Principals' Roles in Supporting and Evaluating Teacher Use of Technology in Nonpublic Secondary Schools

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Susan Byrkit Wallis

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DEDICATION

"All our dreams can come true, if we have the courage to pursue them."

-Walt Disney

This dissertation is dedicated to my loving husband, Brian Wallis, who has exhibited tremendous patience and selflessness during the years I've been in graduate school. You've given me the courage to press on through many life changes – marriages, funerals, illnesses, job changes and yet, your support never wavered. Words are inadequate to express my gratitude for all you've done to help me achieve this goal. I'd also like to dedicate this to my parents, and my biggest cheerleaders, Chris and Larry Byrkit. Thank you for instilling in me a strong work ethic and for your belief in my abilities that often surpassed my own when I needed it the most. To my children, Erin, Matthew and Amy, this accomplishment is also for each of you. Thank you for sacrificing 'time with mom' as I pressed on. Thank you for sharing in the joys and challenges along this journey. Finally, writing this dissertation definitely increased my prayer life and without my constant companion, my Lord and Savior, this would not have been possible. I am blessed beyond measure.

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ABSTRACT

The purpose of this qualitative, explanatory, multi-site study was to explore and better understand how high school principals support, and evaluate teacher use of technology for classroom instruction in nonpublic secondary schools. The study was guided by the Role Identity theory theoretical framework as provided by McCall and Simmons (1966). Literature was also reviewed related to administrative support of technology integration. Limited research exists exploring how principals perceive they support technology use as well as how they evaluate technology integration in the classroom. This study sought to address the gap in the literature. Data were collected through interviews with six high school principals, field notes, and collected artifacts from each of the six schools. Data revealed principals support teacher use of technology for classroom instruction within the constraints of available resources. The study also revealed a lack in formal methods or instruments for evaluating technology use. One solution is for heads of schools and accrediting agencies to establish distinct expectations for principals in leading technology integration using established NETS-A standards. Such expectations can empower principals and transform successful integration of technology in nonpublic schools. Additional implications for heads of school and policy makers regarding technology integration were explored. Finally, suggestions were offered for future research projects.

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CHAPTER I

INTRODUCTION TO THE STUDY

Technology has become an integral part of our culture. Smart phones, laptops, tablets, GPS devices, wireless technology, email and various forms of social media (e.g., Twitter, Facebook, Instagram, Snapchat) as well as virtual reality platforms have created unprecedented and seemingly endless possibilities to network, research, produce while remaining mobile and able to communicate instantly. The technological opportunities that have arisen in the past three decades have not only advanced our ability to communicate and compete in a global market, but they have necessitated major changes in the educational arena as well (Redmann & Kotrlik, 2004; Seay, 2004, Thomas & Knezek, 2008). The changes that technology affords in the marketplace and educational arenas are here to stay and will likely continue to offer opportunities that currently can only stretch our imaginations. Therefore, as schools strive to keep up with technological advances, they must also keep pace with how teachers and students are learning and interacting (Spellings, 2008).

In fact, there has not been a time where technology has played a larger role in education as the year this study was concluded, 2020. This is a year that will be noted in history books where individuals of all ages had life interrupted in unprecedented ways by a worldwide pandemic. All schools and non-essential businesses closed due to the novel Corona virus (CoVid-19) in efforts to slow the spread of the virus to a level manageable by our healthcare system. School buildings have been closed in the United States and only schools with one to one technology have the option to engage in distance learning.

Colleges are continuing classes online for the remainder of the term, they've sent students home, and cancelled spring commencement ceremonies. The College Board has altered Advanced Placement exam content and all exams will be given online in abbreviated form. Social distancing has forced a wider dependency on technology than anyone could have foreseen and only magnified the importance of principals being knowledgeable and well-prepared to lead educational technology efforts inside and outside of the traditional brick and mortar schools.

Before the current pandemic, the impact of educational technology was recognized by administrators, teachers, students, and parents as they sought to increase student engagement, and that historical perspective is still relevant. In a 2017 Speak Up Research Project conducted by Project Tomorrow (2018), 400,000 K-12 students, parents, and educators were surveyed and 83% of parents said the effective use of technology within schools is important to their child's future success. Teachers, tasked with providing authentic, meaningful experiences that bring learning to live, agreed with parents, and 47% reported wanting help using technology to differentiate instruction. And what about students? The survey revealed that nine out of ten high school students have a smartphone, and the most frequently used device for schoolwork was that same smartphone (Project Tomorrow, 2018). 42% of students in grades 6-12 recognize using technology effectively is an important workplace skill but report they use their devices more out of school than in school. The most common way for today's students to learn how to do something is to watch online videos. Just over 75% of 6th to 8th graders and 90% of high school age students prefer YouTube over finding information in a book

(Project Tomorrow, 2018). All of these cultural changes necessitate a paradigm shift in the educational arena related to the role technology holds.

The statistics above do not just pertain to public school parents and students. In 2015-16, there were 5.8 million students in nonpublic schools in the United States accounting for 10.2% of all students enrolled in prekindergarten through 12th grade (McFarland, Hussar, Zhang, Wang, Wang, Hein, Diliberti, Forrest, Bullock, & Barmer, 2019). These enrollment numbers have fluctuated little since the turn of the century. The highest percentage of students in nonpublic schools was 11.4% in fall 1999, and the lowest was 9.6% in fall 2011 (McFarland, et al., 2019). Nonpublic schools, often referred to as private schools, fall outside of the control of the state or federal government and their financial support is primarily from sources other than public funds. Operation of nonpublic schools is the responsibility of individuals and agencies other than publicly elected or appointed officials (McFarland, et al., 2019).

Reportedly, teachers in nonpublic schools perceive they have substantially more influence (almost 25%) over public school teachers in establishing curriculum and setting student performance standards. For example, 67.5% of teachers in nonpublic schools versus 44.3% of teachers in public schools thought they had a lot of influence on establishing curriculum, and 62.5% versus 37.6% thought they had influence setting student performance standards (US Department of Education, 2003).

Whether the discourse is regarding public or nonpublic schools, the challenge is the same. That is, how to take today's students and prepare them for tomorrow's technologically infused world by training them for unknown technology jobs that don't exist yet? Thomas Friedman, in his 2007 book *The World is Flat*, offered qualities

needed by American education to cultivate an increased ability to compete in a global marketplace. Friedman asserts that education reform is more critical than at any other time in history as technology has leveled the playing field across the globe. He goes on to particularize the widening education gap between the U.S. and other countries, but he offers hope that a "flattened" world provides new opportunities for the Midwest to compete globally. Geographical borders no longer prohibit or even slow down our ability to change, purchase or innovate. While interviewing Microsoft's founder, Bill Gates, Friedman quoted Gates as saying, "I have never met the guy who doesn't know how to multiply who created software … You need to understand things in order to invent beyond them" (p. 365). Gates understood engineers and programmers would have to possess basic knowledge of simpler things to succeed with more complex technological innovations. Friedman stressed the importance of rigorous national standards and a much broader look at what current education has to offer today's students, referred to as 'digital natives', to use technology as a tool to advance further than any previous generation. What sets these students apart from previous generations is that "technology is now *part* of mental activity" (Prensky, 2013, p. 23, italics in original). Where technology was supplemental to previous generations, it is primary to digital natives. Prensky (2013) goes on to boldly claim that "students who don't have technology's powerful new capabilities at their command at every turn are not better 21st century humans but lesser ones" (p. 27). Schools are struggling to position themselves to produce better 21st century humans with an evolving understanding of technology's impact on learning (Baylor & Ritchie, 2002). While offering high quality thinking opportunities and skills

application, schools are tasked with developing learners who can create out-of-the-box innovations with in-the-box resources.

Educational institutions have sought to meet the demands to provide 21st century skills by making tremendous capital investments in technology (Anderson & Dexter, 2005). The financial outlay that was necessary to allow schools to amass equipment and build infrastructure has created a greater sense of urgency to demonstrate a return on the investment of technology expenditures (Fisher & Waller, 2013). Consequently, there is a higher degree of accountability resulting from such an immense investment, and that accountability should extend beyond the hardware and software that are available to the usefulness and integration ubiquitous technology affords.

When technology entered the classroom decades ago, studies appeared that purposed to look at the potential and use of technology as a support to teaching and learning (Baylor & Ritchie, 2002). In the years since, studies of technology in schools have encompassed more than availability of hardware and software, they have sought to explore how technology has become an integral part of teachers' pedagogy (Afshari, Bakar, Luan, Samah, & Fooi, 2009). Researchers have concluded that having equipment does not ensure technology integration any more than simply having a technology plan ensures successful implementation of that plan. In addition to a technology rich infrastructure, an instructional delivery shift is needed to net the desired results commensurate to the investment (Fisher & Waller, 2013).

Studies have shown that principals play a pivotal role as technology leaders (Afshari et al., 2009; Anderson & Dexter, 2005; Fisher & Waller, 2013; Shyr, 2017), and may have "considerable effect on the quality of the technology-supported learning

environment" (Anderson & Dexter, 2005, p. 55). Principals then, as technology leaders, are charged with helping teachers connect sound pedagogy to the idea of technology as an educational tool so change will occur in practice. To support teachers in making this pedagogical change, educational technology leaders must, therefore, demonstrate the need for changing knowledge and beliefs related to technology for lasting impact (Hughes & Zachariah, 2001). Consequently, then, "a tech integration effort is only as strong as the administrative support behind it" (Schaffhauser, 2009, p. 31), and principals are key to engaging teaching staff in a shared vision that merges high quality instruction with integrated technology (Fisher & Waller, 2013, Shyr, 2017).

As far back as 1980, principals were being considered technology leaders (Davies, 2010), and in the decades since there has been a consistent call for administrative patience and support for teachers to make the paradigm shift necessary to integrate technology (Dawson & Rakes, 2003) into instruction. Since the start of the 21st century researchers have proposed that the majority of decisions affecting technology in the classroom occur outside of the classroom (O'Dwyer, Russell, & Bebell, 2004). Therefore, looking beyond the classroom to administrative influences can provide better evidence of areas where substantial change may occur. Principals' impact on integration will increase as principals improve their understanding of their role as technology leaders, voice expectations of technology use in the classroom, and support teachers' use of technology in the classroom by assessing implementation of technology in the classroom. The burden to deliver technological understanding and integration lies with teachers while accountability and support rest with school administrators and principals. Recent studies have focused on technical resources more than principals' involvement in

supporting the use of these resources (Anderson & Dexter, 2005). However, research has also shown that principals' support of technology can improve practices in the classroom (Fisher & Waller, 2013; Hew & Brush, 2007; O'Dwyer et al., 2004) and influence teachers' efforts to integrate technology (Fisher & Waller, 2013).

