and teachers identify as needs to support technology integration in their schools?

Setting

Three elementary schools within the Effective Technology Integration Public Schools (ETIPS) school district were the sites chosen for this multiple case study. Their designation was a pseudonym to protect confidentiality; the schools were selected for this research study because they are located in a district that is consistently acknowledged as a national leader for 21st-century learning and technology use for education (CCPS, 2017). Exploration of the phenomenon of effective leadership for technology integration took place in three elementary schools within the ETIPS school district. The geographical setting of the study is within a suburban school district, which serves approximately 47,000 students who live in the ETIPS Florida area and represent the diverse socioeconomic mix of the region. The diverse student population is comprised of "34.22 percent white, 11.55 percent black, 50.14 percent Hispanic, 7.17 percent Migrant, 2.01 Multi Racial, 1.43 percent Asian, 0.6 percent Native American and 0 percent Hawaiian/Pacific islander" (CCPS, 2017, para. 1). The district services a variety of

students who attend from in-zone and out-of-zone schools on waivers. Out-of-zone refers to students who attend a school in a geographic area other than the school normally designated.

At the three selected elementary school settings, the leadership structure of the elementary schools consists of the principal followed by the assistant principal, technology integrator, and teachers. The instructional department staff members are separate from the elementary school leadership structure because these participants are part of the central office structure. The administrators were the focus of the study because they are considered the leaders who have the primary responsibility for the integration of technology in the schools.

Participants

The participants of the study were: (a) the administrator from each of the three schools, (b) two instructional department staff members, (c) a teacher from each of the three schools, and (e) the Instructional Resource teacher of each of the three schools chosen. The sample size was consistent with Creswell's (2014) recommendations for a typical case study. Purposeful intensity sampling was used in this study (Creswell, 2014; Gall et al., 2007). Purposeful intensity sampling was used to select the participants from a school district in southeastern U.S. who were considered effective technology integration leaders. In addition, the technique of convenience sampling was utilized (Gall et al., 2014). The geographic location of southeastern U.S. was convenient for the researcher to access the participants and collect data (Gall et al., 2014).

The instructional department staff members selected three schools where technology integration had been successfully integrated based on the following criteria:

(1) School officials 2014-2017 District Board of ETIPS Technology Strategic Plan (District Board of ETIPS Strategic Plan, 2014) and the adoption of the

International Society for Technology in Education standards (ISTE, 2015; McLeod & Richardson, 2011; Sincar, 2013),

(2) Research and Evaluation Department visits, and

(3) Administrators' and teacher evaluations indicating technology standards were met for the year.

These evaluation measures were used as a guide to confirm that each elementary school administrator selected was considered an effective leader in technology integration in their school and met technology standards in the district.

Procedures

First, this researcher obtained approval from the members of the Liberty University Institutional Review Board (IRB) for permission to conduct the study and collect data (see Appendix A). After IRB approval was acquired, an application was submitted to the Effective Technology Integration Public Schools (ETIPS) Department of Research and Instruction for approval. After permission was obtained from the ETIPS Department of Research and Instruction**,** which included a full description and purpose of the study, how the study was beneficial to the participating school district, and knowledge of the procedures of the study (see Appendix B). Once permission was obtained from ETIPS, invitations were sent via email to request permission to conduct the study to the school administrators and the instructional department staff members to participate in the study (see Appendix C). Additionally, individual contact was made via telephone and/or email with the instructional department staff members and each elementary school administrator to determine their willingness to participate in the research study. When permission was received from each participating school principal, consent forms were provided for each participant in the study prior to data collection (see Appendix D).

Once permission was obtained, data collection began immediately. Participants who were selected for the study and agreed to participate were interviewed via: (a) the telephone, (b) Skype, or (c) in person at each elementary school and/or district office. The interview questions for the ETIPS employees addressed the leadership characteristics and practices related to the facilitation of effective technology integration in the elementary schools at which he/she worked (see Appendix E). The administrator participants participated in a survey. Data in the form of documents collected electronically**,** and some data were received in the form of hard copies. The collected data were analyzed according to the appropriate procedures for each type of data obtained.

The Researcher's Role

As an educational leader in a middle school setting who has experience with technology integration, this researcher was the human instrument in the study, that is, an insider-researcher, and it was emic (Patton, 2015). The purpose of an insider-researcher is to: (a) have an understanding of the culture being examined, (b) have knowledge of the politics of the school system, and (c) apply prior knowledge in the field of technology integration (Unluer, 2012; Yin, 2009).

Due to her previous experiences in this school system, this researcher brought biases to this study; however, every effort was made to control or limit research bias and to apply the highest ethical values and standards during the conduct of the research (Creswell, 2014; Yin, 2014). This researcher's beliefs and perspectives as an assistant administrator was integrated into the research analysis; however, the focus was on the data collected from the research participants, the analysis, and themes that resulted from the study.

It is assumed that the participants selected for the study met the criteria and are an appropriate choice. In addition, it was assumed the participants answered honestly and provided accurate information. Lastly, it was assumed that the participants have knowledge of and experience with the topic of the research study as well as a general interest to participate. The participant data was kept confidential and under lock and key.

Currently, this researcher is employed in the ETIPS district as an assistant principal in a middle school where integration of technology is ongoing. Previously, this researcher was employed at a high school in the ETIPS district and prior to that at a specialty center high school where she was a vital part of the technology distribution and integration planning process and helped to support the staff in their utilization of this technology in the classroom to promote 21-century learning skills. Although this researcher did not have a relationship with the elementary schools in this district that were selected for this study, multiple methods of trustworthiness were utilized to ensure that her personal beliefs and perspectives did not influence the data analysis of the study.

Currently, this researcher is the assistant principal of curriculum and instruction of a public middle school in southeastern, Florida and started this new position in July 2017. Prior to this current position, the researcher served as an assistant principal for one year at a high school in southeastern, Florida and prior to that, the researcher served as an assistant principal for two years at a specialty center high school in southeastern, Virginia. Prior to that, the researcher served as an assistant principal at a comprehensive middle school in the city. The researcher's educational career began in an urban setting teaching various subjects to exceptional education students. Presently, the researcher is a doctoral student in educational leadership at Liberty University and previously earned an educational specialist's degree and master's degree from

Liberty University as well. The researcher's undergraduate degree was awarded from Randolph-Macon College, and the researcher majored in international studies and minored in religious studies. In addition, a special education certification was awarded from Florida Commonwealth University.

As an educator, the researcher's worldview and philosophy, first and foremost, begins with leading others and the school in a manner that is based upon the vision of the school. Every leader possesses their own philosophy of leadership and style of leading others. Each style is based and consists of a leader's: (a) actions, (b) focus on what leaders do, and (c) ability to interact and lead with others (Northouse, 2012). This researcher believes in a democratic leadership style; this style has allowed her to provide guidance and direction while positively influencing staff, students, and community members. In addition, these criteria are used with followers to utilize their talents, express their voices, and work side-by-side with the leader. This style has positively influenced my staff the majority of the time and allowed for commitment, cohesiveness, and agreement among the school community (Northouse, 2012). Also, these practices helped to produce: (a) a higher participation rate among members, (b) more motivation and like mindedness, (c) a commitment from members, and (d) praise and success (Northouse, 2012).

Data Collection

The two instructional department staff members, the three administrators, three corresponding teachers, and instructional resource teachers from the three elementary schools in the same school district were the participants of the study. All of the participants selected for this study were interviewed using open-ended questions at the beginning of the research study. During the interview process, two audio recorders were utilized to accurately capture the data,

and the interviews were transcribed by a professional transcriptionist (Creswell, 2013; Yin, 2014). A researcher's journal was maintained for notes and reflections on experiences with the participants (Yin, 2014). Documents and artifacts were gathered and analyzed in order to gain insight on effective technology integration (Creswell, 2013; Yin, 2014). The data collection sequence began with administrators participating in a survey, followed by interviews and research journaling. This sequence was chosen to ensure organization, provide a collection of data that was rich in detail and depth, and have vital information that would drive the collection of artifacts, documents, and field notes.

Pseudonyms were assigned to participants in order ensure the confidentiality and privacy of the school district, region, and participants. Data was stored in a secure location under lock and key. Data stored on the computer was password-protected. Also, the collected data was organized by themes and codes for analysis (Yin, 2014). Triangulation was used in order to strength the soundness of the findings, that is, multiple methods of analysis were used to understand the phenomenon (Patton, 2015). This technique was used to assess the validity and reliability of the data methods used and to support the theoretical constructs used in this research study (Patton, 2015).

Interviews

According to Yin (2014), interviews are considered to be "one of the most important sources of case study evidence" (p. 110), and the collected data provide the researcher with information related to human actions. The purpose of the interviews used in this study were to collect data and hear participants' statements about the details, which are related to the integration of technology in education. The interviews were scheduled at a convenient time for the participants and were conducted in-person, on the telephone, or by email (Creswell, 2013).

The types of participants were: (a) two instructional department staff members, (b) the administrators of three elementary schools in the same district, (c) one teacher from each school, and (d) one instructional resource teacher from each school. Prior to the interviews, the researcher explained to the participants that: (a) an audio recording system will be used during the interview process, (b) the audio recordings will be literally transcribed by a professional transcriptionist, and (c) the collected data will be obtained through analysis of the transcriptions (Sincar, 2013; Yin, 2014). The researcher either traveled to the necessary locations and conducted an interview in-person or conducted a Skype or web interview, which was conducted in a standard, open-ended format. These interviews were in depth and follow-up questions were asked (Creswell, 2013; Patton, 2015; Yin, 2014). Each participant category had tailored interview questions that were created after an in-depth review of the literature and were based on the ISTE standards (see Appendix E; Patton, 2015). The nature of questions were tailored for each participant in terms of their title, but the content of the question remained the same. After each interview, the researcher completed a field journal entry to record any observations or perceptions that could potentially influence the data analysis (Creswell, 2013). All data collected from the interview process was kept locked and secured to ensure the participants' confidentiality.

Prior to interviews of the study participants, the different sets of interview questions (see Appendix E) were peer reviewed to verify the validity of the questions for each participant category (Patton, 2015. The selected peer reviewers were unbiased professional colleagues from varying states.

Standardized Open-Ended Interview Questions for Leaders

(1) What influenced you to go into the educational field?

(2) How long have you been a principal/leader, and how long have you been the administrator at this elementary school? In ETIPS (pseudonym)?

(3) What type of technology training did you have in your leadership preparation program? In the district?

(4) What type of professional development is available to leaders in ETIPS (pseudonym)?

(5) What technology do you use personally and professionally?

(6) What is your role in technology integration? How has it changed over time? What is the technology vision specifically for this school? For ETIPS (pseudonym)? How is that communicated to staff and parents?

(7) Describe how you communicate to the teachers that their direct application of technology should be aligned to the schools and ETIPS's (pseudonym) technology plan?

(8) How do you communicate, observe, and evaluate teachers on the ISTE-T standards?

(9) How do you address the technology needs and barriers to integration?

(10) What supports and resources are necessary to effectively integrate technology?

(11) What are the benefits to technology integration? How to you promote this to staff? How do you create culture and an environment that is technology rich and conducive to this type of learning?

(12) Describe how you demonstrate the effective use of technology for learning, communication, and project management.

(13) What would you recommend to fellow leaders on what is required for effective leadership for technology integration?

Standardized Open-Ended Interview Questions for Teachers

(1) What influenced you to go into the educational field?

(2) How long have you been a teacher, and how long have you been a teacher at this elementary school? In ETIPS (pseudonym)?

(3) What type of technology training did you have in your educational preparation program? In the district?

(4) What type of professional development is available to teachers in ETIPS (pseudonym)?

(5) What technology do you use personally and professionally?

(6) What is your role in technology integration? How has it changed over time? What is the technology vision specifically for this school? For ETIPS (pseudonym)? How is that communicated to staff and parents?

(7) Describe how you communicate to your colleagues that their direct application of technology should be aligned to the schools and ETIPS's (pseudonym) technology plan?

(8) How do you communicate and observe your colleagues on the ISTE-T standards?

(9) How do you address the technology needs and barriers to integration?

(10) What supports and resources are necessary to effectively integrate technology?

(11) What are the benefits to technology integration? How to you promote this to your colleagues? How do you create culture and an environment that is technology rich and conducive to this type of learning?

(12) Describe how you demonstrate the effective use of technology for learning, communication, and project management.

(13) What would you recommend to fellow teachers on what is required for effective technology integration?

Surveys

Administrators at each of the three bounded systems participated in the leadership survey. The Kouzes' and Posner's Leadership Practices Inventory Self (LPI Self) permission letter states approval for use in the study (Appendix H). Administrators took the Kouzes' and Posner's Leadership Practices Inventory Self (LPI Self) to measure the leadership practices of the administrators in this study. Each participant was sent the survey link via email, completed it independently, and the researcher was informed via email when the surveys were completed.

The Leadership Practices Inventory (LPI) Self Form contains 30 statements for each of the five leadership practices: Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act, and Encourage the Heart. Individual statements are assessed on a 10-point Likert scale, which signifies the frequency of perceived leadership behaviors. Participants rated themselves on each statement by choosing a number from 1-10. The survey results produced a framework for effective leader practices that could be identified in elementary school settings as leaders implement new initiatives such as leading technology integration. All data collected from the surveys were kept locked and secured to ensure the participants' confidentiality (Creswell, 2013).

Document Analysis

In a case study, documents represent a notable role in the collection of data (Yin, 2014). Documents provide the researcher with detailed accounts of policies and procedures that are in place. The third data collection method was an analysis of documents that the instructional department staff members and elementary school administrators use to communicate to staff about technology integration (Patton, 2015). The instructional department staff members, administrators, teachers, and instructional resource teachers provided pertinent documents that were relevant to the study. The documents included: (a) ETIPS District Strategic Technology Plan (b) Technology Integration Matrix, (c) Technology Integration Plans, (d) IDI Plans, (e) IR Curriculum Map, (f) Technology Presentation, (g) Twitter Images, (h) Digital Story Lesson, and (i) 3D Printer Software/Image (Patton, 2015). All collected data from the document analysis process were kept locked and secured to ensure the participants' confidentiality (Creswell, 2014).

Data Analysis

This researcher conducted data analysis of the surveys, interviews, and documents through a variety of measures (Yin, 2014). The data retrieved from interviews was professionally transcribed and double checked by the researcher for accuracy. The data was organized into themes and patterns.

Thick Case Description

The first technique the researcher used was thick case description which provides the basis for qualitative inquiry and reporting (Patton, 2015). The case was described in detail in regard to the: (a) setting, (b) instruction, (c) context, (d) behaviors, (e) procedures, and (e) training (Creswell, 2013). The researcher collected data from the recorded interviews and transcribed the information. Subsequently, she looked for common themes and organized the

data (Creswell, 2013). In addition, the selected pertinent documents were analyzed for emergent themes (Creswell, 2013). This is important because it allows a researcher to: (a) discern and themes in the data, (b) determine meaning behind the patterns, (c) construct conclusions, and (d) build theory (Creswell, 2013). A professional transcriptionist literally transcribed the data. The researcher and a professional expert reviewer examined these materials in order discern triangulation and identify themes (Patton, 2015).

Coding

The second data analysis tool the researcher used was coding (Patton, 2015). The researcher used a coding system to code the data (Yin, 2014). Codes were identified to represent the data, which was separated into small categories and labeled with a code (Creswell, 2013). Based on the coding categories, three themes were generated (Creswell, 2013). Coding is important because it breaks the information into manageable parts, from which themes can be generated (Creswell, 2013).

Inductive Analysis

The third data analysis tool that the researcher used was inductive analysis, which also involves cross-case analysis (Creswell, 2013; Patton, 2015; Yin, 2014). This analysis is important because it is "a strategy for engaging in qualitative inquiry and comparative case analysis. . . that identify patterns of behaviors, interactions, and perceptions" (Patton, 2015, p. 592). Validity and reliability of the findings from data analysis were examined through methods of peer review**,** member checks, and inter-coder reliability processes (Sincar, 2013). These methods were utilized after completion of the data analysis.

Trustworthiness

Trustworthiness was established through a variety of measures. Triangulation was achieved through identification of common themes from the participant interviews, documents, and artifacts. Memoing was used to document thoughts and themes, and the transcriber used the intercoder agreement to analyze data and compare results of coding from all of the interview participants. Member checks were used to ensure that the data were accurate, and peer reviews from external parties were conducted to validate trustworthiness. A brief description of each method is described in this section.

Dependability and Confirmability

The reliability and dependability of the study was based on several techniques. The first technique was triangulation (Patton, 2015). Various methods were used to document the data from the surveys and interviews; it was expected that similar themes would evolve to provide validity (Creswell, 2013). It is important to verify the themes that appear in order to construct meaning and support the foundational theories to build or add to current theories (Creswell, 2013).

The second technique that was used was memoing (Creswell, 2013). The researcher documented personal thoughts and the identifiable themes that evolved throughout the coding process (Creswell, 2013). This technique is important, because the emergent themes can be analyzed for validity based on the received data (Creswell, 2013).

Credibility

The third technique that was used is intercoder agreement (Creswell, 2013). This method involves several different coders who analyze the data and compare their results with the researcher's coding to determine degree of reliability and, if necessary, come to an agreement in

regard to the quality of data coding (Creswell, 2013; Sincar, 2013). This technique is important because it provides concrete evidence from multiple, professional coders and determines the "stability of responses" (Creswell, 2013, p. 253). It is essential that the coders utilized in this process have knowledge about and skills in the research process (Sincar, 2013). In this study, the researcher and a committee member who specializes in the research topic acted as the data coders.

The fourth technique that was used was member checks (Sincar, 2013). This process involves the return of the findings to the study participants to ensure that their collected interview data are correct and accurate (Tuckett, 2005). Member checking allows researchers to determine whether their analyses truthfully reveal the participants' factual experiences and perspectives (Sincar, 2013). In this research study, the interview transcripts were sent to the participants to confirm that the transcripts reflect their actual responses (Sincar, 2013).

Transferability

The fifth technique that was utilized was peer review and debriefing (Creswell, 2014; Tuckett, 2005). Peer review involves the use of an objective and qualified person or "type of investigator triangulation" (p. 39) who reads and critiques the findings and data frequently (Tuckett, 2005). Peer debriefing will take place to minimize any potential bias that might occur from the researcher (Creswell, 2014). Additionally, an external, professional auditor was used to assess the study for credibility (Creswell, 2014). This is to ensure trustworthiness of the interpretation of the data (Tuckett, 2005).

Ethical Considerations

Ethical considerations are an important aspect of a research study**,** and every precaution must be taken in order to ensure participant confidentiality and protection (Creswell, 2013). The

IRB approval to conduct the study, site approval, participant letters, and participant informed consents were a part of the research procedures. Participants were informed of the voluntary nature of the study and that they could withdraw from the study at any given time. All research data was collected and kept in a secure, locked, and password-protected in an electronic device such as a laptop or computer. The researcher and advisor were the only people who had access to the data and were the sole people who had the password. In order to protect the participants' and district's confidentiality, pseudonyms were used for the site and participant s' names. Participants were provided a complete copy of the manuscript. If any data were to pose a risk to participants, the information would be deleted from the research manuscript. To avoid bias and conflict of interest, a peer reviewer was utilized to examine the findings.

Summary

In Chapter Three, the pertinent information, which is related to the study, was presented. Presented in this chapter was the overview of the research methods, which included: (a) the research questions and the design, (b) the site and participants, (c) the procedures, (d) the data collection, and (e) analysis. In this qualitative study, the researcher used purposeful intensity sampling to select participants from the ETIPS (Patton, 2015). The data was collected via: (a) surveys, (b) interviews, and (c) pertinent documents. This information was obtained from the: (a) instructional department staff members, (b) specific administrators, (c) teachers, and (d) instructional resource teachers (Creswell, 2014). The data analysis methods included the use of: (a) professional transcriptionist and coding system, (c) thick case description, and (d) inductive analysis (Creswell, 2014; Patton, 2015). Trustworthiness and ethical consideration measures were implemented to ensure credible data and protection of the participants (Creswell, 2014).

CHAPTER FOUR: FINDINGS

Overview

The purpose of this chapter is to present an in-depth look at the details, findings, and data analysis of the multiple case study. The data collection process was replicated at each of the three bounded systems and data was gathered from interviews, surveys, document artifacts, and the researcher's journal. Furthermore, data analysis included analyzing the data into codes, themes, and an alignment with the central and research questions. The coding process was completed by myself, the researcher. The data from the study was presented in the form of narratives, tables, and graphs. The rationale for this qualitative multiple case study was to explore the characteristics of effective leadership in technology integration for school leaders and staff members in three southeastern U.S. elementary schools. The focus of the study was an exploration of the skills, practices, and techniques used by administrators to successfully integrate the use of technology. The administrators, instructional department staff members, teachers, and instructional resource teachers were asked questions that helped support the underlying research questions. The collected data was analyzed to identify and describe the techniques used by administrators to successfully integrate the use of technology. Several research questions guided this study. The first question was the central, overarching question.

RQ1: What leadership practices are demonstrated by elementary school administrators who facilitate effective technology integration in the school?

RQ2: What characteristics do elementary school administrators identify as being necessary in order to perform their role in effective integration of technology in their schools?

- **RQ3:** What characteristics do elementary school teachers identify as being necessary for the administrator to effectively facilitate technology integration in his or her schools?

RQ4: What resources do administrators and teachers identify as necessary to effectively implement technology integration, and how are those resources made available?

RQ5: What do administrators and teachers identify as needs to support technology integration in their schools?

Participants

The participant population of the bounded systems involved a total of 11 staff members from the ETIPS district. The participants were comprised of nine at the elementary level and two at the central office level who participated in interviews, surveys, and shared pertinent documents. There were three administrators, one at each elementary site who completed the leadership survey for administrators only. The data collected was used to develop narratives, tables, and graphs of what an effective technology integrated elementary school included. A brief review of the participants is included in Table 1. Table 1 contains the pseudonyms for the participants, their years of experience in the ETIPS school district and elsewhere, and their respective job titles. Each participant was given a pseudonym to protect their identity, and the school district was also given a pseudonym.

Table 1

Participant Background and Experience Information

Pseudonym	Total Years of Experience in Education	Years of Experience in the ETIPS District	Job Title	School
Sarah	16	6	Administrator	A
Ashley	33	28	Media Specialist	A
Megan	6	6	Administrator	B
Wanda	25	15	IR Teacher	B
Becky	20	17	Teacher	C
Nicole	35	32	IR Teacher	C
Ethan	12	12	IR Teacher	A
Andrea	-*	4	Administrator	C
Hannah	26	24	Instructional Specialist	DO
Sandra	12.5	12	Teacher	B
Bobby	15	4	Instructional Specialist	DO

*Did not answer this question

The following narratives from the bounded systems were created from an analysis of the interview responses, the ETIPS school documents provided by the participants, administrator surveys, and the researcher's journal. In addition, all research participants and bounded systems are discussed in detail.

School A Elementary

This school is an averaged-` size elementary school located in the heart of Naples, Florida. At the time of the study, the school had about 750 students and 75 staff members (CCPS, 2017). About 35% of the student body fell into the economically-disadvantaged category, and 31% of the student population fit into the minority category (CCPS, 2017). The school has a very veteran staff and the culture emphasizes openness, sharing, positivity, rigor, high expectations and standards. School A is considered a high performing, "red carpet" school and has been an "A" school for the past 17 years (CCPS, 2017).

Sarah. The information regarding Sarah was gathered from a phone interview, school documents that she provided, and leadership survey results. Sarah is a Caucasian female who had 16 years of experience in education and six years spent working in the ETIPS district. At the time of the study, she held a leadership position as an assistant principal and had been at School A for three years. In her leadership preparation program, she had limited technology training. In the ETIPS district, technology training is available to staff; however, she stated. "I don't see emails specific at the elementary level like, 'Hey come and learn about all these new resources and you can share with your staff'." As an administrator, more technology training could be offered and often times you have to seek it out yourself. She stated, "As a new administrator you have to ask for it [training] or you have to go to other colleagues and ask for their help. In my experience at the district, I was not sent emails nor did anyone get in touch with me to say, 'Hey, there's going to be training on this'." Most schools utilize the media specialist and instructional resource teacher to provide technology support to their staff. At Sarah's school, the media specialist works more closely with staff regarding technology integration then leadership does. She stated, "My media specialist finds a lot of programs that she shares out with teachers. She

probably is the person who's really working more closely with them [staff] than leadership." Over the years, Sarah's role in technology integration has not changed. Sarah personally uses technology such as her laptop, personal computer, and iPad. At work, she uses her iPad, which helps complete observations.

Ashley. Ashley's information came from a phone interview, school documents she provided, and the researcher's journal. Ashley is a Caucasian female who had 33 years of experience in education and 28 years spent working in the ETIPS district. She had experience teaching pre-k, kindergarten, first and third grades, and as a media specialist. At the time of the study, she was the media specialist and technology guru at School A Elementary. In her teacher preparation program, she did not have any technology training. In the ETIPS district, she shared that there had been trainings related to BYOD (Bring Your Own Device), district leadership, and Media pSecialist trainings. In her opinion, the district trains the trainer first in new technology platforms and apps and then the trainer shares with school staff members. Her role in technology has evolved over time. She works closely with the technology teacher to have a team and "to provide more assistance to teachers trying to help them integrate technology into the classroom;" however, it was difficult because there were not enough staff members nor time for everything to get done. Professionally, she used Windows, the iPad, Mac, iMovies, Edmodo, and Office. Personally, she used the iPad, Mac, iPhone, Word, Excel, iMovies, and Google Docs.

Ethan. Ethan's information came from a phone interview, school documents he provided, and the researcher's journal. Ethan is a Caucasian male who had 12 years of experience in education and 12 years spent working in the ETIPS district. At the time of the study, he was the instructional resource teacher at School A Elementary in Naples. In his teacher preparation program, he had two courses in technology training that were related to Microsoft

Office. Over time, he gained technology knowledge, completed technology projects, and self-taught himself. In the ETIPS district, he took in-service trainings and taught technology strategies and platforms to staff members. His role was always changing but he tried to "stay ahead of the game," to support staff, students, and parents. He stated, "We've been really big in social media the last few years posting things on Facebook and Twitter. Communicating what we are doing in classrooms which helps inform parents what we are doing and also supports them." Professionally, he used iMovie, Web 2.0 tools, FOCUS, and Microsoft Office. Personally, Ethan used Microsoft Office, Word, Publisher, Move Maker, and iMovie.

School B Elementary

This school is located in the suburbs of Naples, Florida. At the time of the study, the school had about 640 students and 65 staff members (CCPS, 2017). About 53% of the student body fell into the economically disadvantaged category and 37% of the student population fit into the minority category (CCPS, 2017). The school's culture emphasizes digital and global teaching and learning, rigorous and innovative instruction, and striving for academic excellence. The school has a strong partnership with students, staff, parents, and community members. School B is a high performing school and has received a school grade of a "B". This school focuses on digital learning and instruction (CCPS, 2017).

Megan. The information regarding Megan was gathered from a phone interview, school documents that she provided, and leadership survey results. Megan is a Caucasian female who had six years of experience in education and six years spent working in the ETIPS district. At the time of the study, she held a leadership position as a principal and has been at School B for one year. She stated, "I feel like I am the technology leader, to be honest." She had prior

experience as an assistant principal at the elementary, middle, and high school levels. In her leadership preparation program, she had one technology course. She stated,

> I received more technology preparation and training in the ETIPS district, because that is a focus of ours. That's in the Superintendent's Strategic Plan, one of the strands is all about technology. We are always kind of on the innovative side of technology within the district.

Over the years, Megan's role in technology integration has not changed. Megan personally used technology such as her iPad, laptop, cell phone, and is a fan of social media. At work, she used Microsoft Excel, Prezi, Kahoot, Quizlet, cell phone, laptop, social media, and her iPad. Megan's role in technology was to be the technology leader in technology integration and movement within the school. Over time, her role as a leader evolved into having the responsibility of being up-to-date on effective technology devices and strategies in order to promote technology integration in the classroom. In addition, it was her responsibility to make technology available and monitor the integration of it in the classroom.

Wanda. Wanda's information came from a phone interview, school documents she provided, and the researcher's journal. Wanda is a Caucasian female who has 25 years of experience in education and 15 years spent working in the ETIPS district. At the time of the study, she was the instructional resource teacher at School B Elementary. In her teacher preparation program, she did not have any technology training. In the ETIPS district, there were trainings available such as Microsoft Word, Excel, and trainings related to new technology devices and strategies that were implemented in the district. She stated, "I attend multiple trainings a year which are very helpful." Her role in in the school was to teach technology to students and staff. She stated, "Students love to learn when they are using technology." Her role

evolved over time and adapted to fit the latest technology trends and strategies in technology integration. Professionally, she used Microsoft Word, Excel, PowerPoint, Publisher, coding programs, Discovery Education and iReady. Personally, she used the headset but does not tend to utilize the technology platforms at home.

Sandra. Sandra's information came from a phone interview, school documents she provided, and the researcher's journal. Sandra is a Caucasian female who has 12½ years of experience in education and 12 years spent working in the ETIPS district. At the time of the study, she was a teacher at School B Elementary and was also considered a digital leader at the school. In her teacher preparation program, she did not have any technology training. She did take technology courses while completing her Master's in Educational Technology but did not receive any technology training. In the ETIPS district, there are trainings available that help support the implementation of the technology platforms and devices available to staff. She stated, "I really didn't learn how to integrate technology until I came to the ETIPS district." Her role evolved over time and she became a digital leader for the school. She taught staff how to promote and use technology devices, integrate technology into the classroom, and use it as a resource for teaching and enhancing instruction. Professionally, she used Apple TV, iPads, the Alexa application, and Vimeo. Personally, she used Apple devices, her iPhone, and iPad. Below are images documenting technology resources, tools, and applications that have been effectively implemented at her school site:

Figure 1. Technology resources, tools, and applications that have been effectively implemented at School B Elementary.

School C Elementary

This elementary school is located in the town of Naples, Florida. At the time of the study, the school had about 1000 students and 55 staff members (CCPS, 2017). About 22% of the student body fell into the economically disadvantaged category and 26% of the student population fit into the minority category (CCPS, 2017). The school's culture emphasized digital teaching and learning, raising up digital learners, rigorous instruction, and differentiation.

School A is a high performing school and has received a school grade of an "A" school since the year 2000. (CCPS, 2017).

Andrea. The information regarding Andrea was gathered from a phone interview, school documents that she provided, and leadership survey results. Andrea is a Caucasian female who had spent four years working in the ETIPS district. She did not provide information on the length of time she has spent in education. She held a leadership position as an assistant principal and has been at School C for four years. She stated, "I'm in a technology-driven school." In her leadership preparation program, she did not have any technology training but did take one course in technology integration. In the ETIPS district, technology training was available to staff so they would have the opportunity to continually learn and practice in order to become proficient in the programs that are offered. Over the years, Andrea's role in technology integration was constantly evolving as technology changes. Her role was to be the technology leader in the school, oversee and monitor staff integrating technology, and model new technology strategies and devices to staff. She stated,

> As an administrator, when I do a training on technology, I'm teaching teachers how to integrate it in the classroom. So, being that I am savvy with technology, you know, and I keep up with everything, we then have to transfer that knowledge to our teachers, who then transfer that knowledge to the students and so on. I know for a fact that our district is well beyond most when it comes to technology, so we all stay up-to-date with what is being given, and what our kids have capabilities of using.

Andrea personally used technology such as her phone reminders, all Microsoft programs, PowerPoint, Office, Photo Grid, and social applications. At work, she used all Microsoft Office programs, iPads, Movie Maker, and Discovery Education.

Becky. Becky's information came from a phone interview, school documents she provided, and the researcher's journal. Becky is a Caucasian female who has 20 years of experience in education and 17 years spent working in the ETIPS district. At the time of the study, she was a teacher at School C Elementary and had been there for nine years. In addition, she was in the ETIPS District Digital Leaders Program and is part of the Instruction through Digital Innovation Program. She stated, "I'm part of the IDI team at school, I'm considered a technology leader, and I'm a technology mentor teacher for staff. I model and teach everyone how to integrate." In her first teacher preparation program, she did not receive any technology training or knowledge. She went back to school to receive her Masters in Educational Technology and took several courses that focused on technology. In the ETIPS district, there are trainings available that help support the implementation of the technology platforms and devices available to staff. Typically, staff are trained in new technology initiatives and take them back to schools to teach others. Over time, her role evolved into being the model technology teacher leader, especially since she was part of the Instruction through Digital Innovation program. Professionally, she used all of the basic technology platforms the district has for staff, Microsoft, Windows Movie Maker, iMovies, twitter, Flipgrid, Prezi, Padlet, PowerPoint, and education applications. Personally, she used the basic applications, social applications, and Movie Maker.