Statement of the Problem

For many years lack of technology use in schools has been an interest of researchers (Zhao & Frank, 2003). There has been a concern that school leaders were more intentional with the acquisition of technology infrastructures (Fisher & Waller, 2013) rather than with integrating technology into curriculum. In fact, technology integration is considered to be one of the most challenging endeavors of the 21st century classroom (Scherer & Siddiq, 2015; Taimalu & Luik, 2019). Additionally, school leaders reported uncertainty on how to evaluate successful integration of technology (Kolb, 2019). Teachers, on the other hand, were more focused on teaching technology skills as opposed to incorporating technology into instructional methods for teaching and learning (Gorder, 2008). This has led to inconsistencies in defining technology integration in the literature and in practice (Gorder, 2008). Indeed, as educators refine the meaning of technology integration, there is a heightened awareness of the need for educational reform to focus on equipping the next generation with 21st century skills by encouraging teachers to look beyond technology as a tool to accomplish the same tasks (Chen, 2008; Fisher & Waller, 2013; Kolb, 2019, Prensky, 2013). As scholars continue to define the role of technology in education, classrooms continue to be transformed by it. Farjon, Smits and Voogt (2019) recently contended "Technology is considered to be successfully integrated into education when the use of technology enhances the learning process of

students and establishes more effective, efficient, and/or attractive education" (p. 81). This is a broad definition and leaves a lot of room for subjectivity regarding what is effective, efficient or attractive.

Studies have found lack of support by principals to be one of the most significant barriers to technology integration in the classroom (Fisher & Waller, 2013; Zhao & Frank, 2003). Integrating technology in the classroom is not a new phenomenon. Federal, state and local educators and policymakers have tried to keep up with ubiquitous technology for thirty years, and with the adoption of the National Education Technology Plan in 2010, there is greater focus on technology use leading to identification of areas that need further support and subsequent resource allocation. To eliminate this barrier to integration, principals need to understand their roles in supporting and assessing technology integration (Fisher & Waller, 2013). Moreover, Murphy (1997) advised that principals need to develop an understanding of how they are being perceived by teachers in that role, since teachers who report high levels of administrative support also report more and varied uses of technology for instruction.

While previous studies have found that the degree of technology integration is directly correlated to principal support (Anderson & Dexter, 2005; Bakir, 2015; Chang, 2012; Davies, 2010; Dawson & Rakes, 2003; Fisher & Waller, 2013; Hughes & Zachariah, 2001; Inan & Lowther, 2010; McCoy, Lyons, Coyne, & Darmody, 2016; Schrum, Galizio & Ledesma, 2011; Shyr, 2017), no studies have looked at the extent to which principals perceive they support technology. Extant research also has not provided an understanding of how principals evaluate technology integration. Davies (2010) called for studies where "the official and practiced roles of educational technologists

would provide useful information vital to understanding their involvement as technology leaders in schools" (p. 60). Moreover, Schrum, Galizio, and Ledesma's 2011 study called for research that looks at ways principals evaluate teacher use of technology integration. Recommendations for studies focusing on technology and evaluation have come from Ross, Morrison and Lowther (2010) who advocated for studies that investigate formative evaluation techniques for technology integration and Whale (2003) who called for similar investigation by delving into the idea of using technology as a criterion for teacher evaluations. Graham, Tripp, and Wentworth (2009) called for studies that look at how principals are supporting technology integration and Flanagan and Jacobsen (2003) noted that "Ongoing research is needed to understand the evolving role, competencies and dispositions towards technology and learning that principals require in order to be effective technology leaders, and how these are best developed and supported in practice" (p. 140). This study answered the call of Davies (2010), Schrum et al. (2011), Ross et al. (2010), Whale (2003), Graham et al. (2009), and Flanagan and Jacobsen (2003) by examining the roles of principals in supporting and evaluating teacher use of technology in their schools.

Purpose

The purpose of this study was to explore and better understand how high school principals support and evaluate teacher use of technology for classroom instruction in nonpublic schools. This investigation will be accomplished by collecting data from principals' self-perceptions of their roles as supporters and evaluators of teachers' use of technology for classroom instruction. The theoretical framework that will be used is Role

Identity theory. The usefulness of this theory as well as how it was used to guide date collection, analysis, and interpretation will be explained further in Chapter Two.

Research Questions

The study design was an explanatory multi-site qualitative study guided by the following research questions:

1. How do high school principals support teachers' use of technology for classroom instruction in nonpublic schools?
2. How do high school principals evaluate teachers' use of technology for classroom instruction in nonpublic schools?

Significance of the Study

The literature suggests that educational technology is a broad field with an ever-changing landscape as new technologies emerge (Ross et al., 2010). As teachers strive for clarity in the classroom regarding expectations, principals should likewise strive for clarity with teachers regarding what is expected for technology use and integration. Furthermore, actions that principals take to support technology can be influential to successful integration of technology. Much of the literature focuses on resources of technology rather than on leadership (Anderson & Dexter, 2005), but there is extensive research finding that principals have a positive impact on technology integration (Anderson & Dexter, 2005; Bakir, 2015; Chang, 2012; Davies, 2010; Dawson & Rakes, 2003; Fisher & Waller, 2013; Hughes & Zachariah, 2001; Inan & Lowther, 2010; Schrum et al., 2011; Shyr, 2017). Few studies exist, however, that consider principal support in collaboration with teachers' abilities to integrate technology (Hew & Brush, 2007; O'Dwyer et al., 2004). Therefore, more information on the official and practiced roles of

principals as leaders in technology integration is needed (Davies, 2010; Flanagan & Jacobsen, 2003; Graham et al., 2009; Schrum et al., 2011). Fisher and Waller (2013) demonstrated a clear need for principals to go beyond simply identifying the significance of the principals' roles and defining the "need for administrators to understand the methods and strategies involved in technology integration" (p. 30). Thus, this research will add to the literature in leadership and technology use in schools by exploring the support and evaluation of technology in secondary nonpublic schools.

There is a gap in the literature regarding how teachers are evaluated and held accountable for their use of technology in the classroom. Given that school improvement efforts are largely dependent on the role of the principal (Hughes & Zachariah, 2001) exploring principals' roles for technology use and implementation as well as investigating how principals support their teachers' use of technology may provide useful information to district leaders and state education departments for needed reform in this area. This study will be placed in the literature as informing district level administrators and building level administrators in making deliberative decisions as they seek to address the growing understanding and needs of technology leaders. Additionally, an exploratory look at principals' roles as technology leaders may help focus future professional development where it is most needed. Finally, accrediting agencies may find the information useful for development of observation tools to better assess technology use in various environments by both teachers and principals.

Definitions

Educational technology is a multi-faceted topic within the literature encompassing many definitions that are open to interpretation. To avoid ambiguity and confusion, I

have defined words in this section that are applicable to this study. I used these definitions as I approached the literature, collected data and analyzed the data.

- Administrators – A larger group of educational leaders comprised of subgroups of principals, assistant principals, technology leaders, and deans of students.
- Board of Trustees – For purposes of this study, the Board of Trustees refers to the governing body in a nonpublic school. The trustees are usually appointed, unpaid, and have policy and fiduciary responsibility for the nonpublic school. The also have oversight of a single employee, the Head of School.
- Head of School – The person who haw oversight of all divisions, activities, and employees in a nonpublic school. Often referred to as a Headmaster or Headmistress, this role is most similar to a Superintendent in the public school system. The Head of School is generally the only employee of the Board of Trustees in a nonpublic school.
- Nonpublic Schools – Private schools that operate outside the public school system. These school do not receive funding from their state government and are financially operated with tuition dollars and endowments. The nonpublic schools in this study are approved by an accrediting agency and have building level principals who answer to the Head of School. The Head of School answers to the Board of Trustees, and if the nonpublic school is church affiliated, the Board of Trustees generally answers to the church Elder Board.

- Principals – For purposes of this study, principals are operationally defined as members of the administrative team that have primary responsibilities that include pedagogical support and teacher evaluation.
- Technology Leader – an administrative leadership member designated to guide technology initiatives in a school.
- Technology – Information technology such as computers, iPads, devices that can be attached to computers (e.g., LCD projectors, interactive whiteboards and touch screens, digital cameras, document cameras, electronic voters), networks (e.g., Internet, local networks), and computer software.
- Technology Integration – For purposes of this study, technology integration is operationally defined as the use of technology for communication, student productivity, curricular design and teaching practice that includes creating new learning environments where students research, learn, teach, collaborate and solve problems in real world contexts (Earle, 2002).

Limitations

The study was limited by self-reported data from principal interviews that identified their support and evaluation of technology integration. The subjectivity of their answers or their level of honesty in answering the questions may be of concern. However, this limitation was addressed through triangulation of data as well as adherence to the same interview protocol for all participants. Finally, the study may be limited by the researcher who conducted the study. This researcher was a secondary principal employed in a private school in a southeastern state. The question of researcher bias will be discussed in Chapter Three, Role of the Researcher.

Limitations of Role Identity Theory

Stryker and Serpe (1982) explain society as "a multifaceted mosaic of interdependent but highly differentiated parts" (p. 205). Thus it follows that the *self* – as a reflection of society – is organized in an equally complex manner. Whereas the theory seeks to provide a lens for the study of individuals interacting with their environment, it is sociological and therefore it is not intended to be all inclusive or conclusive.

Delimitations

The study was delimited to nonpublic schools in the southeastern U.S. where the principal was part of a decision making team for faculty and/or student technology. Additionally, any potential generalizations are limited to secondary school principals in private schools. By limiting the sites to private schools, the findings may not be applicable to public schools. The use of multiple sites enhanced trustworthiness, but elementary and middle school principals and teachers were excluded. Nonpublic schools were chosen due to the increased autonomy in choosing their own curriculum and establishing their own evaluation methods. Secondary schools were chosen for the increased availability and use of technology due to Bring Your Own Device (BYOD) programs and one-to-one initiatives for students.

Organization of the Study

In this chapter, the statement of the problem, the purpose and the significance of the study have been given. Additionally, definitions pertinent to this research, limitations and delimitations were covered as were the research questions that guided this study. Chapter Two will offer a brief overview of technology use and availability in schools, standards for use, barriers for use, beliefs and perceptions and administrative factors and

roles that may impact instructional technology. The theoretical framework used for this study will be expounded upon. Chapter Three will detail the research design and provide the rational for this exploratory multi-site design. Chapter Four will present an analysis of the data and Chapter Five will be devoted to the findings, discussions and implications resultant from the research.

CHAPTER II

REVIEW OF THE LITERATURE

In Chapter One, the researcher provided an overview of the study. As noted, the purpose of this research was to explain the role of high school principals in supporting and evaluating the integration of technology in schools' instructional practices in nonpublic schools. The study was guided by the following research questions:

1. How do high school principals support teachers' use of technology for classroom instruction in nonpublic schools?
2. How do high school principals evaluate teachers' use of technology for classroom instruction in nonpublic schools?

This chapter begins with a summary of the search process. Following this, a review of pertinent literature related to educational technology, specifically availability in schools, will be presented. Professional standards for technology use will be examined as well as significant barriers to technology integration. A review of the literature related to the significant aspects of this study, that is, beliefs and perceptions of principals, and administrative factors that may impact instructional technology will be examined. The theoretical framework used for this study will be discussed and this review of literature will close with a reiteration of the gap found in the literature and, therefore, the need for this study.

The Search Process

This literature review began with a focused search for literature in the area of educational technology, specifically the area of a principal's role in evaluating and supporting the use of educational technology in the classroom. I found books by Lee and

Winzenried (2009), and Roblyer and Doering (2007) and determined their applicability to the topic at hand by reviewing the chapter titles and skimming the chapter contents. By consulting the works cited in the books, several authors appeared multiple times with work related to educational technology and principals' supporting roles. I expanded the search using Google Scholar's electronic database, ProQuest database and ERIC documents. The search was limited to articles from 2002 to present. Generally, studies before 2002 were not considered. The search was also limited to articles that were available from The University of Tennessee library. Initially the search terms were: *Educational technology, Principal's role in technology change, Integrating educational technology, Integrating instructional technology, Teaching technology, Technology as an instructional tool, Teachers' beliefs and attitudes on technology use, Instructional evaluation of teachers, Teacher evaluation, Support of instructional technology, Principals as technology leaders.*

Once promising articles had been located, the reference lists were used to find additional sources. Of particular interest were researchers in the field of technology leadership and thus, subsequent searches focused on those authors. A few studies from the 1900s were used but generally 2002 to current day research was given primary consideration. Dissertations were also examined and collected as PDFs also providing sources through the reference lists. Finally, peer-reviewed educational journal indices were scanned for useful studies including *Journal of Educational Technology & Society, Journal of Technology and Teacher Education, Journal of Technology, Learning and Assessment, Journal of Research on Technology in Education, Journal of Educational Computing Research, Educational Technology, Journal of the Research Center for*

Educational Technology, Educational Research Quarterly, School Effectiveness and School Improvement, Teaching and Teacher Education, and *Teacher Education Quarterly*.

Growth of Educational Technology

In 1983, the Secretary of Education released a report from the National Commission on Excellence in Education, "A Nation at Risk: The Imperative for Educational Reform," with a recommendation that high school students should be equipped to "understand the world of computers, electronics, and related technologies" (Gardner, 1983, p. 2). In fact, multiple studies in the past 10-15 years are based on a stated need that world-class education systems are necessary for globalized competition (Brown & Warshauer, 2006; Dawson & Rakes, 2003; Fisher & Waller, 2013; Flanagan & Jacobsen, 2003; Hew & Brush, 2007; Inan & Lowther, 2010; Redmann & Kotrlik, 2004; Thomas & Knezek, 2008). Indeed, technology skills must be mastered by teachers and students to ensure preparedness for citizenship. Simply stated, "instructional technology is considered to be key to educational quality as we enter the new millennium" (Afshari et al., 2009, p. 235).

Twenty-six years after "A Nation at Risk" President Obama challenged our nation's governors and state education chiefs to "develop standards and assessments that don't simply measure whether students can fill in a bubble on a test, but whether they possess 21st century skills like problem-solving and critical thinking and entrepreneurship and creativity" (US DOE, Office of Educational Technology, 2010, p. 26). The National Education Association emphasized the necessity of 21st century skills again in 2011 when the executive director, John I. Wilson, stated, "Learning in the 21st century takes new

thinking. . . . The 21st century skills are imperative to implement in our classrooms in order to prepare our students for our globalized workforce" (Stevens, 2011, para 4). More recently, the Office of Educational Technology (OET, 2017) stated, "to remain globally competitive and develop engaged citizens, our schools should weave 21st century competencies and expertise throughout the learning experience" (p. 10). Educational technology has drawn attention from reformers, policy makers, administrators, teachers, and businessmen for well over thirty years. In that time, the call to attention has changed little. If the United States is to remain globally competitive, schools must produce citizens who are well-prepared to take their place in innovative, technology-dependent professions.

Availability

The past 25 years have seen tremendous growth in the availability of technology in schools. In fact, from 1994 to 2005, the percentage of public classrooms in the United States with internet access grew from 3% to a staggering 94% (Wells, & Lewis, 2006) and is more recently reported to be 97% (Gray, Thomas, & Lewis, 2010). Student computer ratios are also at an all-time low of 2:1 (Gray et al., 2010). Even though technology has become more prevalent in our schools, the National Center for Educational Statistics stated that less than 50% of surveyed teachers report using technology during instructional time (Gray et al., 2010). In spite of such low use during instructional time, school systems continue to make heavy investments in technology infrastructures (Ma, Anderson, & Streith, 2005) in hopes that technology will significantly enhance learning and revolutionize teaching (Lee & Winzenried, 2009) as well as meet the mandates of *Every Student Succeeds Act* (ESSA, 2015). Regardless of

the extent of use, the costs of infrastructure and equipment are enormous. One would expect increased and measurable use of technology as a result of such investment by federal, state and local agencies.

Professional Standards for Technology Use

A country's ability to compete globally is, in large part, due to the effectiveness of its educational system (Thomas & Knezek, 2008). To ensure an individual school, system, state or nation remains competitive, standards are established, assessments are conducted, benchmarks are measured and policies are written. The sporadic availability and rapid growth of technology in the educational market has caused stakeholders across the globe to seek ways to align achievement with expectations. The most widely recognized organization to provide comprehensive standards for students, teachers, and administrators in the United States is the International Society for Technology in Education (ISTE) (Thomas & Knezek, 2008).

In 2001 the Collaborative for Technology, a consortium of thirteen professional organizations, released a set of standards intended to guide administrators through technology implementation (Anderson & Dexter, 2005). The standards were designed to focus on competencies thought most necessary for administrators to effectively fill their roles as technology leaders. The standards cover six critical areas with each containing 4 to 6 performance indicators published as the Technology Standards for School Administrators (TSSA, 2001). The six standards are: 1) Leadership and Vision, 2) Learning and Teaching, 3) Productivity and Professional Practice, 4) Support, Management and Operation, 5) Assessment and Evaluation, and 6) Social, Legal and Ethical issues (TSSA, 2001, pp. 6-7).

In 2002, the International Society for Technology in Education (ISTE) adopted the standards for administrators and incorporated them into their own model known as the National Educational Technology Standards for Administrators(NETS-A). These standards are the most current, widely accepted compilation of submissions highlighting the importance of competence related to technology in education (Anderson & Dexter, 2005). These standards promote the use of digital learning tools and identify best practices for how students, teachers and administrators should use technology.

Technology Use versus Integration

One of the common misconceptions around discussions involving technology integration is the idea that the goal is to help others learn *how* to use computers (Afshari et al., 2009). In today's educational environment, the conversation is more focused on technology integration which conveys a meaning of effectiveness in reforming classrooms (Gorder, 2008). Integrating technology is about helping teachers incorporate various forms of technology as a means for learning – not just doing the same things with a new tool, or doing things faster, but doing things differently (Afshari et al., 2009; Ritchie, 1996). Hughes and Zachariah (2001) put it this way: "integrating technology in a meaningful way is not as simple as using new tools to perform the same tasks" (p. 9). The focus should not be on the equipment (Fisher & Waller, 2013) and more technology does not always lead to increased integration (Earle, 2002; Fisher & Waller, 2013; Inan & Lowther, 2010). Integration of technology requires a paradigm shift involving an intellectual and a physical component. Further still, findings suggest the addition of technology without instructional modification does not net any additional student learning (Fisher & Waller, 2013). So, as Hightower (2009) suggested, counting

accessible pieces of technology needs to be secondary to "assessing their instructional utility, a consideration that often lies at the intersections of hardware, software, infrastructure, and the human factors of learning systems" (p. 32).

As suggested by Bebell, Russell, and O'Dwyer (2004), an investigation of how teachers are using technology should precede a study on the usefulness and outcomes of its integration. In the first decade of the 21st century, the highest three uses of technology by teachers were for preparation, email, and student use with teacher-direction (Bebell et al., 2004; Gorder, 2008). Gorder's survey of 174 K-12 teachers also noted that secondary teachers integrated and used technology more than elementary or middle school teachers. More recently, however, technology use in schools has been categorized as one of the following; for instructional preparation, for instructional delivery, and as a learning tool (Inan & Lowther, 2010).

Effectiveness of Integration

In Gorder's 2008 study, she sought to determine teachers' perceptions of instructional technology integration by surveying teachers who attended the Advanced Technology for Teaching and Learning Academy. Her findings were affirmed by Inan and Lowther (2010) with the identification of three types of teacher users: operators, who use technology for professional productivity; facilitators, who deliver instruction using technology; and integrators, who integrate technology into student learning. Gorder's results indicated that teachers were more successful at being operators and facilitators than integrators and the best way for teachers to develop integration is through practice, reflection and collaboration. Moreover, Inan and Lowther's study (2010) reported findings from 1,382 Tennessee public school teachers that reflect computer availability

most significantly increased computer technology use with overall support being the second most important factor to successful technology integration.

Teacher Perceptions, Beliefs and Practices

Extant literature has emphasized teachers' attitudes and beliefs about the potential of technology in the classroom as well as teacher beliefs about their capabilities to use technology with some degree of competence (Bakir, 2015; Cheok, Wong, Mohd Ayub, & Mahmud, 2016; Inan & Lowther, 2010; O'Dwyer et al., 2004; Ertmer & Ottenbreit-Leftwich, 2013; Lowther, Inan, Strahl, & Ross, 2008; Taimalu & Luik, 2019). Without a positive attitude toward technology, the likelihood of teacher use is significantly decreased (Henriksen, Mehta, & Rosenberg, 2019; Zhao & Frank, 2003). Additionally, prior experience and abilities influence success with technology integration. Investigating the importance of attitude, Baylor and Ritchie (2002) found that the primary predictor for technology integration was teacher openness to change and the principal's positive attitude toward technology. In addition, their attitudes led to greater incorporation and more frequent use of technology in the classroom. Similarly, Zhao and Frank (2003) found that the more strongly teachers perceived their teaching style aligned with computers, the more likely they were to use computers in the classroom. Zhao and Frank (2003) went on to report that the most effective way to change teacher beliefs about computers is to socialize teachers with each other regarding the value of computers.

Collaboration and mentoring is another practice found throughout the literature as having a positive effect on teachers' beliefs concerning their own technology use. Lowther et al. (2008) posited from their study of teachers in 26 schools that mentored teachers exhibited more confidence with technology and therefore, were more likely to

engage students with technology. In this study, mentored teachers displayed more positive beliefs about technology. According to the Digital Reports from Blackboard and Speak Up (2016) "three-quarters of district administrators (75%) say that in-school peer coaching and mentoring is the most effective way for teachers to learn how to use technology in the classroom" (p. 8). Collaborative opportunities or peer mentoring between knowledgeable and less knowledgeable teachers within a content area is one effective way to increase technology integration in the classroom (Ertmer, 2005). However, the impact of mentoring found by Lowther et al.'s 2008 study contradicts two previously conducted studies. Kincaid and Feldner (2002) used a profile assessment to gather data from 72 schools that were part of a North Dakota Teaching with Technology Initiative, and found the impact of mentors on teachers' readiness to integrate technology was not as strong as expected. One possible explanation offered was the lack of training offered the mentors. Zhao, Pugh, Sheldon, and Byers (2002) also found contradictory results that suggest teachers who are less reliant on other teachers have greater success integrating technology in the classroom.