Nicole. Nicole's information came from a phone interview, school documents she provided, and the researcher's journal. Nicole is a Caucasian female who has 35 years of experience in education and 32 years spent working in the ETIPS district. At the time of the study, she was an instructional resource teacher at School C Elementary and had been in that position for 17 years. She stated, "Our [school] vision is that everyone is a digital learner, a teacher and a leader. With that in mind, we encourage the kids to share what they've learned,

bring in new ideas. As the technology teacher here, you've probably heard the phrase, 'Sage on the Stage,' or 'Guide on the side.' I prefer to the be the guide on the side." In her teacher preparation program, she did not have any technology training. In her master's and doctorate programs she took courses in technology integration. In the ETIPS district, there are trainings available online and in person, workshops, and district sessions. Her role evolved over time and went from evaluating software and making recommendations for school wide use and applications to being a facilitator for staff in regards to technology integration. She stated, "I introduce programs to staff and students so they can easily integrate technology devices, software, and strategies." Professionally and personally, she used a 3D printer, iPads, and computer set. Lastly, she stated,

> Well, my environment is technology rich. I bring innovating, cutting edge activities for world activities to the kids, and show them, when we introduce lessons, real world applications. By this, a 3D printer's a great example of that. When kids are creating things, prosthetic limbs for animals that are in rehabilitation centers, they get very excited about that. I believe that's very important.

Below is an example of a digital lesson and 3D printer she utilized in the classroom to enhance student learning.

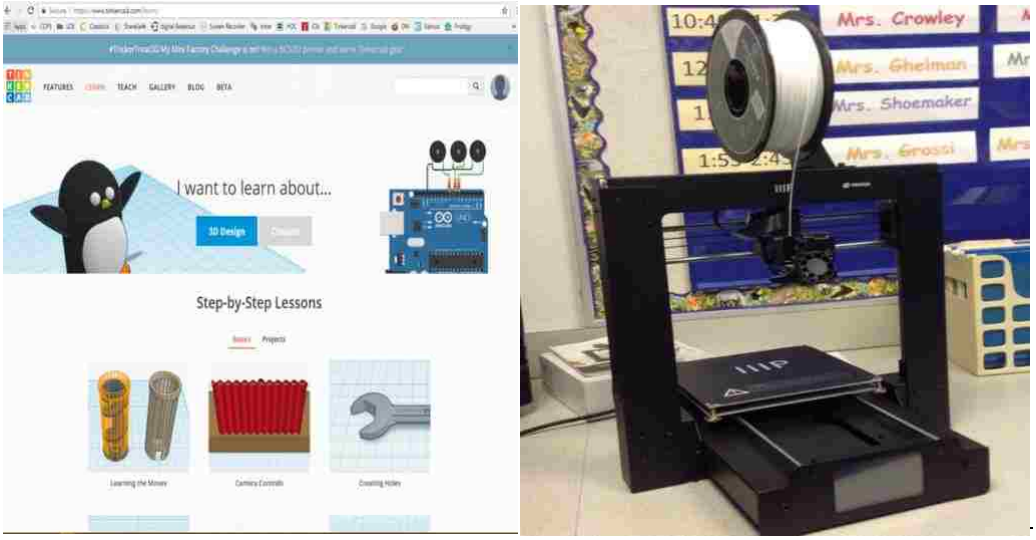

Figure 2. Digital lesson and 3D printer Nicole utilized in the classroom to enhance student learning.

District Office (D)

Hannah. Hannah's information came from a phone interview, school documents she provided, and the researcher's journal. Hannah is a Caucasian female who had 26 years of experience in education and 24 years spent working in the ETIPS district. At the time of the study, she was an instructional specialist for the ETIPS district for the technology department. She was one of the original technology specialists for the district. She stated,

> The vision in the district is per the superintendent. Right now we've got the Instruction through Digital Innovation program. That is one of her visions is that we will have model classrooms in each of our schools that teachers can come and observe what a model digital lesson looks like.

In her teacher preparation program, she did not have any technology training except for computer programming. In the ETIPS district, there are trainings available such as Instructional through Digital Innovation (IDI), which was given to all administrators and staff on the IDI

team. Staff had the opportunity to receive trainings on any of the instructional technology programs that were implemented in the district. Her role had evolved over time and went from fixing and hooking up computers to working with staff on integrating technology into the classrooms and instruction. Professionally, she used Windows machines, HP machines, iPads, interactive whiteboards, document cameras, audio enhancement systems, Ozobots, Dash robots, and LEGO robotics. Personally, she used her iPhone, laptops, desktop computers, and Apple TV. Below are images from Hannah's technology powerpoint she presented describing the purpose and expectations of school based IDI plans and levels of technology integration in school sites.

Figure 3. Images from Hannah's technology powerpoint she presented describing the purpose and expectations of school based IDI plans and levels of technology integration in school sites.

Bobby. Bobby's information came from a phone interview, school documents he provided, and the researcher's journal. Bobby is a Caucasian male who had 15 years of experience in education and four years spent working in the ETIPS district. At the time of the study, he was an instructional specialist at the ETIPS district office and was also considered a digital leader at the school. He stated, "In this district we embrace technology wholeheartedly."

In his teacher preparation program, he had minimal technology training. It was modeled but it was not taught as a standalone subject. The majority of his training came from the district and hands-on learning. In the ETIPS district, there was Digital Leader and Instruction through Digital Innovation (IDI) trainings available to staff. His current role was shifting. At this time, his role was to help coordinate, support, and model the IDI program content pedagogy and technology. He worked with content area departments and supported them by modeling how technology could enhance their instruction and student achievement. Previously, staff had been given information on new technology platforms and devices and told to figure it out. Now, the district provides support by providing specialists to support teachers in integrating technology. Professionally and personally, he used everything Apple, iOS and macOS, iPhone, iPad, Mac desktops and laptops, Windows, video applications; however, 95% of what he used was iOS-based.

The following table gives a summary of the participants, the manner in which data was collected from each participant, and the type of document(s) participants provided.

Table 2

Participant Data Collection Information

Pseudonym	Interview	Leadership Survey	Document(s)
Sarah	√	√	√
Ashley	√		√
Megan	√	√	√
Wanda	√		√
Becky	√		√
Nicole	√		√
Ethan	√		√
Andrea	√	√	√
Hannah	√		√
Sandra	√		√
Bobby	√		√

Results

The researcher utilized a qualitative, multiple case study design. A holistic, multiple case study design used a cross case analysis approach to analyze the data for the three bounded systems (Yin, 2014). The bounded systems were the three different elementary schools in the ETIPS district. The personal experiences and perspectives of the participants were explored with the use of multiple methods of data collection and the logic of literal replication for procedures for the three cases (Creswell, 2014; Gall et al., 2007; Yin, 2009; Yin, 2014). These methods provided triangulation, which reinforced the validity of the case and data.

Participant interviews were completed from the three bounded systems. The participant interviews consisted of nine females and two males. The administrators, teachers, and instructional resource teachers were from the elementary school level, and the instructional specialists worked for the ETIPS district technology department. Interviews were conducted over the phone and in person during the summer and fall months. Interviews were transcribed by

a professional transcription company, reviewed by the researcher, and compared to the researcher's notes for accuracy. Participant artifacts that were given to the researcher for document analysis are listed below in Table 3. Categories from the literature review and theoretical framework sections were utilized to acquire themes and assertions.

Table 3

Participant Name, School Association, Title of Document

Pseudonym	School Association	Document Title
Sarah	A	ETIPS District Strategic Technology Plan
Ashley	A	Technology Integration Matrix
Ethan	A	Technology Integration Plan
Megan	B	IDI Plan
Wanda	B	IR Curriculum Map
Sandra	B	Technology Presentation, Twitter Images
Becky	C	Digital Story Lesson
Andrea	C	IDI Plan
Nicole	C	3D Printer Software/Image
Hannah	D	IDI Plan
Bobby	D	IDI Plan

The Kouzes' and Posner's Leadership Practices Inventory Self (LPI Self) permission letter states approval for use in the study (Appendix H). The purpose of utilizing the Kouzes' and Posner's Leadership Practices Inventory Self (LPI Self) is to measure the leadership

practices of the administrators in this study. The leadership survey sampling consisted of three participants, which were elementary school administrators. Each participant was sent the survey link, completed it independently, and the researcher was informed via email when the surveys were completed.

The survey consisted of measuring practices in five areas: Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act, and Encourage the Heart. Interview questions were written in a manner to identify how the leadership practices of Kouzes and Posner (2012) were potentially evident in practice by the administrators of the three bounded systems. The survey results produced a framework for effective leadership practices that can be identified in elementary school settings as leaders implement new initiatives such as leading technology integration.

The Leadership Practices Inventory (LPI) Self Form contains 30 statements for each of the five leadership practices: Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act, and Encourage the Heart. Table 4 indicates each leadership practice and the corresponding LPI statements. Individual statements are assessed on a 10-point Likert scale, which signifies the frequency of perceived leadership behaviors. Participants rated themselves on each statement by choosing a number from 1-10. Table 5 indicates the response scale.

Table 4

Leadership Practices Inventory and Corresponding LPI Statements – Self Form

Kouzes and Posner Leadership Practices	Corresponding LPI Statement Numbers
Model the Way	1, 11, 21, 26, 6, 16
Inspire a Shared Vision	2, 7, 22, 27, 12,
Challenge the Process	3, 8, 13, 28 , 17, 18, 23
Enable Others to Act	4, 9, 14, 19, 24, 29
Encourage the Heart	5, 10, 20, 25, 30, 15

Table 5

Leadership Practices Inventory – Self Form Response Scale

Response Number	Corresponding Response Phrase
1	Almost Never
2	Rarely
3	Seldom
4	Once in Awhile
5	Occasionally
6	Sometimes
7	Fairly Often
8	Usually
9	Very Frequently
10	Almost Always

The LPI scoring software produced reports on participant responses. Participant graph scores were reported in ranges of least frequent, frequent, and most frequent of application of the leadership practices. The participant responses in graph form can be seen below. In addition, individual participant LPI reports specified a frequency score for each leadership practice. The chart below shows the frequency levels. All participants who participated in the survey achieved a score of high engagement on each of the five leadership practice areas.

Table 6

Leadership Practices Inventory Frequency Range and Level of Engagement

Frequency Range	Level of Engagement
0-29%	Low
30-69%	Moderate
70-100%	High

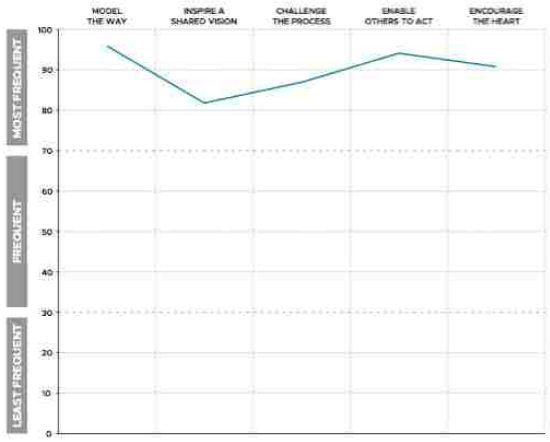

Figure 4. Leadership Practices Inventory: Leader participant one results in graph form.

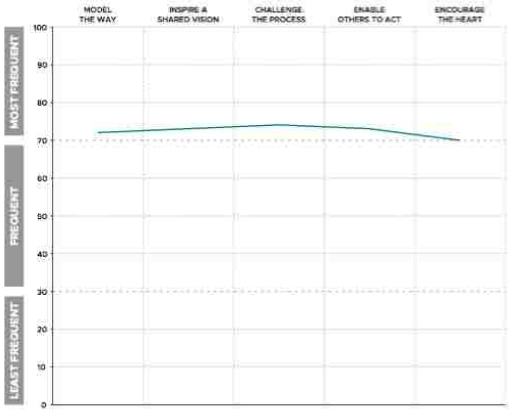

Figure 5. Leadership Practices Inventory: Leader participant two results in graph form.

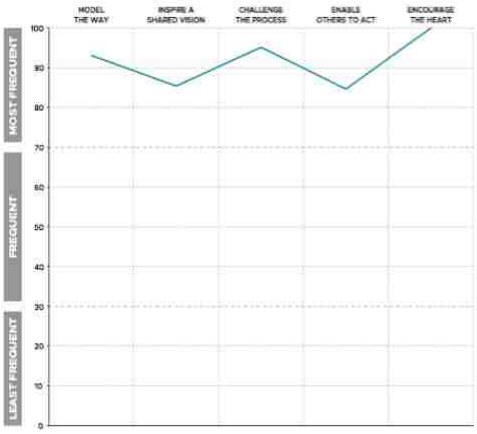

Figure 6. Leadership Practices Inventory: Leader participant three results in graph form.

The researcher executed coding to determine the frequency of words or phrases found within the participant interview responses, documents, and researcher's journal (see Appendix G). After the frequency count was completed, the researcher transferred the words and phrases into 176 assertions. The researcher documented the repeated assertions and established them into categories, which evolved into themes (see Appendix G). This procedural method was carried out over all three bounded systems and a cross case analysis created consistent themes

across the three elementary schools. There were three themes that were consistently developed and evidenced from the three elementary schools per the data from participants.

Theme Identification

Based on the data from the interviews, leadership surveys, researcher's journal, and analysis of relevant documents, three themes emerged. Theme identification was established from the frequent occurrence of common assertions and themes that arose from the multiple data collection methods and analysis procedures (Yin, 2009). I observed each of the three elementary school data and noted 176 assertions and three themes that emerged from the statements. A frequency chart was utilized to document the reoccurring words and phrases that evolved from the data, which were developed into themes. These themes are as follows: Technology Action Plan, Professional Development, and Collaboration. The data provided pertinent information that led to a comprehensive analysis of what effective leadership practices are demonstrated by elementary school administrators who facilitate technology integration in the school.

Theme One: Technology Action Plan. The first theme that arose from all three bounded systems and verified by several data measurements was effective leaders have a plan. In this study, leaders had a technology action plan framework titled Instruction Through Digital Information (IDI) designed by the ETIPS district. The framework allowed school leaders to create an action plan that was tailored to each specific site. The majority of the school goals and themes were the same since the framework was designed by the district and it was evident the themes and goals of the IDI plans were empirically and theoretically driven and aligned with the research discussed in Chapter Two. The IDI plan implementations of each bounded system was observed in the interviews, documents, surveys and researcher's journal and is discussed in detail in the paragraphs that follow. The IDI plan for each elementary school focused on three

different categories with action steps: culture of technology, design and delivery, and reaching all learners. I analyzed the IDI plans and highlighted words that were synonymous with words evidenced from the participant interviews, pertinent documents, and researcher's journal. The analysis results demonstrated each of the three bounded systems had a technology plan of action in place and the leaders were in charge of the plan. One participant [Ethan] shared, "The IDI plan helps our school focus on the vision and creates a plan to stay on top of the technology game." One participant [Megan] stated, "For the IDI plan, I need to be the leader in technology integration and movement within my school." Each elementary school administrator had created a plan that met the needs of their school climate, staff, and student population. One participant [Sarah] stated, "We definitely have a vision and a plan. At our school, the best way to share information from our plan is through faculty meetings and PLC's. That's where we disseminate important information to staff." Participant [Andrea] shared, "We have a specific plan for technology in the district and at our school. We share technology information with staff, model it, and share new applications. We work with staff during planning periods to discuss technology information." The IDI plans for each bounded system also encompassed a plan for social media use and delivery to students, staff, peers, parents, and the community. Participants shared the importance of using social media to communicate with parents and the community, showcase student learning, and create a social network of educators. The table below demonstrates how the participants utilize various social media forums such as Twitter and Facebook, to communicate with staff, students, parents, and the community.