Several organizational factors have been found to correlate to use of technology in the classroom. O'Dwyer et al. (2004) studied survey data from 1490 elementary teachers in Massachusetts that were collected as part of the Use, Support, and Effect of Instructional Technology (USEIT) Study to determine how technology use in the classroom was being influenced by teacher characteristics as well as local schools and districts. "Individual teacher characteristics such as constructivist beliefs, higher confidence using technology and positive beliefs about the efficacy of technology were each found to be associated with increased use of technology in the classroom"

(O'Dwyer et al., 2004, p. 2). Other factors were leadership practices and the emphasis the school and district leadership placed on technology as well as the type and amount of professional development associated with technology. O'Dwyer et al. (2004) also found that the type of restrictive policies related to technology use in the school affected teacher use of technology.

In the wake of O'Dwyer et al. (2004), Ma et al. (2005) sought to understand the role teachers' perceptions play in influencing teacher use of technology. They conducted a study of 84 pre-service teachers to determine factors that would influence teachers' intentions to use technology. These researchers found perceived usefulness and perceived ease of use to be the two motivational variables that significantly influenced the student teachers' intentions to use computer technology. Intention precedes actual use, making this study useful to administrators by providing insight into the important role they have encouraging teachers in their use of instructional technology.

Around the same time, Ertmer (2005) clarified a distinction in the literature between beliefs and knowledge and determined that the pedagogical beliefs which teachers hold about technology ultimately determine how and whether they will use technology in a meaningful way. In 2008, Chen sought to explore the pedagogical relationship further by looking at 12 high school teachers in Taiwan. By looking at teachers' pedagogical beliefs and teachers' technology integration practices, Chen was able to identify inconsistencies between beliefs and integration and attribute those differences to one of three categories: 1) external factors, 2) limited or improper understanding of constructivist theory, and 3) other contradictory beliefs with pedagogical beliefs. External factors included things outside of the teachers' control,

such as access to computers, lack of planning time and insufficient technical or administrative support. Regarding the second factor, none of the teachers in Chen's (2008) study expressed confidence in "how to design technology-based learning activities that would facilitate students' active knowledge construction" (p. 71). The third factor, contradictory or conflicting beliefs, included examples such as pressure to cover more content, give more tests, maintain order and structure all lessons to avoid the unexpected to reduce teacher anxiety. What Chen found was that the interplay between the three factors caused the inconsistency- not any one of them alone. In an area of uncertainty, the teachers "might be more likely to ignore or reject the proposed ideas and practices about how to implement technology integration" (p. 73). Chen stated that teachers, not administrators, determine what happens or doesn't happen in a classroom and therefore empowering teachers should become the focus for administrators who seek to change technology integration practices.

By way of a questionnaire, Inan and Lowther (2010) concurred with Chen's conclusion that teacher influence could have a profound effect on integration, and teacher's computer proficiency had the strongest effect on willingness to integrate technology. Teachers who reported higher proficiency exhibited stronger readiness and beliefs in technology and therefore a stronger willingness to put forth the effort needed for integration. This same study identified overall support and technical support as the next most significant factors in predicting successful integration. Interestingly, this study revealed that teachers' perceptions of computer proficiency decreased as teachers age and years of experience increased. Inan and Lowther (2010) surmised this was due to recent graduates from a teacher preparation program having more technological competence,

and older teachers having received professional training at a time when technology was not part of the customary preparation program (Ritchie, 1996). On a much smaller scale, Morris (2010) performed a qualitative study in Britain on six head teachers and ICT coordinators that produced similar results revealing newer, younger teachers demonstrated better skill with ICT skills in pedagogy and practice.

To conclude the literature review on teacher perceptions, a more recent study was conducted by Chang in 2012. He surveyed 605 Taiwanese elementary teachers to investigate perceptions of their principals' technology leadership. The findings revealed technology leadership in principals increased teachers' technology literacy and effectiveness. Therefore, Chang suggested a vision and a technology plan are musts for principals to be effective in technology leadership. More recent still, Jones and Dexter (2018) conducted a one-year mixed methods study on formal, informal, and independent professional development of four teachers, and they found that not much had changed since the turn of the century regarding the importance of teacher perceptions and self-efficacy to their willingness to attempt technology integration. In fact, Jones and Dexter (2018) noted that school districts are not keeping up with emerging technologies nor are they providing informal or independent professional development opportunities. Without technology leadership and a technology plan that provides sustained professional development, teachers are less likely to have the confidence necessary to create and develop instructional uses for technology. In 2019 Taimalu and Luik conducted a study of 54 educators and similarly concluded knowledge of technology gained through ongoing training and support is the best predictor of technology integration. "Teachers

need to believe that the use of technology will contribute to good teaching and the expected learning outcomes" (Taimalu & Luik, 2019, p. 102).

Barriers and Enablers to Integration

Ertmer (1999) drew on results of previously conducted studies examining how and why teachers were using technology in the classroom. Ertmer identified two types of barriers, first-order barriers and second-order barriers, that impact technology integration in the classroom. Her distinctions became widely used in future studies (Anderson & Dexter, 2005; Chen, 2008; Earle, 2002; Ertmer & Ottenbreit-Leftwich, 2010; Fisher & Waller, 2013; Hew & Brush, 2007; Inan & Lowther, 2010; Kopcha, 2012). First-order barriers are extrinsic to teachers and include a) software and hardware knowledge; b) training; c) planning time; d) professional development; e) access to hardware and software resources; f) technical support; and g) administrative support. Second-order barriers are internal to teachers and include a) confidence; b) beliefs about learning; and c) perceived value of technology to learning. Inan and Lowther (2010) found a clear connection between the teachers' perceptions of these barriers and their willingness to use instructional technology. In a later study, Ertmer and colleagues conducted document analysis and one to one interviews with 12 K-12 teachers to revisit the alignment of teachers' espoused pedagogical beliefs versus their enacted beliefs with technology. They found existing attitudes and beliefs and current levels of knowledge and skill to be the strongest barriers preventing teacher technology use (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012).

One of the first-order barriers to acceptance of technology in schools that has been the subject of studies for almost twenty years is computer competence of the

principals (Afshari et al., 2009; Murphy & Gunter, 1997; Ritchie, 1996). In addition to computer competence, Ritchie (1996), Murphy and Gunter (1997), and Bakir (2015) agree that a lack of administrative support is the most critical barrier to technology adoption and implementation. There is an incongruity in the relationship between the teachers' and principals' perceptions of support (Fisher & Waller, 2013; Murphy & Gunter, 1997) and Murphy and Gunter (1997) suggest the incongruity may be due in large part to a lack of physical evidence on the principals' part regarding technology leadership.

In 2007, Hew and Brush published a review of 48 empirical studies conducted between 1995 and 2006 that related to integrating technology in K-12 classrooms. Through their review of these studies, 123 barriers to integration were identified and reduced to the following six categories: 1) resources, 2) knowledge and skills, 3) institutional (leadership and school scheduling), 4) attitudes and beliefs, 5) assessment (i.e., time consuming high stakes testing), and 6) subject culture (beliefs about the usefulness of technology to a given subject). The second and 4th categories are second-order barriers, and the first, third, fifth and sixth categories are first-order barriers as identified by Ertmer (1999) and Hew and Brush (2007). The three most common barriers found by Hew and Brush (2007) were lack of resources, knowledge and skills, and attitudes and beliefs with lack of resources appearing most frequently in 40% of the studies analyzed. Lowther et al. (2008) also agreed that availability of resources was a critical factor to technology integration efforts. This category was a compilation of technology (or lack of access to technology), time, and technical support. Gorder (2008) likewise concluded time was a potential barrier to successful technology integration.

The second most frequently mentioned barrier to technology integration by Hew and Brush (2007) was knowledge and skills. Teachers' technological and content knowledge was a key barrier found by Lowther et al. (2008) as well. This was one of the primary reasons teachers gave for not integrating technology in their classrooms. Hughes (2005) conducted a multi-case study and emphasized that a technology-supported-pedagogy knowledge and skills base is critical for teachers to be able to integrate technology in their teaching. In a recent study of 54 teacher educators, Taimalu and Luik (2019) demonstrated the significant impact of pedagogical knowledge on teachers' self-efficacy beliefs and their willingness to use or not use technology. Likewise, other scholars have made the pedagogy connection to technology integration in more recent years (Collins & Halverson, 2018; Henriksen, Mehta, & Rosenberg, 2019). Once these barriers to technology integration are addressed, they can become the catalysts for successful implementation of technology in the classroom.

Hew and Brush (2007) also categorized five strategies to overcoming these barriers: 1) shared vision for a technology integration plan, 2) overcoming the scarcity of resources, 3) changing attitudes and beliefs, 4) providing professional development, and 5) reconsidering assessment. Of special interest is the remarkable increased access to technology since 2005 (Gray, et al., 2010) which has drastically reduced several of the first-order barriers. Ertmer et al. (2012) stipulate, however, that first-order barriers will likely never be completely eliminated. Nonetheless, the increased availability to technology found researchers refocusing and designing studies that explored the relationship between pedagogy and student-centered learning with technology which became known as '*technology integration'* (Dexter, Anderson, & Ronnkvist, 2002;

Ertmer, 2005; Ertmer et al., 2012). Ertmer, et al. (2012) conclude by stating "little will be gained if second-order barriers (knowledge and skills, attitudes and beliefs) are not addressed" (p. 433).

Impact of Administrative Support on Teacher Practice

Technical support and professional development aren't the only leadership components found in literature to affect high-quality technology integration. Hughes and Zachariah (2001) surveyed 40 teachers to ascertain their perceptions and found that the overall principal's leadership style influenced their beliefs about teaching and technology. They were primarily examining the relationship between the leadership style and the implementation of new technology. Hughes and Zachariah (2001) found a positive correlation between administrators who have a facilitative leadership style and those who support technology integration. They stressed the strength of leadership by stating:

> For technology to be used successfully as an instructional tool in the classroom, teachers must be willing and able to construct pedagogically sound reasons for doing so. Moreover, their own knowledge and beliefs about teaching, learning and technology will lead to the real changes in the classrooms. It is up to the leaders in our educational communities to align those changes in meaningful, productive directions for the future (Hughes & Zachariah, 2001, p. 10.)

There is extensive research finding that administrators have a positive impact on technology integration (Anderson & Dexter, 2005; Bakir, 2015; Chang, 2012; Davies, 2010; Dawson & Rakes, 2003; Fisher & Waller, 2013; Hughes & Zachariah, 2001; Inan

& Lowther, 2010; Murphy & Gunter, 1997; Roblyer & Doering, 2010; Schrum et al., 2011; Shyr, 2017). Administrators can and do affect how teachers are implementing technology in the classroom. (Murphy & Gunter, 1997). What is not clear, however, is how support, and evaluation overlap with teachers' abilities to integrate technology (Hew & Brush, 2007; O'Dwyer et al., 2004).