Table 7

Participant Name, Social Media Usage, Communication Via Social Media

Participant	Facebook	Twitter	Communication via Social Media
Megan	√	√	"Technology through communication, I think I mentioned Twitter and Facebook. That's a big, huge push, the social media and using that as a platform to communicate with our community and our parents, students, and teachers."
Wanda	√	√	"My parents follow me on social media, so on Twitter, I do a video of the highlights of our class and during the week I'll spotlight different things that go on, different activities and invite them in to see what's going on. I'll send home a little note sometimes saying, "I was featured on Twitter today, make sure you check it out," Because we are going that digital way, paper is kind of becoming a thing of the past. So they follow me on Twitter, they email me when needed, that's pretty much the way I communicate with parents."
Sandra		√	"So I showcase my things on Twitter, so everyone can see that."
Andrea	√	√	"Twitter, Facebook, all the social media apps that we use is communicated to parents. And that's the primary way of communicating, is using those programs."
Becky	√	√	"I'm also a huge Twitter person. My whole classroom theme is Twitter this year, actually. Even the kids are learning how to do it. We have a private twitter for them to use, so that's kind of cool. Most teachers use it and we send a lot of information through it. We just make sure that our pages that we're doing for Twitter and Facebook get them more excited and they'll start using those things more, as well as allowing the kids to use their devices more, too."
Bobby		√	"So a lot of what we share on Twitter, that's a great pathway to find out what's going on. Again, I can't undersell how critical Twitter has been in communicating with teachers directly. Email tends to get lost so Twitter for those teachers that have the buy in, that have the initiative."
Ethan	√	√	"I know we've been really big in social media the last few years. Posting things on Facebook and Twitter and use these by communicating what we are doing in our classrooms. So, that's been helping a lot too."

The IDI plan was a vital tool utilized by leaders to foster an effective technology environment to enhance student learning, create a plan for collaborating, and communicating with various stakeholders.

Theme Two: Professional Development. The second theme emphasized the importance of professional development and preparing leaders and staff to effectively integrate educational technology into the classroom and curriculum. Over the past decade, the purpose and usage of technology in schools has increasingly become more predominant in classrooms (Hanover Research, 2014). Furthermore, leaders and teachers have to become efficient in technology integration and use of digital tools in order to implement in their schools and classrooms (Grady, 2011; Hanover Research, 2014). Before this can occur, professional development opportunities need to be available in order educate and train staff, be continuous, and make connections with staff (Hanover Research, 2014). One of the most important things school leaders can do is create a culture of collaboration and connection in relation to digital learning for staff and students (Bloom & Krovetz, 2009; Demski, 2012). The participant data revealed most staff initially lacked the knowledge and skills to effectively integrate technology in their schools. It was not until leaders stressed the importance of professional development, instituted training sessions, and participants received trainings that they became effective users of technology and digital tools. The participants stated professional development sessions are still crucial in their schools in order for staff to properly utilize technology. Professional development sessions need to:

- Be rich in technology
- Offer a coaching model
- Offer continuous access to PD resources and support
- Expand beyond face to face and to digital forums (Grady, 2011).

One participant [Ethan] shared,

> I sit down with either the grade level or a small group of teachers who would be interested in learning that piece of technology and either providing them with a mini in-service, or developing mini lessons and seeing how we can progress further, what worked and what didn't. That approach has been pretty successful at our school.

Professional development opportunities allow staff members to receive the proper training and knowledge that is needed to comprehend digital tools, modify their teaching styles and instruction, and implement in classes to enhance student learning. According to one participant [Ashley], "technology is a tool to be used to enhance and support student learning." Another participant [Ethan] stated, "It's important to show them [staff] how that application of using technology will make their life easier or showing them how it aligns with what the district wants them to do. The whole thing is just providing them with training." Each of the three bounded sessions implemented their specific IDI plans and had IDI teams that acted as technology integration coaches and mentors to staff. According to Grady (2011) and Hanover Research (2014), staff are more likely to integrate and utilize technology if they are continuously supported by coaches and if there is a climate of collaborative learning. According to one participant [Wanda],

> I'm actually apart of the IDI plan and am a mentor for technology. We're very lucky that our principal allows us to present the technology information to the staff. For example, I just did a training using the Classkick application, and how teachers can use that to work with identifying critical content and chunking that into digestible bites so, kind of correlating it with Marzano. It's so important to have collaboration with team members and sharing during planning as well.

The three elementary schools had the support of leaders and strong IDI coaching teams that fostered a climate for staff which allowed for support, growth, learning opportunities, and encouragement in relation to technology integration. The IDI coaches provided cognitive, instructional, and peer coaching for staff (Hanover Research, 2014). Cognitive and instructional coaching allowed for technology integration modeling, adding technology into lesson plans, support, and reflection (Demski, 2012; Grady, 2011). In addition, coaching allows staff to demonstrate use of technology tools to teachers, who are then given time to practice, implement, and tryout technology (Grady, 2011). It is vital for leaders to provide staff with opportunities to practice with technology and become comfortable using it (Grady, 2011). Furthermore, once staff feel at ease with the digital tools, they can showcase it to other staff, present at PLCs, or present it at other professional development meetings (Grady, 2011). The three elementary schools had leaders that utilized professional learning communities to collaborate and share a technology vision for their schools and discuss ideas, practices, and solutions to technology integration (Demski, 2012; Hanover Research, 2014). The interviews, leadership surveys, researcher's journal, and pertinent documents solidified and confirmed the significance of professional development for leaders and staff. It is evident why these three elementary schools were recognized as effectively integrating technology because the leaders all valued professional development and implemented it their buildings.

Theme Three: Collaboration. In the 21st century, schools require administrators to be multifaceted leaders, which includes being a leader of technology, collaborative, and sharing the responsibilities (Grady, 2011). Administrators have to consistently play an active role in being an advocate for all staff, students, and the community to move the school vision of being

effective integrators of technology in the classroom (Demski, 2012; LaFrance & Metcalf, 2013; Spiro, 2011). According to one participant [Megan],

> Promoting the vision starts with the IDI plan that I've created. I introduce the plan and concepts to teachers, the integration of technology, and the use of technology to promote student engagement and achievement. Teaching them at the beginning of the school year, the expectations of the use of technology within the classroom, as well as that's something that is embedded in our delivery of this plan.

This entails creating a school climate that exemplifies collaborative, innovative and connective learning in the field of technology. In addition, administrators need to sell the idea to staff and students that digital learning is constantly changing, and staff have to be willing to be adaptable (Grady, 2011; Spiro, 2011). For example, one participant [Sarah] shared,

> Well, we meet with them [staff] quite regularly, so we have the PLC meetings twice a month, so every other week we're meeting with teachers. This is where we collaborate with staff and share ideas. If our principal and I have any technology information that comes out from the district that we need to share with the teachers, it's done at that time, or emails are forwarded to them. A lot of times if it's something more important and here's what they need to do, we like to meet with them. We don't want to just send it out to them with no follow through. It's important to meet and talk.

Part of having staff buy-in involves inspiring them with the administrator's actions. Buy-in is very important and leaders have to focus on the processes and not just the program (Spiro, 2011). According to one participant [Hannah], "Your administrative team needs to be a model of good integration practices in their use for faculty meetings and anything else that they're going to do."

Administrators have to effectively and increasingly model technology use that staff are supposed to use in their classrooms (Demski, 2012). For example, one participant [Megan) stated,

> As a professional leader, I need to be comfortable with old and new technology. So when they see me using that type of technology then it just pours over into the classroom. It is my responsibility to be up to date and know all that the digital tools offer so that I can help move technology into the classroom, and the expectation of the use of technology within the classroom, that definitely has become my responsibility as a leader. I need to promote that, it's good for the kids. It's good for student engagement, kids are digital natives, that's the way they learn. So certainly that's my responsibility to make it available and monitor.

This involves the complex task of showing staff how to use technology with ease by being a model; using digital tools to carry out tasks such as sharing messages via social media sites, email, and websites; and using technology platforms for student information and learning (Grady, 2011; LaFrance & Metcalf, 2013). One participant [Ashley] stated, "I demonstrate with teachers in the classroom and walk them through the whole process of using the digital tool." According to another participant [Andrea], "As a leader I have a chance to model technology, my role is to model it with other people, seeing it being used. And when they see it being used by me, they are more likely to integrate it." Furthermore, administrators can utilize technology during meetings, have teachers model how they use technology in the classrooms, and share images of staff and students using it as well (Grady, 2011). Technology leaders also urge staff to not just use technology to carry out tasks but to teach lessons, use for instructional purposes, and enhance student learning (Grady, 2011; LaFrance & Metcalf, 2013). Grady (2011) explained that teachers are the fundamental ingredient to effective technology integration in the classroom.

Some staff will be resistant and others fearful, which requires administrators to calm the anxiety and encourage staff to be open to change (Grady, 2011; Spiro, 2011). One participant shared, "I have a very veteran staff, and luckily they're very much on the ball and they're always looking for new ways to bring technology into the classroom." Effective leaders need to be able to inspire and influence staff. One participant [Ethan] shared, "At my school we get pilot groups together to collaborate and test out new technology devices and strategies for learning. Teachers get excited observing the pilot groups and I think, are inspired to use the new devices in their classrooms." In addition, administrators need to set the vision for technology, create goals, and most importantly, have a plan in place (Grady, 2011; Spiro, 2011). For example, numerous participants shared how technology was a part of the ETIPS strategic plan; therefore schools have also adopted a vision and set goals in place. It has become an expectation that staff utilize technology for instructional purposes. Effective technology leaders see the importance of monitoring technology integration, determining areas of needed support, and work hard to remove the barriers (Grady, 2011). The participants from the three bounded systems stated strong leadership and collaboration are crucial to effective technology integration.

Research Question Results

RQ1. What leadership practices are demonstrated by elementary school administrators who facilitate effective technology integration in the school?

Each leader varies in their leadership style and manner in which their people are led. The administrators who participated in the research study had different styles of leadership, but all had commonalities in relation to leadership practices and technology integration. The most noteworthy commonality the data revealed was leaders have a vision that is carried out in a plan. The leaders shared the vision needs to be shaped around the districts digital vision but also

encompass a focus on high standards for learning and student success. The plan allows leaders to think of all possible issues they might encounter along the way of technology integration; therefore, they strategically plan out solutions and techniques (Maxwell, 2007; Spiro, 2011).. Leaders begin to use prior knowledge and analyze past experiences to gain insight, wisdom and learn new lessons to better prepare for technology integration at their school (Maxwell, 2007). Leaders discuss the necessary needs, present barriers, and resources and obtain advice from a variety of sources (Maxwell, 2007; Spiro, 2011). The way a leader navigates is important to its followers.

A second common practice that developed from the research data is that leaders possess a vision and purpose for leading a group of people and creating a positive, passionate, cooperative learning climate that is conducive to technology integration. Furthermore, if there is no momentum for the vision, then there will most likely be no victory (Maxwell, 2007). It is vital to have passion and a drive for implementing the plan and carrying out the vision because it will either enable the leader to win or lose with their followers (Maxwell, 2007). According to one participant [Megan], effective leaders

> Have a vision, set expectations and then, of course, communicate those expectations to staff. But also, provide the PD that goes along with it so that they can meet those expectations and then, of course, monitor the use of technology.

Another participant [Ethan] shared, "We promote our vision and all of the technology we are incorporating at school through social media which gets everyone hyped up." It is important for administrators to have momentum because it encourages them to fight for their vision; it enables them to feel confident and successful; and it motivates followers to feel enthused, use their talents to perform, and be a part of a significant movement of the school (Maxwell, 2007).

A third commonality that evolved from the data was cultivating leadership skills in other staff members in order to improve the lives of others and lead them towards their true potential (Maxwell, 2007). One participant [Sarah] shared, "We raise up leaders by working with staff closely in PLC meetings, modeling to staff, encouraging staff to become coaches, and teaching them along the way." Leaders need to model, train, encourage, manage, and support their followers to help them achieve what they are called to do in life and help the school achieve their vision and common goals (Maxwell, 2007. When leaders instill confidence and skills to others, it leads to enabling staff members to improve instruction, implement new strategies, and enhance student learning.

RQ2. What characteristics do elementary school administrators identify as being necessary in order to perform their role in effective integration of technology in their schools?

In order for administrators to effectively perform their role, lead, and integrate technology, there are a few characteristics they must possess and demonstrate to others. According to the participants, administrators must demonstrate trustworthiness because it is the basis of leadership (Maxwell, 2007). One participant [Andrea] shared, "In order to be effective in your school, staff have to be able to trust you as the leader." In order for administrators to develop trust in their schools they must exhibit confidence, character, humility, and a bond between their staff, students, and community (Maxwell, 2007). One participant [Sarah] shared, "It's important to build that trust with your staff and let them know you're there to work with them." Another participant [Megan] stated, "I show up consistently for my staff and this is part of how they learn to trust me. You have to have trust to be successful in your school.' Possessing character demonstrates to others that one is competent, stable, and able to admit their mistakes and learn from them and earn trust and support from others (Maxwell, 2007).

Participants shared that administrators need to teach others and add value to people by serving them, valuing relationships and interactions with others. One participant [Andrea] shared, "As a leader, part of my role is to teach others and help them learn new skills. It is also my job to find the right staff to model, teach, and coach their peers." In addition, one participant [Sarah] shared, "We work closely with staff in PLC and faculty meetings to teach them the latest strategies, collaborate as a group, and work to improve teaching strategies." Each administrator at the three elementary schools discussed the importance of teaching staff through avenues such as professional development sessions, PLC meetings, faculty meetings, team meetings, and just modeling to those around them. As an administrator, one can determine whether or not he or she is adding value to followers' lives by whether growth is occurring individually and as a school team.

Leaders are influential people, and it is vital to demonstrate citizenship qualities in order to attract quality followers. If a leader models leadership qualities and skills and teaches others how to follow and demonstrate citizenship characteristics, then the organization will be a magnet for others with leadership talents (Maxwell, 2007). Being a leader requires one to demonstrate quality skills in order to attract followers who possess shared values and characteristics. As a leader, it is vital to lead by example and possess follows and members of the organization who should hold similar views on values, morals, attitudes, talents, energy levels, and leadership qualities (Maxwell, 2007). One participant [Andrea] shared, "You are the living agreement between your staff and you have to be willing to inspire, influence, model, and teach them the way." Furthermore, connecting with others requires leaders to demonstrate confidence, sincerity, faith, and purpose in themselves and in their followers (Maxwell, 2007). One participant [Megan] shared, "It is all about rapport and relationships with staff. And of course

support too. This is what influences them." Leaders need to take the initiative to gather followers, show them their value and talents, and, most importantly, that they care (Maxwell, 2007). One participant [Sarah] shared, "It's important to have an open door policy to connect with staff, encourage them, listen, and get them on board with school initiatives." Schools that are effective and successful exemplify that a leader has done his or her job and instilled qualities in staff. Those qualities that are modeled first start with the heart and build relationships that impact each other and their school (Maxwell, 2007).

RQ3. What characteristics do elementary school teachers identify as being necessary for the administrator to effectively facilitate technology integration in his or her schools?

There are several characteristics that teachers identify as necessary in order for an administrator to effectively facilitate technology integration in their school. One commonality among the teacher participants was creating a school atmosphere that promoted innovation and digital learning. Participants explained that this starts with the school vision, selling it to others, and creating buy-in. One participant [Wanda] stated, "Leaders need to be knowledgeable about technology so they can create change in the school." The administrator needs to revamp the school culture by establishing a positive school environment, which is a key ingredient for school effectiveness (Bloom & Krovetz, 2009).. In addition, one participant [Hannah] stated, "It is important to have a common language for technology integration. You want everyone to be on the same page and have an understanding of what technology integration looks like." A second commonality that the data revealed was resourceful administrators. Leaders know there will inevitability be barriers to new strategies and ways of thinking, but it is the job of the leader to listen to the needs of their staff, be proactive in finding solutions, model practices and be adaptable to making the necessary changes. For example, one participant shared the ETIPS

district is a BYOD (bring your own device) district in order to enhance student learning. At this particular school site, the electronics policy entailed devices being out of sight and turned off at all times. In order to promote the digital and innovative vision, policy needed to change in order to promote a digital learning environment. The administrator took the time to instill the skills and tools needed to be effective. In turn, the staff was able to embrace the change instead of resisting it. A third commonality that developed from the data was the need for the school environment to foster collaboration to teach skills, promote learning, and instill confidence. One participant [Bobby] shared,

> Leaders need to be comfortable using technology personally and professionally. Be comfortable showing staff how to use it in the classroom, it's ok to make mistakes, and we can probably all learn something from the students. Leaders need to be lifelong learners with their staff.