Principals' Roles as Technology Leaders

The role of a principal includes myriad responsibilities ranging from student disciplinarian to instructional coach. Leading technology integration adds one more assignment to an already full job description for a principal and requires knowledge, skill, leadership, and vision to refocus faculty pedagogically and technologically (Ertmer & Ottenbreit-Leftwich, 2013; Shyr, 2017). To accomplish this, more is needed than just placing additional computers in the classroom. Administrative support in the form of professional development directed at enhancing student learning, as well as collaborative opportunities, are required for successful integration (Inan & Lowther, 2010). Support should include strategies to improve teachers' competency and beliefs about the usefulness of technology in the classroom, resource allocation, and curricular alignment (Baylor & Ritchie, 2002). The *Every Student Succeeds Act* (2015) mandates that, to the extent appropriate, local education agencies must provide professional development to "build capacity for principals, other school leaders and local educational administrators to support teaching in using data and technology to improve instruction and personalize learning" (part C, section 4104). Thus, leading, learning, and training are now part of a principal's role.

Shifting Priorities

How then, can a school improve the use of effective instructional technology? Hughes and Zachariah (2001) suggested there is resistance from teachers and overcoming that resistance requires a values shift regarding teaching and learning. They surveyed 40 faculty members and found significant positive correlations between implementation of technology and "facilitative leadership and positive perceptions of overall building climate" (p. 6). Similarly, Gorder (2008) stated, "the most important factor is the teachers' ability to shape instructional technology activities to meet students' needs" (p. 63). Therefore, technology integration begins with teachers' beliefs and attitudes and is helped or hindered by administrative support. Nonetheless, there is little empirical evidence of the specific roles administrators play in influencing teachers' use of technology for teaching and learning (Odwyer et al., 2004). Multiple external factors can influence a school or district's adoption of technology. State standards, funding, and technical support are but a few factors that may limit administrators' efforts to increase technology in the classroom (Bakir, 2015; Straub, 2009). As technologies continue to expand, decisions about type of technology need to be continually considered and reconsidered.

Teacher Training. The *Every Student Succeeds Act* (2015) mandates that, to an appropriate level, schools must provide training for teachers that focuses on "the knowledge and skills to use technology effectively, including effective integration of technology, to improve instruction and student achievement" (*Every Student Succeeds Act*, 2015, part C, section 4104). Consequently, a practical suggestion for school administrators who want to increase usefulness and ease of use with technology would

include providing adequate opportunities through professional development to demonstrate ways technology can enhance instructional performance (Ma et al., 2005). Training that increases teachers' feelings of competency with computer technology can increase teachers' intention to use technology for teaching. Ma et al. (2005) suggested training "would most probably be one of the top priorities that school administrations need to tackle in the future" (p. 393). Similarly, Inan and Lowther (2010) and Gorder (2008) emphasized professional development as necessary to increasing teachers' competence resulting in integrated technology. Gorder (2008) suggested administrators intentionally identify efficient ways teachers can help each other with new technologies. Moreover, collaborative learning communities should provide teachers additional opportunities to reflect and share best teaching practices, especially in core content areas (Inan & Lowther, 2010; Gorder, 2008). In more recent research, Bakir (2015) conducted a study and found technology integration would be inconsistent at best without systematic faculty development. According to Bakir (2015) "Technology support needs to be consistent, reliable, and delivered in a timely manner by skillful personnel" (p. 127). Bakir identified funding and access to technology as two additional hindrances to technology implementation but found teacher pedagogical beliefs to be the biggest barrier to successful technology integration.

Pedagogy. Other more recent work by Ertmer and Ottenbreit-Leftwich (2013) highlighted the importance of viewing technology integration through a pedagogical lens and not just a technological one. Their research is interested in the *how* rather than the *what* of technology whether in teacher education, professional development opportunities, or in the day to day classroom. Ertmer and Ottenbreit-Leftwich (2013)

rely heavily on the work of Jonassen (1996) from the 1990s and best stated their shared philosophy here: "by turning our attention to the verbs of learning, we align more closely with what Jonassen urged us to do in 1996 – to shift our emphases from technological tools to pedagogical goals in both significant and impactful ways" (p. 2). The focus becomes how technology is being used to support learning goals.

Technology adoption in a school doesn't just affect teaching and learning. The extent of influence may not be related to pedagogy at all. For instance, Straub (2009) commented that any technological changes in a school, whether related to the Student Information System (SIS), phones or payroll, may have an effect on the teachers' environment and therefore, their attitudes about technology. Once attitudes are influenced negatively, teachers may find it more difficult to think pedagogically as opposed to technologically.

Principals' Perceptions

Empirical studies have shown that the leadership role of the principal is the primary factor that impacts successful technology integration (Afshari et al., 2009). Anderson and Dexter (2005) found similar results in their analysis of 866 principals in a 1998 survey. Generally, they identified a positive correlation between technology leadership and technology usage demonstrating that technology leadership is more important than technology infrastructure.

In a mixed-methods study of 310 principals in the southwest United States, Waxman, Boriack, Lee, and MacNeil (2013) collected data through questionnaires and interviews regarding principals' perceptions and orientations toward the major functions of technology. Specifically, they looked at perceptions of the importance of technology

and any differences that years of experience or gender made on the principals' perceptions. Their findings suggested principals with more than 15 years of experience most often believe instruction is the major function of technology with newer principals expressing communication as the most common major function. Furthermore, they found female principals more likely to view technology as a communication tool above technology as an instructional tool and the reverse for male principals.

Murphy and Gunter (1997) stated that effective technology integration is more likely to occur if leaders model, support, and express expectations for how technology should be used to support the curriculum. Of further interest was the finding by Anderson and Dexter in 2005 that principals are slower at integrating technology into their own practices than they are at implementing programs and policies for their school centered on technology use. Regardless, studies agree that administrative oversight is a necessary factor to successful integration. However, other than establishing the importance of the leadership, little has been studied in the past 15 years regarding the role principals play and the role they should adopt to be most supportive in bringing about technology integration in their schools.

Proficiency. Studies showed that principals' proficiency with technology is a critical factor in teachers' effective use of technology to support curricular objectives (Anderson & Dexter, 2005; Fisher & Waller, 2013; O'Dwyer et al., 2004). The National Education Technology Plan (NETP), released by the Department of Education in 2010, emphasized the need to have strong technology leadership. However, several studies have found administrator preparation programs lacking in this area by not requiring any demonstration of knowledge or skills in leadership ability to support teachers' effective

use of technology (Schrum et al., 2011). Hightower (2009) reported that only 10 states had any type of licensure requirement for technology competence for administrators or teachers. Lack of administrative proficiency was found by Fisher and Waller (2013) as well. Of the six survey questions Fisher and Waller (2013) asked, the lowest scored item related to "principals' abilities to ensure the effective integration of technology into curricular design, instructional strategies, and learning environment to maximize learning and improve teaching" (pp. 24-25). By providing training to principals, especially related to methods and strategies for integrating technology into the curriculum, principals will develop a deeper understanding of the challenges and be able to offer better leadership resulting in increased technology use (Dawson & Rakes, 2003).

Accountability. Technology has altered the way schools function in many ways. Communication has transformed from paper/pencil and face-to-face to email, texts and social media. Instructional tasks have shifted from posters to PowerPoint presentations, and hard copy textbooks are now more frequently available in digital form. Organizational tasks have taken shape with the assistance of spreadsheets, apps and databases; management is almost unrecognizable from 20 years ago as issues such as cyber bullying, online courses, and digital tools are the topics of today's administrator (Fisher & Waller, 2013). However, since the infusion of technology began some 30 years ago in K-12 classrooms, there has only been moderate transformation in best practices using technology and many classrooms still function under the same traditional methods (Henriksen et al., 2019; Zhao & Frank, 2003). Essentially, "simpler technologies requiring little adjustment to existing practices are more frequently used" (Zhao & Frank, 2003, p. 820). Therefore, as technology changes and continues to

expand, the role of the principal must grow and expand. "The role of the school leader is essential in helping teachers establish a culture that values risk taking, promotes exploration, and celebrates innovation" (Schrum et al., 2011, p. 254). Multiple studies demonstrate a positive correlation between technology leadership exhibited by the principal and teacher's technology integrated practices (Anderson & Dexter, 2005; Chang, 2012; Davies, 2010; Dawson & Rakes, 2003; Fisher and Waller, 2013; Inan & Lowther, 2010; Yu & Durrington, 2006).

Ultimately, there is strong agreement that teachers who receive more support, have more positive beliefs about technology, and have more confidence in their ability to use technology for instruction making them more likely to choose to integrate technology (Ertmer & Ottenbreit-Leftwich, 2010; Henriksen et al., 2019; Inan & Lowther, 2010; Kopcha, 2012). The importance of principals' positive attitudes has also been found significant in the use of technology. Several studies report that if principals are perceived by teachers as being positive and supportive of technology integration, teachers are more likely to risk integration in their classrooms (Anderson & Dexter, 2005; Baylor & Ritchie, 2002; Chang, 2012; Ritchie, 1996). The principal's role, then, is to empower and influence teachers to engage with students as they learn with a new tool. If principals understand the teachers' roles in integrating technology, then they will work to incorporate some accountability component in classroom observations and annual evaluations (McLeod & Richardson, 2013).

Public versus Nonpublic School Agency

When choosing education options for their children, parents have the primary decision-making role and have two options under our current system – public and

nonpublic. Regardless of the option chosen, parents perceive that schools and parents share the responsibility of educating children (Barna, 2014). There are numerous similarities and differences between the two types of schools, but for purposes of this literature review, only governance and resources will be discussed as they relate to school choice between public and nonpublic schools. Barna Group (2017), a research and resource organization focusing on tracking trends in faith, culture, leadership, and vocation in the U.S. conducted a study of 1371 parents in 2015 and identified the top four factors that are most important to parents when considering school choices. The factors were: safety, quality teachers, academic excellence, and character development. This study was conducted on the heels of a 2014 survey the Barna Group conducted in which only 7% of American adults rated the current public schools as very effective. In 1997, the U.S. Department of Education released findings from The Condition of Education 1997 asserting, "private schools have a climate that would appear to be more conducive to learning, including greater safety and fewer problems caused by students having poor attitudes toward learning or negative interactions with teachers" (U.S. Department of Education, 1997, p. 31).

Governance

Public schools are subject to the control of a local school board while nonpublic schools are managed by their own school boards and subject to much less legislation related to teacher qualifications, curriculum, and admission requirements. Nonpublic schools offer school leaders and parents greater opportunities for influencing school operations. These schools are more likely to consider offering services and programs that

are competitive to attract a broad range of students which will, in turn, allow them to be more selective in who is admitted and who is not.

Public schools have open enrollment, and nonpublic schools have competitive and often rigorous entrance standards allowing them to refuse admission to applicants who do not meet the standards held by individual nonpublic schools (Epple & Romano, 1998; Shanker, 1993). Academically then, nonpublic schools have been found to perform better on standardized tests – perhaps due to higher performing students being admitted to the schools initially (Shanker, 1993). Additionally, the demographics of nonpublic school can look very different than their public counterparts since study body composition can be more controlled by admission interviews with students and parents.

A key distinction between the governance of public and nonpublic schools is the way decisions are made. Generally nonpublic schools are known for decentralized decision making (Choy, 1997). Decisions about discipline, curriculum and policies are more commonly made at the building level for nonpublic schools while those same decisions are made at the district level for public schools. School level administrators are then left to determine appropriate implementation.

Resources

There are tremendous costs involved in providing quality education in both the public and nonpublic sectors. Public schools are funded with local property taxes as well as state and federal funds. Such schools are considered government owned and subject to local, state and federal legislation (Shleifer, 1998). By contrast, nonpublic schools are financed with private tuition dollars and endowments as well as other public sources, such as religious groups. The source of financial provision creates differences in material

resources from the large (buildings) to the small (textbooks). Access to funding may create a variety of program opportunities and differences (Choy, 1997). For instance, nonpublic high schools have more rigorous academics and graduation requirements, but fewer academic support and health-related services (Choy, 1997).

This study will include data collected from nonpublic schools. Technology resource decisions are not generally made at the building level in public schools. Therefore, nonpublic schools were more attractive sites for this research.

Theoretical Framework

Roles of teachers and principals have changed significantly in the past twenty years due to technological changes, economic conditions, and globalization resulting from social networking and the internet. Due to these changing roles, harmonious understanding of principals' roles in supporting and evaluating technology use in the classroom can lead to more successful integration of technology and better teaching methods (Kannan, Sharma, & Abdullah, 2013; Murphy & Gunter, 1997; Schulter, 2006; Yee, 2000). Role Identity theory was the lens used for this study to explain principals' perceptions of principals' support and evaluation of technology at the secondary level in nonpublic schools. As principals perceive the role of the principal as a technology supporter to be socially valuable, it is believed there will be a positive effect, resulting in motivational power (Petkus, 1996) to perpetuate the principals' performance in that role.

Historical Development and Key Figures of Role Identity Theory

Role Identity theory grew from another framework known as Symbolic Interactionism. The ideas for the theory were first presented by George Mead in 1934 (Stryker & Burke, 2000), but the term itself is credited to Herbert Blumer in 1937

(Stryker & Serpe, 1982). The theory was further refined in 1966 and became known as Role Identity theory (McCall & Simmons, 1966) and furthered still as Identity theory (Grube & Piliavin, 2000).

Mead's framework was relatively simple with three main components: society, self, and behavior (Mead, 1934). Initially, Mead sought to explain resultant behaviors based on the interactions of society and self (Stryker & Serpe, 1982). Mead posited that all situations and events in our lives involve identifying our surroundings and establishing meaning for them. The *things* in our environment may be categorically arranged or even socially identified. By using categories in such a manner, we create, as Mead noted, a social identity which is different than a personal identity (McCall & Simmons, 1966). Social identities carry with them a set of expectations that are normally known as social roles (Grube & Piliavin, 2000; McCall & Simmons, 1966). Contemporary sociologists expanded on Mead's simplistic frame and began explaining a two-directional theory that described how social structure affects self and how self affects social behavior (Stryker & Burke, 2000). In other words, structured roles share a reciprocal relationship with the self which shares a reciprocal relationship with social behavior (Stryker & Serpe, 1982).

McCall and Simmons (1966) differentiated between role-performance (to meet a set of established social expectations) and a more subjective perspective of a role that is responsive to the individual's *self*, "It is our view that the importance of self lies not in its reflexive churnings and seethings, but in its directive influence on human behavior" (p. 8). They sought explanations beyond the simple questions of "WHO comes together to engage in WHAT social acts WHEN and WHERE?" (p. 2). Their primary interest was

on how and why individuals interact as they do and they tried to answer that question by examining the semantic aspects of the self as opposed to the functional aspects.

Self is "essentially a set of such role-identities organized according to dynamic hierarchical principals" (McCall & Simmons, 1966, p. xvi). As McCall and Simmons furthered their framework for a role identity model, they asserted that a role identity is how a person thinks of himself acting based on a specific societal position. Such a view is imaginative, idealized and dramaturgical in nature. Their more traditional theory then subscribed to the idea that individuals become the actors that identify what needs to be considered in a given situation and they behave accordingly to accomplish their goals. The caveat is that individuals may define situations using their own perceptions resulting in a society that is ever-changing, subjectively-defined and possessing an anything-goes structure. Such self-assigned role-identities determine our interpretations and responses to the situations and people around us, becoming conventional and culturally normal.

Peter Burke grounded his early work on Social Identity theory, a more general theory than Role Identity theory, in the idea that behavior and identity are linked through meaning. If meaning could be determined for an identity, then meaning of behavior could be predicted (Stets, 2006). Stryker and Burke (2000) are also credited with furthering Identity theory and emphasized that Identity theory has more in common with role identities than social identities. They concluded that role identities imply a duality. "Role is external; it is linked to social positions within the social structure. Identity is internal, consisting of internalized meanings and expectations associated with a role" (p. 289).

In the 1980s Stryker and his colleagues included emotions as part of their identity models and in the 1990s Burke and his colleagues came to the same conclusions in their research (Stets, 2006; Stryker & Burke, 2000). In 2000, Stryker and Burke collaborated to again emphasize the importance of emotions and stated boldly that where there are discrepancies in the meanings of the situation and the self, negative emotions will be found. Conversely, where there is a match in meanings, positive emotions will result (Stryker & Burke, 2000).

Main Tenets of Role Identity Theory

Reviewing the main tenets of Role Identity theory begins with the identification of two aspects of role-identity, the conventional and the idiosyncratic (McCall & Simmons, 1966). The conventional are the culturally accepted and the idiosyncratic are the individual embellishments we add. The proportion of the two varies, but we are constantly working to maintain them to legitimate our role-identities. As we balance our roles, our purpose in life is affirmed and our sense of well-being increases (Thoits, 2012). Once we claim an identity, we step into a dual role of persuading ourselves and others that our role is legitimate.

The act of persuading others is known as *role support*. Defined more succinctly, it is "the expressive implications of other's reactions" (McCall & Simmons, 1966, p. 71). There is almost always some discrepancy between our role-identity and the interpretation and construction of others, not to mention the complexity added by each person having multiple role-identities. Conversely, there is a structured approach that is more anchored and predictable. Structural interactions happen within individuals and between individuals, and thus behaviors may be patterned in an individual or a group of similar

individuals allowing for stereotypes (Stets, 2006). Interactions between individuals can also be studied to build a foundational understanding of social norms on which social structure is based. Within these interactions, individuals are constantly receiving feedback and adjusting their behavior creating a continual cycle of re-structuring society.

Using McCall and Simmons' (1966) model of Role Identity theory, three concepts are considered to improve meaning and increase understanding. The three processes that individuals participate in to establish and maintain their identities are: identity, identity salience, and commitment. Each works in harmony with the others to provide explanatory power such that, "commitment affects identity salience which in turn affects role-related behavioral choices" (Stryker & Serpe, 1982, p. 207). Note the similarity of this statement to the flow presented in Symbolic Interactionism: from society - to self - to social behavior.

Identity. The identity is a composition of a person's role and identity. As suggested by Schmidt (2000), role is about purpose. That purpose may be of one's own making or a compilation of others' input. One individual may have as many roles or identities as people with whom there are relationships (Stryker & Burke, 2000). This is also known as role performance, and each role contributes to the *self* (McCall & Simmons, 1966). McCall and Simmons go on to define a person's role identity as "the imaginative view of himself as he likes to think of himself being and acting as an occupant" (p. 65). They offer two distinctions. The first is rooted in the word *role* of role identities and is a more conventional dimension that is related to the external, or social, expectations tied to social position (Stets, 2006; Stryker & Burke, 2000). This is usually known to us as common culture. The second dimension is rooted in the word

identities of role identities and is internal and idiosyncratic in nature, recognizing that each of us brings a unique interpretation to our roles (Stets, 2006; Stryker & Burke, 2000). A teacher, for instance, may see himself conventionally in a role as an educator and instructor. Idiosyncratically, however, the teacher understands his identity is that of a mentor and a confidante.

Yet another component of identity is the person identity. Person identity is the meanings that sustain the self apart from a given group or role. This component is comprised of more characteristics and behaviors such as dominant or submissive, assertive or aggressive, good or bad, permissive or legalistic. The person identity is simultaneously present in all social and role identity situations. In fact, according to Stets (2006), all three - social, role, and person, are intertwined in all situations.

Role identities are based on negotiations of roles and counter-roles (McCall & Simmons, 1966; Stets, 2006). As previously stated each person brings his/her own perception of his/her own role as well as a perception of the other person's role and hence, some coordination, negotiation and compromise are generally required. When conflicts arise, negative emotions may erupt and individuals will seek to resolve the conflicts through one of several methods (Stets, 2006).

Stets (2006), suggested that methods of resolution may involve short-term credit which is where a person overlooks the conflict because of previous support for an identity. Another method of resolving conflicts is selective perception where an individual only attends to that which is supportive and ignores what isn't. Similarly, individuals may engage in selective interpretation where cues are interpreted as supportive when they really aren't. Stets (2006) offered additional approaches to

resolving conflict such as: blaming, criticizing, sanctioning, disavowing, changing identities, and withdrawing. All of these methods avoid the pain and discomfort associated with unaffirmed identities and all the while the individual is seeking to balance internal processes to legitimate the *self* (Burke, 1980; Burke & Reitzes, 1991).

Identity salience. Identity salience refers to the hierarchical organization of the identities (or roles) a person has. The salience in any given situation may change based on the need for a role to be invoked. Thus, each identity's position in the hierarchy is its salience (Stryker & Serpe, 1982).

Individuals possess more than one role at a time. Our multiple identities exist in a patterned hierarchy of prominence that is determined by how intensely we are committed to our own perception of ourselves in a given position and how supported we feel by others whose opinions matter (McCall & Simmons, 1966). Additionally, extrinsic and intrinsic gratification can affect the prominence, which is fluid and changes as any of the factors change (McCall & Simmons, 1966; Stets, 2006). The hierarchy, therefore, demonstrates the individual's priorities reflecting the ideal self (Stets, 2006). McCall and Simmons (1966) have identified five determinants that affect salience, or notable significance, of a role identity: "(1) its prominence; (2) its need of support; the person's need or desire for the kinds and amounts of (3) intrinsic and (4) extrinsic gratification ordinarily gained through its performance; and (5) the perceived degree of opportunity for its profitable enactment in the present circumstances" (pp. 81-82). These factors are not of equal importance and actually allow us to distinguish between a temporary hierarchy of identity, known as the situational self, and an enduring hierarchy, or ideal self, that is more stable and predictable (Stets, 2006).