Participants shared that collaboration and support are vital and can occur through PLC meetings, trainings, professional developments, and digital formats such as Twitter, Facebook, and other social media forums. Furthermore, support can be viewed as listening to staff concerns and needs, providing adequate resources to ensure reliable software and hardware, providing opportunities for staff to learn together, and support the risk takers and those that are confident.

RQ4. What resources do administrators and teachers identify as necessary to effectively implement the integration of technology and how are those resources made available?

There are numerous resources that participants identified as necessary to effectively implement the integration of technology at the elementary school level. The data revealed schools need reliable software, hardware, equipment, and appropriate internet bandwidth. One participant [Ashley] stated, "Providing infrastructure and support of the hardware in the

classroom is essential." In addition, participants shared the need for an available personnel worker to address the technology work tickets, troubleshooting, and fix any issues that arise. One participant [Bobby] shared, "Having the IT support is crucial for effective technology integration." Another participant [Ethan] shared, "Having updated software and computers along with district support will aid in effective integration." Furthermore, participants indicated a need for resources such as time and money to support continuous trainings and examples of technology applications in the classroom. Lastly, one participant [Nicole] shared, "It is vital to have a backup plan for when technology fails you. You have to have a plan B to be successful."

RQ5. What do administrators and teachers identify as needs to support technology integration in their schools?

In order for effective technology integration to occur at the elementary level, participants indicated that time and resources are essential (Grady, 2011). It is essential that administrators offer time for professional development, practice sessions, trainings, and resources to support effective classroom integration of technology (Demski, 2012). According to one participant [Megan], "

> Professional development, I think is the biggest piece for teachers. If teachers don't know how to use something, they're not going to use it. If they are taught how to use a technology device, whether it be an iPad or whatever it may be, and a program, they're going to use it. They see the benefit if they are taught exactly how to use it and see that the students are responding to that, they are engaged, they are deepening their knowledge of the content. But I think that probably the biggest piece of integration of technology is just teaching the teachers how to use it correctly.

Another participant [Sandra] reiterated the importance of trainings, "Professional development is huge when learning new applications and incorporating them into the learning environment for student

learning." Furthermore, administrators need to ensure that all staff has access to the digital tools they are learning about and practicing with that will be implemented in the classroom (Demski, 2012). One participant [Becky] shared, "Multiple people should be available at your school to offer support and step in when needed." In addition, one participant [Ashley] shared, "Our community has been monumental in providing support, funding, and resources to our school. If you can build up your community, it will be a blessing." Participants indicated the need for working software, proper bandwidth, Internet speed, and staff members who are readily available to provide software support, if needed.

Cross-Case Synthesis

In this section, I the researcher, will discuss a cross-case synthesis of the three bounded systems. The synthesis will present the technology integration process utilized by the three elementary schools and how each leader effectively led the process. The purpose is for others to understand and comprehend how the effective leaders implemented technology integration at their individual sites.

Technology integration in the ETIPS district was going on for quite some time and was a part of the district's strategic plan for success. This past year, the district adopted IDI plans for each school, and school administrators were responsible for creating a plan and implementing it. The leaders discussed planning before technology integration begins and going through a specific process to prepare their staff. The IDI Plans at the three elementary schools designated a team of staff members who acted as the model technology teachers. The team provided model lessons on effective technology integration in the classrooms, observed teachers and reflected with them, and had PLC discussions.

Summary

In Chapter Four five research questions, the data results, and themes were presented. The results were founded from the multiple data collection sources. The data collected derived from participant interviews, leadership surveys, the researcher's journal, and physical artifacts. The participants shared a variety of physical artifacts ranging from Twitter images to ETIPS technology plans. The themes that surfaced from participant interviews, leadership surveys, the researcher's journal, and physical artifacts were categorized by each bounded system and the data sources described above.

The themes that surfaced from the three bounded systems [elementary schools] had claims that were associated with the literature review and theoretical framework discussed in Chapter Two. As the researcher, I chose to use words and phrases that repeatedly appeared in the interviews, pertinent documents and artifacts, survey results, and researcher's journal that were analyzed. The consistent words or phrases found in the multiple forms of data then formed assertions, which then developed into themes from each of the data tools. Subsequently, I cross analyzed the three bounded systems [elementary schools] and established the themes from each case. In totality, there were three themes that developed from the data.

The research study involved a comprehensive analysis of the practices needed in order to have leaders effectively integrate technology at the elementary school setting. Most of the multifaceted qualities discussed in the literature review were observed throughout the three bounded systems [elementary schools]. The results of the data suggest that administrators, specialists, teachers, and IR teachers all appear to have parallel characteristics and practices on what should be present in effective technology integrated elementary settings. Nonetheless, each bounded system [elementary school] had similar methods on how effective technology

integration was achieved in their setting and thoughts on plans moving forward. In Chapter Five, I, the researcher, examine the three bounded systems [elementary schools] as a whole, which permitted me to observe and understand that they had more common attributes than previously perceived.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this multiple case study was to explore the characteristics of effective leadership in technology integration for school leaders and staff members in three southeastern U.S. elementary schools. The elementary schools that participated in the study were led by administrators that were considered to be effective technology leaders. Based on the data results, the analysis provided an in-depth understanding of how effective school administrators can lead technology integration and implement in their respective school sites. These findings are significant due to the growing concerns of technology integration, the gap in literature on this topic, and the need to support schools as they initiate technology integration. Research was collected through participant interviews, surveys, documents, and the researcher's journal. The study was conducted with the approval of the ETIPS Research Committee and Liberty University's IRB.

Chapter Five evaluates and discusses the research questions and three overarching findings, in light of the applicable research and literature. Furthermore, it compares the results of the current research study to the existing literature. In addition, this chapter sets the framework for the data implications and how they could be utilized to guide future research and professional development opportunities for administrators integrating technology in the school setting. Chapter Five concludes with recommendations for forthcoming research studies around the training, implementation, and integration of technology in the school setting.

Summary of Findings

Five central questions guided the research for this study and tracked data to analyze and formulate answers. The central and guiding research questions along with a concise summary of the results are listed below.

Central Research Question: What leadership practices are demonstrated by elementary school administrators who facilitate effective technology integration in the school?

It was evident in the research and the themes that evolved that the three elementary schools had numerous characteristics and practices in common as it related to leadership and technology integration. One of the emergent themes from the data was a technology plan that was common at each of the three bounded systems. Each leader developed a technology plan for their respective school site that shared a vision for technology integration and implementation. The technology plans provided specific steps that were tailored to each school's needs, those responsible, and resources needed. Furthermore, the plan included action steps and tasks, which were delegated to staff. The purpose in entrusting these tasks to others was to motivate and cultivate leadership skills and build up leaders in the building. In addition, administrators ensured professional development sessions and trainings were a part of the technology plan, a vision, and strategies for forming future leaders. Participant responses revealed a strong need for continuous professional development and trainings in order to effectively integrate technology and feel comfortable utilizing digital tools in the classroom for instructional purposes.

One of the themes, a need for effective leaders, also emerged from the three bounded systems. School administrators in the 21st century have multi-faceted roles which include the new challenge of being the school technology leader. In order to be effective leaders, administrators have to establish and communicate the vision and goals for technology integration

in their schools. Furthermore, participants revealed administrators need to promote the vision, model technology use in their everyday tasks and instructional practices, be hands-on users, and support the use of digital tools for student learning. In addition, administrators need to secure funding and resources for staff and students and provide opportunities for growth in the area of technology integration. Lastly, participants shared that administrators need to offer professional development opportunities, trainings, mentors, and follow-up sessions to ensure proper use, implementation, and confidence.

The leadership practices for elementary school administrators who facilitate effective technology integration in their schools were apparent in the data analyzed. The three themes that were consistently present in the three bounded systems developed from the interviews, leadership surveys, documents, and researcher's journal. The data collection and analysis revealed an in-depth understanding, documentation, and connection to previously discussed literature in Chapter Two.

Research Question Two

What characteristics do elementary school administrators identify as being necessary in order to perform their role in effective integration of technology in their schools?

There were several characteristics that elementary school administrators identified as being necessary in order to perform their role in effectively integrating technology at their schools. Administrators shared that it is important to be influential in your school building because this inspires staff, promotes buy-in, and creates a climate of trust. Trust is necessary to incorporate any type of change. In addition, administrators shared that it is important to be intuitive, especially in times of transition and implementing new strategies such as technology. Staff are going to trust their leaders' judgement and expect leaders to be intuitive in order to

make the best decision for their schools and staff members. Lastly, participants desire leaders that view their followers as valuable and seek to add value into their lives.

Research Question Three

What characteristics do elementary school teachers identify as being necessary for the administrator to effectively facilitate technology integration in his or her schools?

Elementary school teachers identified three characteristics that were necessary for administrators to effectively facilitate technology integration in their schools. Participants shared it was important for there to be an atmosphere that encompassed digital learning and innovation. The data revealed this atmosphere and climate is a trickle-down effect from the school vision. In addition, participants discussed the need for collaboration in order to learn from one another. Collaboration could occur in PLC, faculty, and team meetings; professional development sessions; and training opportunities. Lastly, participants stated the importance of having a resourceful administrator. This was vital because leaders have to think outside of the box, be creative, and utilize all funding sources to meet the needs for technology integration.

Research Question Four

What resources do administrators and teachers identify as necessary to effectively implement the integration of technology and how are those resources made available?

Participants identified several resources that were necessary in order to effectively implement the integration of technology at their respective school site. First and foremost, administrators shared they need to plan for technology resources which entails software, hardware, equipment, reliable Wifi, appropriate bandwidth, troubleshooting issues, and the potential for faulty equipment. There needs to be a budget line in order to fund the resources that are needed for technology integration. The data revealed resources were needed for staff

development and training opportunities. Resources not only include the PD and trainings but also the need and materials needed to ensure these occur consistently and continuously.

Research Question Five

What do administrators and teachers identify as needs to support technology integration in their schools?

Administrators and teachers identified multiple needs in the data in order to support technology integration in their respective elementary schools. The administrator participants shared it is vital for leaders to be visionary and promote technology in their schools. In addition, it is necessary for technology to be promoted through daily tasks such as sending out emails, memos, digital agendas, and utilizing digital programs to track data and school reports. If staff observe administrators using technology, they are more likely to adopt this practice and use it as well. In order to determine the technology needs of the schools, administrators need to be aware of the technology needs of the building, which can be done through inventory checks, surveys, and determining the reliability of the hardware, software, and equipment. Furthermore, administrators need to be aware of staff using technology, those that are not, the risk takers, and staff that do not feel comfortable using technology. Teachers shared that administrators can offer incentives to get staff buy-in and celebrate the technology usage of staff utilizing it for student learning and instruction purposes. The data revealed administrators need to support and encourage the technology teacher leaders in the building, conduct observations to determine how technology is being carried out in the classrooms, and what trainings are needed to support staff. Teachers shared it is necessary for administrators to collaborate with staff, model technology use to them, and connect to promote technology integration at the school level. The research

questions were answered by themes that developed from interview, survey, and document data and were described in Chapter Four.

Discussion

To grasp the connection between this research study, the theoretical components, and the literature review section concerning technology integration, the conclusions will be assessed in relation to the general principles and practices regarding technology integration. The findings will be presented in two sections: comparison to the literature and contrasts of the literature. This study was grounded in Spillane's (2005) distributive leadership theory and Kouzes and Posner's (2012) transformation theory. The literature review in Chapter Two examined (a) school leadership preparation programs, (b) technology leadership, (c) use of technology, (d) the International Society for Technology in Education-Administrators (ISTE-A) standards, and (e) school culture. The subtopics included: (a) teacher preparation, (b) the International Society for Technology in Education-Teachers (ISTE-T) standards, (c) adaption to technology, (d) limitations, and (e) benefits. Finally, the focus was on: (a) technology integration in schools, (b) leadership approach, (b) vision, (c) teamwork, (d) preparation programs, (e) barriers to technology, (f) benefits to technology, (g) resources, and (h) needs.

Related Literature

Effective administrators must comprehend the process of technology integration in order for it to be implemented in their school setting (Bass & Bass, 2008; Davies, 2010). In order for leaders and staff to be effective, it is important for educational preparation programs to instruct, model, train, and prepare school staff on technology use and implementation (Grady, 2011; Howell et al., 2014; Kowch, 2013). While schools are aligned with 21st -century technology standards, skills, and goals, the majority of school leaders and have not received the proper

training (Howell et al., 2014; Kowch, 2013). According to participant responses, administrators and staff members had to learn how to use technology individually by teaching it to themselves. Furthermore, staff learned how to utilize and integrate technology by district and school trainings. Participants that were not in leadership positions indicated in their responses that administrators appeared to be knowledgeable, understood the process, and were able to model and lead the technology implementation procedures. In addition, their leaders were known as effective and transformative leaders in the school building and ETIPS district. These results paralleled Byrom and Bingham's (2001) perspective on leadership as the distinct factor in successful technology integration occurring in schools. In addition, participant data coincides with the literature review research in that effective school leadership characteristics and tactics promote the direction and operation of technology integration (Grady, 2011; Klar et al., 2013). Lastly, effective school leaders exhibit leadership characteristics tantamount with Kouzes and Posner's (2012) leadership model. The five leadership practices in Kouzes and Posner's (2012) leadership model that aligned with the participant responses and themes were: "Model the way, Inspire a shared vision, Challenge the practice, Enable others to act and Encourage the heart" (p. 15).

Preceding technology integration, it imperative that leaders present the purpose behind technology, its relation to curriculum and instruction, and cultivate a vision (Bloom & Krovetz, 2009). This concept was not only presented in the literature review but paralleled the theoretical components and participant responses. Administrators shared one of the first agenda items includes sharing the vision with staff and inspiring staff to become a part of the shared value of the school effort (Adamy & Heinecke, 2005; Berrett et al., 2012; Bloom & Krovetz, 2009; Dexter, 2011; Klar et al., 2013; Leithwood et al., 2008; Schrum et al., 2011). Leaders can inspire

and encourage staff by using technology and modeling its effectiveness. Administrative leaders utilize technology devices and platforms for communication purposes, analyzing school data, preparing pertinent documents, budget tasks, staff development presentations, and for personal purposes (Grady, 2011; Levin & Schrum, 2011). Participant leaders and non-leaders indicated they utilize technology for professional, instructional, and personal reasons. For example, staff use technology to enhance student instruction, analyze assessment results, create lessons, and correspond with their peers.

By getting buy-in from staff, administrators are able to set the foundation for teamwork and enable staff to act by supporting the vision, taking ownership of the movement, sharing roles, and allocating tasks among others (Adamy & Heinecke, 2005; Berrett et al., 2012; Davies, 2010; Grady, 2011; Leithwood et al., 2008; Maxwell, 2007; Spillane et al., 2004). In order to have staff on board, foster collaboration, and distribute tasks, leaders have to establish a climate of trust which is essential during a school movement such as a shift towards technology integration (Angelle, 2010; Devos & Bouckenooghe, 2009; Crum & Sherman, 2008; Grady, 2011; Kouzes & Posner, 2012). Effective leadership practices encompass a shared vision, staff support, resources, and opportunities for growth (Bebell & O'Dwyer, 2010; Bloom & Krovetz, 2009; Devos & Bouckenooghe, 2009; Kopcha, 2010; Dexter, 2011; Grady, 2011; Schrum & Levin, 2013).

Contrasts to the Literature

The National Educational Technology Standards for Administrators (NETS*A) were established for school leaders to help support effective technology leadership and integration in the educational setting (ISTE, 2015; Howell et al., 2014, Sincar, 2013). The five themes of NETS*A relate to: (a) visionary leadership, (b) digital age learning culture, (c) excellence in

professional practice, (d) systemic improvement, and (f) digital citizenship (Howell et al., 2014; ISTE, 2015). These standards were designed to support school leaders in the practice of technology integration (Schrum et al., 2011; Sincar, 2013). The NETS*A standards do not equate to effective technology implementation but do provide leadership guidelines and practices for technology integration (Howell et al., 2014; Sincar, 2013). Participants were asked an interview question relating to the knowledge and understanding of these standards. The majority of participants were unaware of the standards or did not have a working knowledge of the standards applications, practices, and relation to the school setting. One participant [Megan] stated,

> I have to be honest, I don't know if I've ever even looked at that [ISTE-A/T standards]. My assumption is that our Strategic Plan strands for the use of digital technology within the classroom is based off that. And that's an assumption, I don't know that.