Commitment. Commitment is defined by Stryker and Serpe (1982) as "the degree to which the person's relationships to specified sets of others depends on his or her being a particular kind of person, i.e., occupying a particular position in an organized structure of relationship and playing a particular role" (p. 207). This concept is a reflection of a societal acceptance to a particular role. A person will only be as committed to a position as the level of importance he/she places on the relationships or organization depending on that position. As perceived importance is increased, self-esteem will increase and commitment to the role will increase (Grube & Piliavin, 2000; Stets, 2006). McCall & Simmons (1966) expressed commitment as a gamble that an individual takes on his/her ability to live up to his/her self-conception. Using that understanding of commitment, Burke and Reitzes (1991) described commitment as a set of self-meanings, not an activity or relationship with another person. Instead they stated, "people pursue lines of activity which sustain and support their identities to the extent they are committed to those identities" (p. 250). They further explained that the stronger the commitment, the greater the ability to predict from meaning to performance.

Summary. The three concepts of identity, identity salience and commitment are integral to the iterative process of forming social culture. Individuals reflect on their role or place within their culture and develop social identities or group memberships accordingly (Stets, 2006). In a later publication, Stets (2010) offers a concise explanation of the connection between role identities and self-efficacy.

> By verifying role identities – that is, behaving in ways consistent with the meanings and expectations associated with role identities – individuals come to have a heightened sense of self-efficacy. They feel competent and effective. As a

> result of this strong feeling of competence, persons with higher self-efficacy are more likely to engage in difficult behaviors that they have not tried before because they have the expectation they will successfully carry out those behaviors. Persons who have low levels of self-efficacy are more likely to shy away from problematic situations because they feel that they will fail. Self-efficacy arises from the successful verification of role identities. People with high self-efficacy try more things and thus have the opportunity to learn they are successful. In contrast, because people with low self-efficacy tend not to make the effort, they may not have the opportunity to learn about the things they are good at (p. 650).

The other part of the iterative process leads individuals to develop perceptions of specific roles as they relate to counter-roles. Therefore, a role-identity exists only in the presence of a counter identity (Burke, 1980). For instance, a parent role exists only because of a child role, a teacher role exists only because of a student role, and a principal role exists only because of a teacher role. Thus, people will aim to fulfill their self-expectations but those expectations don't exist outside of social expectations (McCall & Simmons, 1966).

Conclusion

This review of literature began with a look at the almost 35 year history of technology in education. Specifically, the availability of technology was reviewed as were the ISTE recommended standards. The differences between use and integration of technology were discussed and effectiveness of technology integration was examined as well as the effects of perceptions, beliefs and practices. Teacher's pedagogical beliefs and efficacy of technology beliefs were discussed as they exist in literature. Barriers to

technology integration were classified as first and second order. The literature then elaborated on enablers to technology integration and identified the importance of administrative support as one of the most significant. A list of five strategies to overcoming barriers was followed by a discussion on the shifting roles of principals. The chapter concluded with an in-depth look at Role Identity theory, the theoretical framework used for this research. Chapter Three will provide a discussion of the methodology used for this study.

CHAPTER III

METHODOLOGY

The purpose of this qualitative, explanatory, multi-site study was to explore and better understand how high school principals support, and evaluate teacher use of technology for classroom instruction in nonpublic schools. The study sought to answer the following questions:

1. How do high school principals support teachers' use of technology for classroom instruction in nonpublic schools?
2. How do high school principals evaluate teachers' use of technology for classroom instruction in nonpublic schools?

This chapter describes the methodology used to conduct the study. Included is a graphic representation of the research design and a rationale for choosing this design. Explanations are included that detail how the qualitative methods worked together to accomplish the purpose of the study. Additionally, the role of the researcher, site and sample selection, data collection and instrumentation are discussed. Methods of verification are explained, and the chapter concludes with a summary of the methodology used for this study.

Type of Design

After careful consideration, I determined a directed content analysis approach to be the best research design to explore this topic. The aim of this model is to describe a phenomenon and validate or describe it in conceptual form (Elo & Kyngas, 2008). Key concepts or variables from a theory or model in the literature are identified as initial categories in the coding process. "With a directed approach, analysis starts with a theory

or relevant research findings as guidance for critical codes (Hsieh &b Shannon, 2005, p. 1277). The model used to identify initial categories was the Technology Standards for School Administrators (TSSA) which consists of six standards as previously mentioned. The outcome of the analysis provides a condensed yet broad description of the essential elements under study. Vaismoradi, Turunen, and Bondas (2013) describe content analysis as "a systematic coding and categorizing approach used for exploring large amounts of textual information unobtrusively to determine trends and patterns of words use, their frequency, their relationships and the structures and discourses of communication" (p. 400). A directed content analysis approach was selected to provide a deeper understanding of the relationships that exist in and around technology leadership roles, specifically of principals as they support and evaluate teachers' use of technology in the classroom in nonpublic secondary schools.

The three features of directed content analysis that lend credence to its appropriate use in this study are that it is systematic, it reduces data, and it is flexible (Schreier, 2012). The goal of the qualitative questions in this study was to explain technology support and evaluation and how they are connected to the role of the secondary principal in a school through the perspectives and experiences of the principal. Because I conducted interviews with principals at multiple sites and gathered field notes and documents for review, the flexibility and systematic reduction of data was necessary to support the purpose and research questions of this study.

In this study similar sites were deliberately chosen to afford a direct replication. The multiple sites increased the credibility and generalizability of the findings (Anney, 2014; Merriam, 2009). Purposeful sampling was used to select the sites as well as the

samples within the sites to maximize discovery and understanding (Merriam, 2009). Lincoln and Guba (1985) suggested that purposive sampling increases the range and scope of data as well as allowing a researcher to uncover a "full array of multiple realities" (p. 40). Figure 1 provides a graphic representation of the research design used for this study including the research questions, data collection steps and data analysis steps.

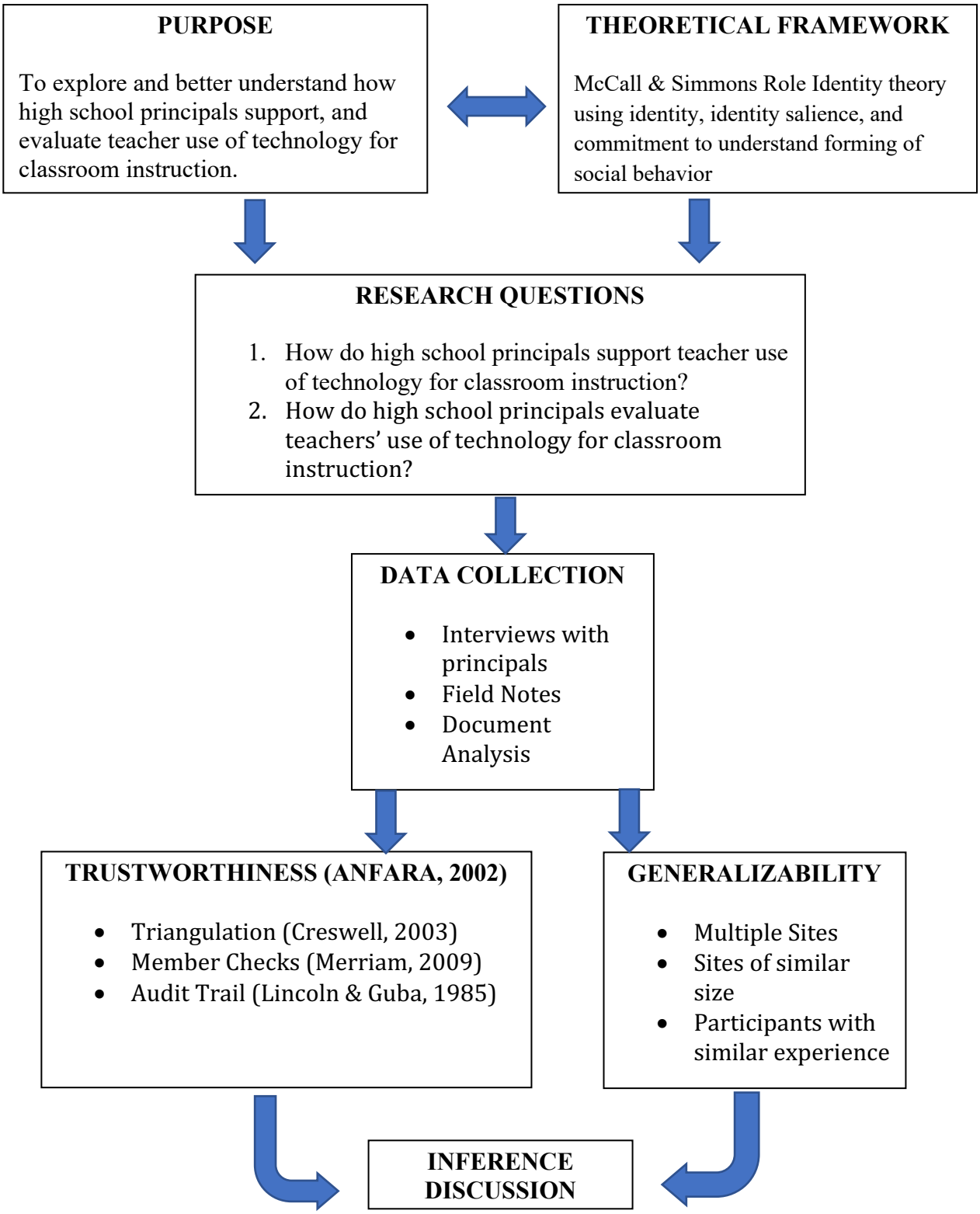

Figure 1. Research Design Flowchart

Rationale for a Qualitative Design

The problem, purpose and questions of this study were determined to best be answered by an explanatory qualitative study and the specific strategy that best matched the needs of the study was a directed content analysis. Qualitative researchers, according to Merriam (2009), are motivated to understand the meaning individuals have attributed to the world based on their experiences. By examining how principals support and evaluate technology use through Role Identity theory, the experiences of principals and their perceptions of their roles added meaning to the topic of this study. A directed content analysis was the most applicable approach because it uses a deductive process where the initial coding categories were chosen from a pre-existing model (Elo & Kyngas, 2008; Hsieh & Shannon, 2005). The model used for the codes was the National Educational Standards for School Administrators (NETS-A). The six domains of the NETS-A are 1) Leadership and Vision, 2) Learning and Teaching, 3) Productivity and Professional Practice, 4) Support, Management and Operations, 5) Assessment and Evaluation, and 6) Social, Legal and Ethical Issues. With data collected primarily through interviews, directed content analysis allowed for semi-structured questioning providing a collection of descriptive evidence (Hsieh & Shannon, 2005). By including field notes from the school settings, I aimed to "study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them" (Denzin and Lincoln, 2005, p. 3).

Merriam (2009) maintains the researcher, as the primary instrument in a qualitative study, is used to capture the essence of what is being studied from the

participant's perspective, not the researchers. This is known as the emic or insider's perspective. With the use of interviews, field notes, and document analyses, perspectives of principals were used to understand their constructed meaning when supporting and evaluating technology use in secondary classrooms. Quantitative methods would not have produced rich, thick descriptions of the topic being studied. Therefore, a qualitative approach was determined to be the more appropriate method to fulfill the purpose and answer the research questions for this study.