This being said, the standards and practices did not play a role in the effective integration of technology at the three bounded systems.

Lastly, some of the research in the literature section clashed with the results of the research study. According to Chang (2011), administrators leading technology integration do so by establishing, guiding, and applying technology practices to improve technology performance. Participant results indicate effective leadership practices and characteristics is what leads to successful technology integration

Implications

There are several implications that developed out of the multiple case study on the effective leadership practices that are necessary in order to integrate technology at the elementary school setting. According to participant responses in the interviews and researcher's

journal, effective leaders are the catalyst for technology integration at the elementary school level. Effective leaders who integrate technology at the elementary school setting exhibit a vision for their respective school sites, a technology plan, professional development, and technology leaders. Furthermore, participants discussed a strong need for time and resources to ensure technology implementation. This research study can support administrators, technology leaders, specialists, and teachers by emphasizing the leadership practices and essential components that are needed to integrate technology at the elementary school level. The theoretical, empirical, and practical implications are discussed in the following sections.

Theoretical

The theoretical implications of this research study paralleled the concepts discussed in the theoretical frameworks from Spillane's (2005) distributed leadership model and Kouzes and Posner's (2012) model of transformational leadership. There were several theoretical implications that will assist school districts, district office personnel, administrators, and other staff who support technology integration in the school setting. With the presence of technology in schools and the implementation of 21st-century learning strategies, administrators have had to adjust their multi-faceted roles and responsibilities to include the navigation and facilitation of technology integration. Furthermore, administrators have had to delegate and distribute the various responsibilities to staff so everyone takes action to complete the tasks (Angelle, 2010; Davies, 2010; Klar et al., 2013). In this research study, the three administrators revealed in the data the importance of working with colleagues, sharing best practices among other leaders, and distributing tasks to their followers in order to share responsibilities (Spillane, 2015). This aligns with the distributed leadership model because the school leaders focused on the distribution of leadership for school technology leadership practices and roles for successful integration of

technology. Depending upon the situation, practices are formed by the exchanges that occur between the leaders and followers. In this research study, leaders developed practices by sharing tasks from the technology plan in order to effectively integrate technology.

School administrators were able to distribute leadership responsibilities through the individual technology plans they implemented at their school sites by delegating and assigning tasks to staff. Administrators were able to establish technology integration practices that evolved from the interactions between staff. The distribution of leadership tasks, the technology plan, and the concept of shared responsibilities leading to the establishment leadership practices aligned with Spillane's (2005) theoretical viewpoint. According to the interview responses, pertinent documents, and the researcher's journal, the school technology plans had a clear delineation of assigned roles, steps, and actions. Furthermore, the plans provided opportunities for staff to learn from leaders and peers about best practices and how to effectively lead technology integration in their classrooms. Hulpia and Devos (2010) directed a research study on the distributed leadership model and discovered the model to be effective when the leader is present, supportive, reflective, and encourages a climate of collaboration. Participant responses indicated the importance of visible leaders that were supportive, provided feedback, and fostered a school climate around teamwork. Participant responses regarding leadership practices were aligned with the distributed leadership model and Hulpia and Devos' (2010) study on the model as well. The highlight on distributed leadership and shared responsibilities from the three bounded systems validated school leaders' obligation to effective technology integration.

The theoretical implications from this study aligned with Kouzes and Posner's (2012) model that reflects transformational leadership. In Kouzes and Posner's leadership model, leaders apply tactics and styles to demonstrate how to address trials while leading effectively.

Kouzes and Posner (2012) stated, "Model the way, Inspire a shared vision, Challenge the practice, Enable others to act and Encourage the heart" (p. 15). In this research study. the data revealed the importance of leaders modeling technology and demonstrating to staff how to utilize it in everyday tasks and enhancing instruction. In addition, leaders have to share the vision of the technology plan and be influential in order to have buy-in from the staff. Furthermore, leaders had to challenge the norms and provide support in order to enable staff to act. For example, administrators provided professional development and training sessions along with other resources to encourage and empower staff with technology integration. Participant responses disclosed the importance of leaders fostering collaboration and building relationships, which occurred through trainings, peer coaching, PLC meetings, and professional development sessions (Devos & Bouckenooghe, 2009; Kouzes & Posner, 2012). Lastly, participants shared the necessity of leaders establishing a school culture that strives for distinction, values community, serves, and encourages others (Blankstein, 2013; Crum & Sherman, 2008; Kouzes & Posner, 2012).

Effective school leaders exhibit the leadership traits, which are tantamount with Kouzes and Posner's (2012) leadership model and utilize the practices of the distributed leadership model. It is essential for administrators to cultivate the vision, have a plan, and distribute the tasks to others. Furthermore, effective leaders see the importance of promoting collaboration, reforming school norms, and motivating staff to act.

Empirical

The literature review section explored the numerous leadership practices and essential components researchers suggested as solutions to technology integration in the primary school settings. As the researcher, I recognized confirmation of those same leadership practices and

components in the interview responses, survey results, documents, and researcher's journal from participants in each of the bounded systems in the research study. The data analysis from the multiple data sources [interview responses, leadership surveys, documents, researcher's journal] revealed characteristics that correlated with the literature review in Chapter Two.

The first empirical implication addresses the necessity for district trainings and professional development sessions in relation to technology integration. Administrators and school staff would benefit from trainings and professional development sessions that focus on new and common technology tools, apps, and strategies. It is important to educate school staff on digital tools that are applicable to instruction and learning at the various grade levels and content areas (Grady, 2011). In addition, it would be helpful for the trainings to offer illustrations of these tools being implemented in the classroom and students' use of the devices (Grady, 2011). Participants shared trainings and professional development sessions should be continuous in order for staff to feel confident, comfortable, and become proficient in technology integration. According to participant responses, future trainings should include utilizing technology for student achievement purposes, tracking student data, and the relationship between technology and observations and evaluations.

The second empirical implication suggests that school districts offer trainings and conferences to current and aspiring leaders as it relates to technology integration. Leadership is multifaceted and with the onset of 21st-century learning trends it is essential leaders be effective in technology integration. In order to ensure leaders are effective in technology integration, school districts need to make leadership attendance at professional development, trainings, and conferences a priority (Grady, 2011). According to the administrator participants, being present at trainings allows leaders to gain skills and enhance their knowledge and leadership practices.

Furthermore, it provides opportunities for leaders to learn how to utilize new and improved digital tools as it relates to instruction and learning, instead of them having to figure out how to use it themselves. Attending trainings and conferences allows leaders to meet new peers and expand their educational network.

Practical

The results of this multiple case study provide significant insights into the effective leadership practices for technology integration and indicate several practical implications for school districts and most importantly, school leaders. The results from this research study can support districts, administrators, and staff members in integrating technology at the elementary school level. Administrators not only carry the role of leadership, but they are also viewed as technology leaders (Berrett et al., 2012; Davies, 2010; Schrum et al., 2011). It is essential that they have an abundance of relevant information to support them in integrating technology at their school sites.

The first implication suggests administrators have a technology plan that includes a vision, common language, trainings, and action steps for integrating technology. Furthermore, administrators need to be the technology leaders in the technology integration movement at their respective school sites. It is important for administrators to include action steps and roles in the plan and also delegate responsibilities among staff. Administrators will need to shift the culture at the school, demonstrate the vision, and motivate staff to buy-in to this new framework of teaching and learning.

The second implication suggests trainings and professional development sessions for staff. These trainings and PD's should be led by administrators, coaches, trainers, and peer educators. It is important to staff for there to be a presence of leadership at all of the sessions

and to be aware this is a team approach. Leadership attendance is crucial to effective technology integration because it demonstrates to staff the importance of the digital movement, it provides an opportunity for leaders to develop rapport with staff, and creates a culture of teamwork and unity. In addition, it allows leadership to gauge the effectiveness of the professional development sessions, determine staff strengths and areas of growth, and determine additional training that is needed. Professional development sessions are essential to enhancing the skills of staff in regards to technology integration.

The third implication suggests resources and funding to ensure effective technology integration. Participants shared the importance of time and resources for trainings and peer collaboration, peer coaching, time to learn and implement the new digital instructional framework, and resources to address the barriers that will arise. This research study has demonstrated it is the administrator's role to secure resources and funding in order to have effective technology integration. Funding is essential to pay for the technology resources and materials to ensure reliability and consistency. Furthermore, funding is needed to pay for training and professional development sessions. Funding and resources should be a part of the technology plans that leaders utilize as they navigate and implement technology at the elementary school level. If resources are not secured and funding is not available, it could potentially lead to ineffective technology integration and untrained staff.

Delimitations and Limitations

In this research study, there are several delimitations and limitations. These delimitations and limitations are correlated with the research study and will be described below. Several delimitations were applicable to this research study. Delimitations are decisions the researcher has chosen for the study, and they include the boundaries that are present. They include the: (a)

setting, (b) methodology (c) participants, and (d) phenomenon of the research study. I relied on a bounded system to explore the characteristics of effective leaders for technology integration. The setting of the ETIPS district was chosen because the district is nationally recognized for technology and school leaders' decisions to implement technology in all schools, especially elementary schools. The participants selected for interviews were determined based on their involvement with technology integration. Another delimitation of the study was the decision to explore how leaders effectively facilitate technology integration, rather than participants' perceptions of technology integration.

One area of limitations relates to the participants and sites of the three bound systems in the research study. In addition, there are limitations to participant gender and ethnicities. Although it is important to be cognizant of these limitations, the research study limitations do not invalidate the results of the research study.

The chosen criteria for the selection of participants limit the application of this research study to other educational settings. The schools involved in this research study were elementary schools and staff from the technology department that service students in grades K-5. These elementary schools were located in one particular geographic area in Florida and encompassed the southeastern area. These specific elementary schools were distinguished as effectively integrating technology, and the researcher characterized these sites as successful. Furthermore, schools that were still in the process of effectively integrating technology were not included in the research study sample. The elementary schools and staff voluntarily decided to participate in the research study, which demonstrated an enthusiasm to provide insight about their experiences in technology integration. This could potentially affect the research study sample by approving

sites with an affirmative outlook and perspective on technology integration. These practices and perspectives could potentially not be representative of other school sites integrating technology.

The second area of limitations relates to participant gender and ethnicities. Out of the 11 participants, nine were female and two were made. In addition, all of the participants were Caucasian. The participants were sampled from various sites within the ETIPS district.

The research study delimitations and limitations described in this section operated to offer an emphasis for the research study as an entirety. The research was limited to geographic locations, gender, ethnicities and participant sample criteria. These research delimitations and limitations strive to support the validity of the data outcomes and lessen the number of outliers and biases present in the data analysis.

Recommendations for Future Research

This research study has answered several research questions about effective leadership practices for technology integration. Furthermore, there are additional questions that remain unanswered and should be the focus of future research. The subsequent recommendations for future research studies are as follows:

(1) Exploring the integration of technology in other geographic areas outside the state of Florida will offer further information about technology integration for school leaders and staff.

(2) Moving the focus of research from elementary schools to other school settings will provide information to leaders and staff in middle, high school, virtual, and alternative schools.

(3) Student experiences related to technology integration in effective schools should be explored to determine if there are additional factors related to effective technology integration.

(4) Schools that have been ineffective in integrating technology should be examined in order to determine why these sites have not been effective.

(5) Exploring the relationships between the community and other partnerships that have aided schools in effectively integrating technology should be studied.

These recommendations for future research will offer an awareness and understanding of what is needed to effectively lead, plan, utilize, and integrate technology at the school level.

Summary

The effective integration of technology in the three bounded systems [elementary schools] attests to a technology plan that is in place, professional development, and effective leadership. The use of effective leadership strategies to launch the integration of technology at the elementary level and also provide staff with the necessary skills has proven to be successful. The ability of administrators to create and implement technology plans will be enhanced as an outcome of this research study. Administrators will have a greater understanding of the importance and necessity of building effective leadership skills in order to successfully create technology plans that include professional development, time, and resources for staff. The barriers related to technology integration should not discourage administrators but prompt them to be more strategic in seeking solutions. The focus for administrators should be to apply effective leadership strategies in order to successfully integrate technology into instruction for student learning. The data collected from the interviews, surveys, and documents in this

multiple-case study have created topics for conversation, such as technology integration at various school settings. These include examples of successful planning practices by the participants and strategies that lead to positive outcomes. The results of this study also recommend that significant indicators of technology integration are correlated with effective leaders, a technology plan, and continuous professional development.

REFERENCES

Abu-Tineh, A., Khasawneh, S. A., & Al-Omari, A. (2008). Kouzes and Posner's transformational leadership model in practice. *Leadership & Organization Development Journal, 29*(8), 648-660. doi:10.1108/01437730810916613

Adamy, P., & Heinecke, W. (2005). The influence of organizational culture on technology integration in teacher education. *Journal of Technology and Teacher Education, 13*, 233-255.

Akpan, J., & Beard, L. (2013). Overview of assistive technology possibilities for teachers to enhance academic outcomes for all students. *Universal Journal of Educational Research 1*(2), 113-118.

Akpan, J., & Beard, L. (2014). Assistive technology and math education. *Universal Journal of Educational Research 2*(3), 219-222. doi:10.13189/ujer.2014.020303

Albugarni, S., & Ahmed, V. (2015). Success factors for ICT implementation in Saudi secondary schools: From the perspective of ICT directors, head teachers, teachers and students. *International Journal of Education and Development using Information and Communication Technology, 11*(1), 36-54.

Alnahdi, G. (2014). Assistive technology in special education and the universal design for learning. *The Turkish Online Journal of Education Technology, 13*(2), 18-23.

Angelle, P. S. (2010). An organizational perspective of distributed leadership: A portrait of a middle school. *RMLE Online: Research in Middle Level Education, 33*(5), 1-16.

Assistive Technology Act (1998)

Assistive Technology Act of 2004, P.L. 108-364, 108 Cong., 118 Stat. 1707. (2004).

Assistive Technology Network**.** (2016). *Welcome to the assistive technology network of Florida.* Retrieved from http://ttac-atsdp.gmu.edu/index.asp

Barton, A., & Skiba, D. (2006). Adapting your teaching to accommodate the Net generation of learners. *OJIN: The Online Journal of Issues in Nursing*, *11*(2), 1-11.

Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York, NY: Free Press.

Bass, B. M., & Bass, R. (2008). *The Bass handbook of leadership, theory, research and managerial applications* (4th ed.). New York, NY: Free Press.

Bebell, D., & O'Dwyer, L. M. (2010). Educational outcomes and research from 1:1 computing settings. *Journal of Technology, Learning, and Assessment, 9*(1), 1-16.

Berrett, B., Murphy, J., & Sullivan, J. (2012). Administrator insights and reflections: Technology integration in schools. *The Qualitative Report, 17*(1), 200-221.

Birnbaum, R. (1988). *How colleges work: The cybernetics of academic organization and leadership*. San Francisco, CA: Jossey-Bass.

Blackaby, H., & Blackaby, R. (2011). *Spiritual leadership: Moving people on to God's agenda*. Nashville, TN: B & H.

Blankstein, A. (2013). *Failure is not an option.* Thousand Oaks, CA: Corwin.

Bloom, G., & Krovetz, M. (2009). *Powerful partnerships: A handbook for principals mentoring assistant principals.* Thousand Oaks, CA: Corwin.

Board of Education of the Hendrick Hudson Central School District v. Rowley, 458 U.S. 176 (1982).

Bohn, J. (2014). Building school morale: Turning resistant teachers into resilient teachers. *ASCD, 9*(10). Retrieved from http://www.ascd.org/ascd-express/vol9/910-bohn.aspx

Bolden, R. (2011). Distributed leadership in organizations: A review of theory and research. *International Journal of Management Reviews, 13,* 251-269. doi:10.1111/j.1468-2370 .2011.00306.x

Bouck, E. C., Doughty, T. T., Flanagan, S. M., Szwed, K., & Bassette, L. (2010). Is the pen mightier? Using pentop computers to improve secondary students' writing. *Journal of Special Education Technology, 25*, 33-47.

Bouck, E. C., Flanagan, S., Joshi, G. S., Sheikh, W, & Scheppenback, D. (2011). Speaking math - A voice input, speech output calculator for students with visual impairments. *Journal of Special Education Technology, 26*(4), 1-14.

Bredeson, P. V., Klar, H. W., & Johansson, O. (2011). Context-responsive leadership: Examining superintendent leadership in context. *Education Policy Analysis Archives, 19*(18), 1-28.

Brooks-Young, S. (2007). *National education technology standards for students* (2nd ed.). Washington, DC: International Society for Technology in Education.

Brown, M. M., & Hosking, D. D. (1986). Distributed leadership and skilled performance as successful organization in social movements. *Human Relations, 39*, 6579.

Bryman, A. (2004). Member validation and check. In M. Lewis-Beck, A. Bryman, & T. Liao (Eds.), *Encyclopedia of social science research methods* (p. 634). Thousand Oaks, CA: SAGE. doi:10.4135/9781412950589.n548

Burns, J. (1978). *Leadership.* New York, NY: Harper & Row.

Byrom, E., & Bingham, M. (2001). *Factors influencing the effective use of technology for teaching and learning: Lessons learned from the SEIR-TEC intensive site schools.* Retrieved from ERIC database. (ERIC Document Reproduction Service No. ED471140)

Carter, P. (2005). *Keepin' it real: School success beyond Black and White*. New York, NY: Oxford University Press.

Chang, I. H. (2011). The effect of administrators' technological leadership on teachers' technology literacy and teaching effectiveness in Taiwanese elementary schools. *Educational Technology & Society, 15*(2), 328-340.

Christensen, C. (2011). *Disrupting class: How disruptive innovation will change the way the world learns* (2nd ed.). New York, NY: McGraw Hill.

[redacted] Schools 2016-17 School Profile. (2017). In *Demographics.* Retrieved from http://www.[redacted]com/Page/349

Collins, A., & Halverson, R. (2010). The second educational revolution: Rethinking education in the age of technology. *Journal of Computer Assisted Learning, 26*(1), 18-27. 10.1111/j .1365-2729.2009. 00339.x

Cook, A., Adams, K., Volden, J., Harbottle, N., & Harbottle, C. (2011). Using Lego robots to estimate cognitive ability in children who have severe physical disabilities. *Disability & Rehabilitation: Assistive Technology*, *6*(4), 338-346 9. 10.3109/17483107.2010.534231

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Los Angeles, CA: Sage.

Crum, K. S., & Sherman, W. H. (2008). Facilitating high achievement: High school administrators' reflections on their successful leadership practices. *Journal of Educational Administration, 46*(5), 562-580. doi:10.1108/09578230810895492

Cullen, J., Richards, S. B., & Frank, C. (2008). Using software to enhance the writing skills of students with special needs. *Journal of Special Education Technology, 23*, 33-44.

Davies, P. (2010). On school educational technology leadership. *Management in Education, 24*(2), 55-61.

Davis, T., Barnard-Brak, L., & Arredondo, P. (2013). Assistive technology: Decision-making practices in public schools. *Rural Special Education Quarterly, 32*(4), 15-23.

Demski, J. (2012). This time it's personal. (Cover story). *T H E Journal, 39*(1), 32-36.

Dessoff, A. (2011). Making schools future-proof. *The Education Digest, 76*(7), 46-49.

Devos, G., & Bouckenooghe, D. (2009). An exploratory study on administrators' conceptions about their role as school leaders. *Leadership & Policy in Schools, 8*(2), 173-196. doi:10.1080/15700760902737196

Dexter, S. (2011). School technology leadership: Artifacts in systems of practice. *Journal of School Leadership, 21*(2), 166-189.

District Board of [redacted] District Technology Strategic Plan (2014). *District Board of [redacted] District Technology Strategic Plan 2014-2017*. Retrieved from [redacted]

Drasgow, E., Yell, M., & Robinson, R. (2001). Developing legally correct and educationally appropriate IEPs. *Remedial and Special Education, 22*(6), 359-373.

Duhaney, D. C. (2012). Blended learning and teacher preparation programs. *International Journal of Instructional Media, 39*(3), 197-203.

Dyal, A., Carpenter, L. B., & Wright, J. V. (2009). Assistive technology: What every school leader should know. *Education, 129*(3), 556-560.

Education for All Handicapped Children Act (1975)

Edyburn, D. (2009). Hindsight, understanding what we got wrong, and changing directions. *Journal of Special Education Technology, 24*(1), 61-64.

Fla. Stat. § 1003.575 (2016). Assistive technology devices; findings; interagency agreements.

Florida Alliance for Assistive Services and Technology Program [FAAST], 2017

Fullan, M. (2007). *Leading in a culture of change*. San Francisco, CA: Jossey-Bass.

Gall, M., Gall, J., & Borg, W. (2007). *Educational research: An introduction* (8th ed.). Boston**,** MA: Pearson.

Ganz, J., Earles-Vollrath, T., Heath, A., Parker, R., Rispoli, M., & Duran, J. (2012). A meta-analysis of single case research studies on aided augmentative and alternative communication systems with individuals with autism spectrum disorders. *Journal of Autism & Developmental Disorders, 42*(1), 60-74. doi:10.1007/s10803-011-1212-2

Gardner, W. L., Reithel, B. J., Cogliser, C. C., Walumbwa, F. O., & Foley, R. T. (2012). Matching personality and organizational culture: Effects of recruitment strategy and the five-factor model on subjective person-organization fit. *Management Communication Quarterly, 26*(4), 585-622.

Garland, V. E. (2009). Emerging technology trends and ethical practices for the school principal. *Journal of Educational Technology Systems, 38*(1), 39-50.

Gershenson, S., Holt, S. B., & Papageorge, N. W. (2016). Who believes in me? The effect of student-teacher demographic match on teacher expectations. *Economics of Education Review, 52,* 209-224.

Gibb, C.A. (1954). Leadership. In Lindzey, G. (Ed.)., *Handbook of Social Psychology,* 2 (pp. 877-917). Reading, MA: Addison-Wesley.

Goodwin, B. (2011). One-to-one laptop programs are no silver bullet. *Educational Leadership, 68*(5), 78-79.

Grady, M.L. (2011). *Leading the technology-powered school* (2011). Thousand Oaks, CA:

Greaves, T., Hayes, J., Wilson, L., Gielniak, M., & Peterson, E. (2010). *Project RED key findings.* Shelton, CT: MDR. Retrieved from http://www.one-to-oneinstitute.org/findings

Groff, J., & Mouza, C. (2008). A framework for addressing challenges to classroom technology use. *AACE Journal, 16*(1), 21-46.

Hall, P., Childs-Bowen, D., Cunningham-Morris, A., Pajardo, P., & Simeral A. (2016). *The administrator influence: A framework for developing leadership capacity in administrators.* Alexandria, VA: ASCD.

Hanover Research (2014). *Trends in higher education recruitment, marketing, and technology*. Washington, D.C. Retrieved from: https://www.hanoverresearch.com/media/Trends-in-Higher-Education-Marketing-Recruitment-and-Technology-2.pdf

Hazelkorn, M., Katsiyannis, A., & Yell, M. (2007). Reflections on the 25th anniversary of the U.S. Supreme Court's decision in Board of Education v. Rowley. *Focus on Exceptional Education, 39*(9), 1-12. Hill, D. C. (2007). *Special education due process hearings involving students with autism* (Order No. 3257947). Available from ProQuest Dissertations & Theses Global. (304898079)

Houchens, G. W., & Keedy, J. L. (2009). Theories of practice: Understanding the practice of educational leadership. *Journal of Thought, 44*, 49-61.

Howell, M. P., Reames, E. H., & Andrzejewski, C. E. (2014). Educational leadership program faculty as technology leaders: What support will they need? *New Waves, 17*(1), 31-49.

Hsieh, C., Yen, H., & Kuan, L. (2014). The relationship among administrators' technology leadership, teaching innovation, and students' academic optimism in elementary schools. *International Association for the Development of the Information Society*. Retrieved from http://www.iadisportal.org/

Hulpia, H., & Devos, G. (2010). How distributed leadership can make a difference in teachers' organizational commitment? A qualitative study. *Teaching and Teacher Education, 26*(3), 565-575.

Hurley, R. F. (2012). *The decision to trust: How leaders create high-trust organizations*. San Francisco, CA: Jossey-Bass.

Inan, F. A., & Lowther, D. L. (2010). Factors affecting technology integration in K-12 classrooms: A path model. *Educational Technology Research and Development, 58*(2), 137-154.

Individuals with Disabilities Education Act, 20 U.S.C. § 1400 (2004).

International Society for Technology in Education. (2015). *ISTE National Educational Technology Standards (NETS) and Performance Indicators for Administrators.* Eugene, OR: International Society for Technology in Education. Retrieved from http://www.iste .org/standards/iste-standards/standards-for-administrators

Javeri, M., & Persichitte, K. (2010). Use of innovation component configuration map (ICCM) to measure technology integration practices of higher education faculty. *Journal of Technology and Teacher Education, 18*(4), 607-643.

Johnson, L. F., Levine, A., Smith, R. S., & Haywood, K. (2010). Key emerging technologies for elementary and secondary education. *The Education Digest,76*(1), 36-40.

Judge, S., & Simms, K. A. (2009). Assistive technology training at the pre-service level: A national snapshot of teacher preparation programs. *Teacher Education and Special Education, 32,* 33-44.

Klar, H., Brewer, C., & Whitehouse, M. (2013). AVIDizing a high-poverty middle school: The case of Magnolia Grove. *The International Journal of Research and Practice on Student Engagement 1*, 9-23.

Kopcha, T. J. (2010). A systems-based approach to technology integration using mentoring and communities of practice. *Educational Technology Research & Development, 58*, 175-190.

Kouzes, J. M., & Posner, B. Z. (1995). *The leadership challenge: How to keep getting extraordinary things done in organizations.* San Francisco, CA: Jossey- Bass.

Kouzes, J. M., & Posner, B. Z. (2012) *The leadership challenge* (5th ed.). San Francisco, CA: Jossey-Bass.

Kowch, E. G. (2013). Whither thee, educational technology? Suggesting a critical expansion of our epistemology for emerging leaders. *Techtrends: Linking Research and Practice to Improve Learning*, *57*(5), 25-34.

Kumar, S., & Vigil, K. (2011). The Net generation as preservice teachers: Transferring familiarity with new technologies to educational environments. *Journal of Digital Learning in Teacher Education, 27*(4), 144-153.

Lafont, S. L. B. (2011). *The relationship between administrators' technology leadership and the teachers' use of technology* (Doctoral dissertation). Retrieved from ProQuest Central; ProQuest Education Journals. (909958633)

Lei, J. (2009). Digital natives as preservice teachers: What technology preparation is needed? *Journal of Computing in Teacher Education, 25*(3), 87-97. Retrieved from ERIC database. (Document Reproduction Service No. EJ835233)

Leithwood, K., Harris, A., & Hopkins, D. (2008). Seven strong claims about successful school leadership. *School Leadership and Management, 28*(1), 27-42.

Levin, B. B., & Schrum, L. (2014). Lessons learned from secondary schools using technology for school improvement: It's just not that simple! *Journal of School Leadership*, *24*(4), 640-665.

Louis, K. S., Leithwood, K., Wahlstrom, K. L., Anderson, S. E., Michlin, M., Mascall, B., & Moore, S. (2010). Learning from leadership: Investigating the links to improved student learning. *Final Report of Research to the Wallace Foundation.* Retrieved from http://www .wallacefoundation.org/knowledge-center/school-leadership/key-research /Pages/Investigating-the-Links-to-Improved-Student-Learning.aspx

Martin, E. M. (2011). *Digital natives and digital immigrants: Teaching with technology* (Doctoral dissertation). Retrieved from http://hdl.handle.net/2047/d20002139

Maxwell, J. C. (2007). *The 21 irrefutable laws of leadership: Follow them and people will follow you*. Nashville, TN: Thomas Nelson.

McCaffery, P. (2010). *The higher education manager's handbook: Effective leadership and management in universities and colleges* (2nd ed.). New York, NY: Routledge.

McLeod, S., & Richardson, J. W. (2011). The dearth of technology leadership coverage. *Journal of School Leadership, 21*(2), 216-240.

Menon Eliophotou, M. (2011). Leadership theory and educational outcomes: The case of distributed and transformational leadership. *Proceedings of the 24th International Congress for School Effectiveness and Improvement*. Available from: http://www.icsei .net/icsei2011/Full%20Papers/0125.pdf

Metcalf, W., & LaFrance, J. (2013). Principals' perceptions of their technology leadership preparedness. *Journal of Research in Education*, *23*(1), 58-75.

Mezirow, J. (1994) 'Understanding transformation learning', *Adult Education Quarterly*, *44*(4): 222-232.

Moore, K. D. (2012). *Effective instructional strategies from theory to practice.* Thousand Oaks, CA: Sage.

Morgan, G. (2006). *Images of organizations* (2nd ed.). Thousand Oaks, CA: Sage.

Northouse, P. (2012). *Introduction to leadership concepts and practice.* Los Angeles, CA: SAGE.

Patton, M. (2015). *Qualitative research & evaluation methods* (4th ed.). Thousand Oaks, CA: Sage.

Petcu, S., Yell, M., & Fletcher, T. (2014). Assistive technology: Legislation and legal issues. *Exceptionality, 22*(4), 226-236. doi:10.1080/09362835.2013.865538

Rackensperger, T. (2012). Family influences and academic success: The perceptions of individuals using AAC. *AAC: Augmentative & Alternative Communication, 28*(2), 106-116. doi:10.3109/07434618.2012.677957

Retter, S., Anderson, C., & Kieran, L. (2013). iPad use for accelerating reading gains in secondary students with learning disabilities. *Journal of Educational Multimedia and Hypermedia, 22*(4), 443-463

Riley, G., Beard, L. A., & Strain, J. (2004). Assistive technology at use in the teacher education programs at Jacksonville State University. *Techtrends: Linking Research & Practice to Improve Learning, 48*(6), 47-49.

Rogers, D. (2005). *Teaching vs. learning environments.* Retrieved from: http://faculty.valenciacollege.edu/drogers/essays/teachvlearn.html

Rutledge, L. (2010). Research guides. *Georgia State University College Law.* Retrieved from http://libguides.law.gsu.edu/content.php?pid=104522&sid=786431

Schrum, L., Galizio, L. M., & Ledesma, P. (2011). Educational leadership and technology integration: An investigation into preparation, experiences, and roles. *Journal of School Leadership, 21*(2), 241-261.

Schrum, L., & Levin, B. B. (2013). Preparing future teacher leaders: Lessons from exemplary school systems. *Journal of Digital Learning in Teacher Education, 29*(3), 97-103.

Schrum, L., Skeele, R., & Grant, M. (2003). One college of education's effort to infuse technology: A systematic approach to revisioning teaching and learning. *Journal of Research on Technology in Education, 35*(2), 256-303.

Simpson, C. G., McBride, R., Spencer, V. G., Lowdermilk, J., & Lynch, S. (2009). Assistive technology: Supporting learners in inclusive classrooms. *Kappa Delta Pi Record, 45*(4), 172-175.

Sincar, M. (2013). Challenges school administrators face in the context of technology leadership. *Educational Sciences: Theory and Practice, 13*(2), 1273-1284.

Spillane, J., & Diamond, J. B. (2007). *Distributed leadership in practice*. New York, NY: Teachers College Press, Columbia University.

Spillane, J. P. (2005). Distributed leadership. *Educational Forum, 69*(2), 143-150.

Spillane, J. P. (2015). Leadership and learning: Conceptualizing relations between school administrative practice and instructional practice. *Societies, 5*(2), 277-294. Retrieved from http://dx.doi.org/10.3390/soc5020277

Spillane, J. P., Camburn, E. M., & Pareja, A. S. (2007). Taking a distributed perspective to the school principal's workday. *Leadership & Policy in Schools, 6*(1), 103-125. doi:10.1080/15700760601091200

Spillane, J. P., Halverson, R., & Diamond, J. B. (2004). Towards a theory of leadership practice: A distributed perspective. *Journal of Curriculum Studies, 36*(1), 3-34. doi:10.1080/0022027032000106726

Spillane, J. P., & Zuberi, A. (2009). Designing and piloting a leadership daily practice log: Using logs to study the practice of leadership. *Educational Administration Quarterly, 45*(3), 375-423.

Spiro, J. (2011). *Leading change step-by-step.* San Francisco, CA: Jossey-Bass.

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage**.**

Stanley, A. (2005). *Taking care of business* [DVD]. Colorado Springs, CO: Multnoman.

Technology Related Assistance for Individuals with Disabilities Act (1988)

Toledo, C. (2007). Digital culture: Immigrants and tourists responding to the natives' drumbeat. *International Journal of Teaching and Learning in Higher Education, 19*(1), 84-92.

Tuckett, A. G. (2005). Part II. Rigour in qualitative research: Complexities and solutions. *Nurse Researcher, 13*(1), 29-42.

Unluer, S. (2012). Being an insider researcher while conducting case study research. *The Qualitative Report, 17*(29), 1-14.

Valentine, J., & Prater, M. (2011). Instructional, transformational, and managerial leadership and student achievement: High school administrators make a difference. *NASSP Bulletin, 95*(1), 5-30.

Van Laarhoven, T., Munk, D. D., Chandler, L. K., Zurita, L., & Lynch, K. (2012). Integrating assistive technology into teacher education programs: Trials, tribulations, and lessons learned. *Assistive Technology Outcomes and Benefits, 8*(1), 32-47.

Vassileva J, (2008). Toward social learning environments. *IEEE Transactions on Learning Technologies, 1*(4), 199-214.

Virginia Department of Education (VDOE). (2008). Assistive technology: A framework for consideration and assessment. Retrieved from http://www.pen.k12.va.us/special_ed/iep _instruct_svcs/assistive_technology/framework_assistive_technology.pdf

Waycott, J., Bennett, S., Kennedy, G., Dalgarno, B., & Gray, K. (2010). Digital divides? Student and staff perceptions of information and communication technologies. *Computers & Education, 54,* 1202-1211. doi:10.1016/j.compedu.2009.11.006

Windman, V. (2013). Assistive technology 2.0: Special tech. *Tech & Learning, 33*(9), 19-22.

Yin, R. (2009). *Case study research: Design and methods* (4th ed.). Thousand Oaks, CA: Sage.

Yin, R. (2014). *Case study research: Design and methods* (5th ed.). Thousand Oaks, CA: Sage.

Appendix A

Liberty University IRB Application

LIBERTY UNIVERSITY
INSTITUTIONAL REVIEW BOARD

June 14, 2017

Lauren Dawson Woodward
IRB Approval 2746.061417: A Case Study Exploring Technology Integration in Three Southeastern U.S. Elementary Schools

Dear Lauren Dawson Woodward,

We are pleased to inform you that your study has been approved by the Liberty University IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

Appendix B

ETIPS (pseudonym) Department of Research & Instruction Application

Your approval is also subject to the following guidelines as designated by the committee:

(a) Information is collected anonymously, and no personally identifiable information is obtained from or reported on any individual student, person, group, or organization.
If your research involves the collection of data from students, you must provide details of your study, (survey questions to be asked, etc.) and get signed permission from their parents/guardians.
(b) If the district is to be identified in any manner in the final report of an approved study, prior permission must be secured.
(c) The cooperating organization or individual will furnish a copy of the final results to the district.
(d) All personnel involved (staff, teachers, administrators, etc.) know it is voluntary to participate and identity information is kept confidential.
(e) Research conducted on accepted proposals must be actively underway within one (1) year of the date of acceptance. Researchers must request an extension for approved research proposals that are not initiated and actively underway by this time.
(f) Approval means the researcher may collect data as specified in the original proposal. This notification is not approval to provide data, promise of services, nor is it permission to use district data. Should the researcher pursue data beyond the parameters of the research proposal, all access to district resources will be denied to the researcher and any organization he/she presently represents.
(g) Approval does not include any services from the district including access to district databases (unless it is public information available through the district's public information office.)
(h) Personnel from the Department of Assessments and Data Management will not provide research services.
(i) The researcher must notify the committee about any changes made to the original proposal. The committee reserves the right to rescind its approval if the modifications do not satisfy any of the conditions detailed above.

Please contact the Office of Accountability and Data Management should you have any questions or concerns.
Respectfully,

Appendix C

School District Permission

Dear Superintendent:

As a previous district administrator and current doctoral candidate, I am requesting your support of a dissertation study I am conducting with Liberty University. I am conducting research to better understand effective leadership for technology integration in your school district. The title of my research project is A Case Study Exploring Technology Integration in Three Southeastern, U.S. Elementary Schools. The purpose of my research is to conduct a qualitative, multiple-case study to identify the effective leadership practices of school leaders and staff in technology integration in three Southeastern U.S. elementary schools. More specifically, the practices and characteristics, which foster an environment that successfully supports the process of technology integration, will be explored. This study will be guided by the theoretical framework of Spillane's (2005) distributed leadership model and the Kouzes and Posner (2012) model of transformational leadership. These theories provide an understanding of: (a) leadership practice, (b) distributed leadership, and (c) how educational leaders become effective as they foster the process of technology integration in the schools (Abu-Tineh, Khasawneh, & Al-Omari, 2008; Angelle, 2010; Davies, 2010; Kouzes & Posner, 1995; Mezirow, 1994; Spillane, 2005; Spillane, 2015; Valentine & Prater, 2011).

I am writing to request your permission to conduct my research at your school district and contact members of your staff to invite them to participate in my research study.

Participants will be asked to click on a link to complete the attached survey (administrators only), contact me to schedule a recorded interview, and submit documents relating to technology integration in their assigned school. Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please respond by email to ladawson2@liberty.edu and attach a signed statement on approved letterhead indicating your approval.

Sincerely,

Lauren Dawson Woodward
Doctoral Candidate, Liberty University
Assistant Principal, [redacted]

Appendix D

Participant Recruitment E-Mail

Greetings,

My name is Lauren Woodward, and I'm currently an Assistant Principal of [redacted] and a doctoral student at Liberty University. I am conducting a multiple case study of effective leadership for technology integration in [redacted]. The purpose of this email is to request your participation in this research study. You were selected as a potential candidate for the study because you meet the study criteria as confirmed by your Instructional Technology Specialist of working at an effective technology school for technology integration in the elementary school setting. Please consider participating in this research study.

If you agree to contribute to the study by being a participant, you will be asked to participate in interviews, participate in a survey (administrators only), and provide documents relating to technology integration in your assigned school. The interview questions will be related to the following areas:

1. Effective leadership practices and characteristics of technology integration
2. The role of the technology leader in the Elementary School setting
3. Fostering an environment and culture that facilitates effective technology integration

The interviews will be conducted by myself and can either be conducted in person, by email, or on the telephone at your convenience. Pseudonyms will be used to protect the participants' names and schools. Information will be kept according to established guidelines. Participants will be provided a copy of the manuscript prior to its completion, and if data poses a risk to participants, the information will be deleted from the research manuscript.

A consent document is attached to this email and contains additional information about my research. To participate, please respond by email to ladawson2@liberty.edu with a signed consent form attached.

If you have any questions prior to participating in the interview or at any time during the data collection process, please contact me at ladawson2@liberty.edu.

Sincerely,

Lauren Dawson Woodward

Appendix E

The Liberty University Institutional Review Board has approved this document for use from 6/14/2017 to 6/13/2018 Protocol # 2746.061417

PARTICIPANT INFORMED CONSENT FORM

Lauren Woodward
Liberty University
College of Education, Ed.D. Program

Researcher Name: Lauren Woodward, a doctoral candidate in the School of Education at Liberty University

Title of Research Project: A Case Study Exploring Technology Integration in Three Southeastern U.S. Elementary Schools

Background Information:
You are being invited to participate in a research study about effective technology integration in the elementary school setting. The purpose of this form is to inform you about the study and determine if you would like to be a part of it. You were selected as a possible participant because you are an administrator, technology department staff member, teacher or the instructional resource teacher from the school district selected for this study.

I ask that you read this form and ask any questions you may have before agreeing to be in the study. Please be aware that you are free to decide not to participate or withdraw from the study at any point. Please read this form and ask any questions you may have before agreeing to participate in the study. Lauren Woodward, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

Purpose of the study:
The purpose of this qualitative multiple case study is to explore effective leadership for technology integration led by elementary school Administrators in a Southeastern U.S. school district. This study will attempt to answer the main research question: *What leadership practices are demonstrated by elementary school Administrators who facilitate technology integration in the school?*

Procedures:
If you agree to contribute to the study by being a participant, you will be asked to participate in one recorded interview which will not last longer than one hour, complete a survey (administrators only) that will take approximately 15 minutes to complete, and provide documents relating to technology integration in your assigned school. Some of the documents could potentially include, but are not limited to (a) district and individual school technology plans, (b) budget documents, (c) board and staff meeting minutes and agendas, (d) website information, (e) emails and memos to staff, (f) professional development and training information, and (g) photographs of technology devices and/or tools. The interview questions will be related to the following areas:

1. Effective leadership practices and characteristics of technology integration
2. Role of technology leader in the elementary school setting

3. Fostering an environment and culture that facilitates effective technology integration

The interviews will be conducted by myself and can either be conducted in person, via email, or on the telephone at your convenience.

Voluntary Nature of the Study:
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or Collier County Public Schools. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Risks and Benefits of being in the Study:
The risks for this study are minimal and are no more than the participant would encounter in everyday life. The potential publication of this study may prove beneficial for helping support schools with effective integration of technology. No direct benefits are provided as a part of your participation in the research study.

Confidentiality:
The researcher is the only person who will have knowledge of the identity of the participant and all steps have been taken to protect your identity. The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. Research will be stored in computers that are password protected, and any paper and recordings will be maintained in a locked file cabinet. The researcher is the sole person who will have access to the locked file cabinet. The recordings will be erased after the information is transcribed and/or if a participant withdraws from the study.

Compensation:
Each participant will receive a $25.00 generic gift card for completing the study.

Contacts and Questions:
The researcher conducting this study is Lauren Woodward. You may ask any questions you have now or later. If you have questions later, **you are encouraged** to contact the researcher by phone at 804-437-3742 or by email at ladawson2@liberty.edu. You may also contact the researcher's Dissertation Committee Chair, Dr. Joan Fitzpatrick, by email at jfitzpatrick@liberty.edu .

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s) or Dissertation Committee Chair, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Green Hall Suite 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

The Liberty University Institutional
Review Board has approved
this document for use from
6/14/2017 to 6/13/2018
Protocol # 2746.061417

Please notify the researcher if you would like a copy of this information to keep for your records.

Statement of Consent:
I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study

☐ I agree to take part in this research.
☐ The researcher has my permission to audio-record me as part of my participation in this study.

Printed Name: _____

Signature: _____

Date: _____

Signature of Investigator: _____

Date: _____

Appendix F

Leader Interview Question Matrix

Principal's/Leaders' Interview Questions (these questions will be used to interview the director and manager of technology too)	Research Question	Literature
1. How long have you been an administrator, and how long have you been the administrator at this elementary school? In ETIPS (pseudonym)?	Years of experience/Introduction	N/A
2. What type of technology training did you have in your leadership preparation program? In the district?	RQ: 3	(Greaves et al., 2010; Schrum et al., 2011)
3. What type of professional development is available to leaders in ETIPS (pseudonym)?	RQ: 3	(Schrum et al., 2011)
4. What technology do you use personally and professionally?	RQ: 1	(Schrum et al., 2011)
5. What is your role in technology integration? How has it changed over time? What is the technology vision	RQ: 1	(Sincar, 2013)

specifically for this school? For ETIPS (pseudonym)? How is that communicated to staff and parents?		
6. Describe how you communicate to the teachers that their direct application of technology should be aligned to the schools and ETIPS's (pseudonym) technology plan?	RQ: 1	(Greaves et al., 2010)
7. How do you communicate, observe, and evaluate teachers off the ISTE-T standards?	RQ: 4	(McLeod & Richardson, 2011; Schrum et al., 2011l Sincar, 2013)
8. How do you address the technology needs and barriers to integration?	RQ: 4	(Schrum et al., 2011).
9. What supports and resources are necessary to effectively integrate technology?	RQ: 3	(Schrum et al., 2011)
10. What are the benefits to technology integration? How to you promote this to staff? How do you create culture and an environment that is technology rich and conducive to this type of learning?	RQ: 1	(Greaves et al., 2010; Schrum et al., 2011)

11. Describe how you demonstrate the effective use of technology for learning, communication, and project management.	RQ: 1 & RQ: 2	(Schrum et al., 2011)
12. What would you recommend to fellow leaders on what is required for effective leadership for technology integration?	RQ: 4	(Greaves et al., 2010)

Teacher Interview Question Matrix

Teacher's Interview Questions	**Research Question**	**Literature**
1. How long have you been a teacher and how long have you been a teacher at this elementary school? In ETIPS (pseudonym)?	Years of experience/Introduction	N/A
2. What type of technology training did you have in your educational preparation program? In the district?	RQ: 3	(Greaves et al., 2010; Schrum et al., 2011)
3. What type of professional development is available to teachers in ETIPS (pseudonym)?	RQ: 3	(Schrum et al., 2011)

4. What technology do you use personally and professionally?	RQ: 1	(Schrum et al., 2011)
5. What is your role in technology integration? How has it changed over time? What is the technology vision specifically for this school? For ETIPS (pseudonym)? How is that communicated to students and parents?	RQ: 1	(Sincar, 2013)
6. Describe how you communicate to the teachers in your department that their direct application of technology should be aligned to the schools and ETIPS's (pseudonym) technology plan?	RQ: 1	(Greaves et al., 2010)
7. How do you communicate, observe, and evaluate your peers off the ISTE-T standards?	RQ: 4	(McLeod & Richardson, 2011; Schrum et al., 2011l Sincar, 2013)
8. How do you address the technology needs and barriers to integration?	RQ: 4	(Schrum et al., 2011).

9. What supports and resources are necessary to effectively integrate technology?	RQ: 3	(Schrum et al., 2011)
10. What are the benefits to technology integration? How to you promote this to your department? How do you create culture and an environment that is technology rich and conducive to this type of learning?	RQ: 1	(Greaves et al., 2010; Schrum et al., 2011)
11. Describe how you demonstrate the effective use of technology for learning, communication, and project management.	RQ: 1 & RQ: 2	(Schrum et al., 2011)
12. What would you recommend to fellow teachers on what is required for effective for technology integration?	RQ: 4	(Greaves et al., 2010)

Appendix G

Codes, Sub Themes and Themes

Codes	Sub Themes	Themes	Number of Times it Appeared in the Data
Planning Design Preparation Guidelines Plan Proposal Blueprint Strategy IDI Instructional Design/ Digital Learning Action Steps Technology Common Language Vision Inspiration	IDI Plan Technology Action	Technology Action Plan	52
Growth Progress Collaboration Staff Learning PLC's Meetings Professional growth Learning opportunities Model Inspire Peer to Peer learning Conferences Trainings	Growth Instruction Meeting	Professional Development	56
Culture Enable Distribute Climate Collaboration Trust Inspirational Positive Model	Effective Leads Transformative Person	Effective Leaders	68

Instructs Respect Vision Navigator Delegator Challenge			

Appendix H

Kouzes' and Posner's Leadership Practices Inventory Self (LPI Self) PERMISSION LETTER

WILEY

November 16, 2016

Lauren Woodward
3040 Oasis Grand Blvd 2101
Fort Myers, FL 33916

Dear Ms. Woodward:

Thank you for your request to use the LPI®: Leadership Practices Inventory® in your dissertation. This letter grants you permission to use either the print or electronic LPI [Self/Observer/Self and Observer] instrument(s) in your research. You may ***reproduce*** the instrument in printed form at no charge beyond the discounted one-time cost of purchasing a copy; however, you may not distribute any photocopies except for specific research purposes. If you prefer to use the electronic distribution of the LPI you will need to separately contact Joshua Carter (jcarter@wiley.com) directly for further details regarding product access and payment. Please be sure to review the product information resources before reaching out with pricing questions.

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(2) Copyright in the LPI, and all derivative works based on the LPI, is retained by James M. Kouzes and Barry Z. Posner. The following copyright statement must be included on all reproduced copies of the instrument(s): "Copyright © 2013 James M. Kouzes and Barry Z. Posner. Published by John Wiley & Sons, Inc. All rights reserved. Used with permission";
(3) One (1) **electronic** copy of your dissertation and one (1) copy of all papers, reports, articles, and the like which make use of the LPI data must be sent **promptly** to my attention at the address below; and,
(4) We have the right to include the results of your research in publication, promotion, distribution and sale of the LPI and all related products.

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Best wishes for every success with your research project.

Cordially,