Role of the Researcher

The researcher, according to Merriam (2008), "is the primary instrument for data collection and analysis" (p. 15). Creswell (2003) extended this concept to say, "qualitative research is interpretative research, with the inquirer typically involved in a sustaining and intensive experience with participants" (p. 184). The eyes and ears of the researcher record and process the information gathered. This role provides potential for bias on the part of the researcher (Merriam, 2008; Yin, 2009) and should be recognized before data is collected and analyzed.

While collecting data for this study, I was a secondary school principal at a nonpublic school. In this role, I was the primary instructional leader for the high school faculty and performed teacher evaluations. I was instrumental in expanding available technologies in my school and was familiar with the personal struggles teachers faced as they attempted to integrate technology. I was also quite familiar with the multi-faceted role of technology leadership in a one-to-one initiative. I am a licensed teacher with 30 years of classroom experience and a constructivist paradigm - believing experience with technology is a much better teacher than training. As a constructivist researcher, I sought

to explain and provide understanding and structure to what was learned through a more personal and interactive method. I relied on the "participant's views of the situation being studied" (Creswell, 2003, p. 8) to generate meanings and identify emerging patterns throughout the research process as opposed to making predictions or proving a theory.

Therefore, controlling the potential for bias with this paradigm was important. Merriam (2009) cautions against preconceived ideas by reflecting on one's own experiences. This is referred to as bracketing of ideas and aids the researcher in understanding how and what meaning participants construct about events in their lives. Simon (2011) describes it as a process that creates distance from previously held notions by becoming a nonparticipant observer. This place of suspended judgement is best achieved by practicing reflexivity, a key thinking activity to keep the researcher more aware of positions and potential biases and thereby minimizing their influence (Chan, Fung, & Chien, 2013). To eliminate the opportunity for bias as an influence, I maintained a reflexivity journal where I documented my positions as well as thoughts, feelings and perceptions during the data collection and analysis of this study. Another bracketing strategy employed during this study included using semi-structured interviews which allowed me to take cues from the participants. Being reflexive and conducting bracketing, the practice of intentionally creating distance between held beliefs, notions, values, and experiences, decreased the likelihood of bias and added to the trustworthiness of data collection and analysis (Chan, Fung, & Chien, 2013).

Using multiple data collection tools, the data were triangulated with interviews, field notes, and document reviews. Furthermore, confirmability with member checks

increased objectivity by validating the interview data. Such an approach allowed me to study the reality of technology support and evaluation as the principals constructed it.

Site and Participant Selection

For this study, I employed a purposeful sampling process. Intentionality in choosing participants best provided data needed to answer the research questions guiding the study. According to Creswell, a researcher should select "individuals and sites for a study because they can purposefully inform an understanding of the research problem and central phenomenon in the study" (2009, p. 156). To increase likelihood that findings from this study may be generalizable to similar schools, I gathered data from schools of similar size and make-up. I focused on nonpublic schools in the state of Tennessee. Further criteria are discussed in the respective sections below.

Sites

I chose the selected sites for this explanatory study from nonpublic, Category 2, secondary schools as identified by the State of Tennessee Department of Education web site. Category 2 schools were chosen due to the broad association with nine different accrediting agencies approved by the State Board of Education. As of October, 2018 there were 121 Category 2 schools in Tennessee with more schools having affiliation through membership or accreditation with the Association of Christian Schools International (ACSI) (n=32) than any of the other eight accrediting agencies (Tidwell, 2018). Therefore, the pool of Category 2 schools chosen for this study was narrowed further to only include schools with ACSI accreditation (n=19). Finally, school selection was filtered to only include schools with: 1) 45 or more teachers, 2) 500 or more students in K-12, and 3) a brick and mortar secondary level program (n=9). These qualifications

for participation were deemed to best suit the nature of what was being studied that is, the roles and relationships of principals in supporting and evaluating teacher use of technology in the classroom.

For each of the nine schools, I made contact by sending an email to the head of school to determine the proper procedures and protocols for gaining approval to conduct the study. I provided each head of school an overview of the study in the email. Upon receiving approval from the heads of school, I contacted secondary principals by email at each school to obtain consent to participate in the study.

Once I contacted the nine schools, a table was created to organize the schools' demographics. The table listed the name of each potential school, the head of school, the principal, the number of teachers, number of students, as well as the date approval was granted to conduct the study by the head of school and the principal. When approval was granted, the table was color coded to indicate schools who agreed to participate. Green was used to distinguish approval and red was used for schools who declined. Yellow was used for schools who failed to respond to the email invitation to participate. Once I identified all of the participating schools, pseudonyms were assigned to identify schools and participants in a manner that provided anonymity and confidentiality as seen in Table 1.

Table 1

Pseudonym Assignment for Schools and Participants

School Name	Principal Name
Ambassador High	Mr. Anders
Jefferson Academy	Mr. Jones
Masonville	Mrs. Mahoney
Mountview	Mr. Morgan
Northside Academy	Mr. Nash
Thomasville	Mr. Turbish

Of the nine identified schools, six agreed to participate in the study. Four were in the eastern part of the state. Two were in the middle part of the state, and no schools agreed to participate from the western part of the state.

Of the six schools that agreed to participate two had grades PreK-12 with populations greater than 500 students, three had grades K-12, and one had grades 6-12 with populations greater than 500 students. Population varied for grades 9-12 and Table 2 provides school demographics for each of the participating schools to build background and provide context. Names of all participating schools and principals were coded to ensure confidentiality.

Table 2

Demographic Information for Participating Sites

School Name	Grade Levels	Total number of teachers	Total Number of students	Number of students 9-12
Northside Academy	K-12	80	719	184
Thomasville	K-12	67	851	290
Mountview	K-12	45	519	116
Jefferson Academy	PreK-12	50	543	160
Masonville	PreK-12	56	1037	320
Ambassador High	6-12	88	784	464

Participants

To answer the research questions for the study, which sought to explain how principals perceived they support and evaluate teachers' use of technology, data were gathered from principals using purposive sampling. Merriam (2009) posits that "Purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned" (p. 77). Consequently, the criteria for the principal interviews included the participant as a current secondary principal at a nonpublic, Category 2, school and he or she voluntarily agreed to participate in semi-structured interviews. The size of the sample for the qualitative data collected was determined by "informational

considerations" (Lincoln & Guba, 1985, p. 202). No additional criteria were set for the purposeful sample regarding race, ethnicity, students with disabilities, community type, or satellite program availability.

Data Collection Procedures

After obtaining IRB approval from The University of Tennessee, I obtained head of school email addresses from the State of Tennessee Department of Education web site. I sent an introductory email to each head of school containing an explanation of the study and a request to contact their secondary principal for participation. By replying to my email and providing contact information for the secondary principal, they granted permission for me to contact the principal. Upon receipt of the email from the head of school, I sent an email to the principal containing an explanation of the study, a statement ensuring their identity would be kept confidential and the email also specified that data retrieved from their responses would only be used for this study. The introductory email requested an email reply to schedule an interview. I scheduled interviews at the participants' schools in a private space of their choosing. At the beginning of the interview, I asked each principal to read and sign a form giving consent to the face-to-face interview and then given the opportunity to ask questions about the study. If I didn't receive a respone from a head of school or principal within two weeks after the original email to the head of school or two weeks after emailing the principal, I sent a reminder email to the head of school and/or principal encouraging them to participate. At the end of one month, I sent a second follow up email and two weeks later, non-responsive heads of school and/or principals were removed from the list of potential schools.

Data for this study were collected through interviews with principals, field notes, and document analysis. Merriam (2008) asserts "the main purpose of an interview is to obtain a special kind of information" (p. 88). She goes on to elaborate on three types of interviewing: highly structured, semi-structured and unstructured. For more open-ended questions, she recommends a semi-structured interview and hence, that is what was used with the principals in this study. The majority of the interview was "guided by a list of questions or issues to be explored, and neither the exact wording nor the order of the questions is determined ahead of time" (Merriam, 2008, p. 90). I also collected artifacts for document analysis, and each will be discussed further in the following sections.

Pilot of Interview Protocol

To strengthen the findings of the study, it was necessary to develop an appropriate interview protocol. The goal of the protocol was to provide consistency and structure that would guide interviews in such a way as to attain rich data adding breadth and depth to the discussion of principal support and evaluation of technology use in the classroom. A protocol was initially developed for principal interviews (see Appendix E) relying heavily on the theoretical framework, purpose of the study, and research questions.

The protocol was piloted to avoid researcher bias and to provide a validity check. Initially, the pilot protocol was reviewed by three content validity experts who were professors at The University of Tennessee. A draft of the protocol was emailed to each professor for comments and suggestions. Feedback was noted, and 3 questions were reworded to add clarity. The second phase of the pilot test consisted of five principals being asked to serve as participants. All five agreed to be part of the pilot, but not part of the participant pool for the study. Interviews were conducted individually with each. At

the completion of each pilot interview, I asked the pilot participant to provide feedback related to the length of the interview, clarity, sequence, redundancy, ease of understanding of the questions, and whether or not the participant perceived the questions would get the information desired to answer the stated research questions. I analyzed the feedback from each pilot participant, reflected on the content of the answers given, and made the following adjustments to the protocol: 3 questions were combined; 2 questions were suggested as probing questions; 3 questions were deleted; 3 questions were added; one question was moved in the sequence; and wording for 2 questions was changed. The original protocol consisted of 18 questions and the final protocol consisted of 15 questions. All of the participants expressed ease with the questions and perceived no questions were irrelevant or misleading. The pilot responses provided useful suggestions that strengthened the protocol and improved the likelihood of obtaining quality data that answered the study's research questions.

Principal Interviews

Principals who agreed to participate in interviews were contacted and I scheduled face-to-face interviews. Each principal was asked to read and sign a form giving consent to the face-to-face interviews. Each interview lasted approximately 30-60 minutes with follow up interviews conducted, or emails exchanged, as necessary to add clarity to previous responses. The emic perspectives provided by the principal interviews were limited by their self-reported nature (Yin, 2009).

At the commencement of each interview, once the recording had begun, participants were asked to verbally confirm their willingness to participate and have the interview recorded. The protocol included 15 questions. The interview questions were

carefully selected to address each research question and to elicit as much information as possible from each principal regarding the research topic. The types of interview questions used fell into six broad categories as delineated by Patton (2002): 1) experience/behavior, 2) opinion/value, 3) feeling, 4) knowledge, 5) sensory, 6) background/demographic. According to Patton (2002), every type of question that might be asked in an interview can be encompassed in one of these categories. Table 3 outlines how each of these typologies connects to the interview questions in Appendix A.

Table 3

Interview Question Type

Type of Interview Question	Principal Interview Questions
Experience/Behavior	P2, P3, P4a, P5, P8, P8a, P10
Opinion/Values	P4, P6, P6a, P7, P7a, 9, 13
Feeling	P10a, 14
Knowledge	P3, P11, 11a
Sensory	P4a, P4b, P12
Background/Demographics	P1, P4b

All interviews were audio recorded and transcribed, and each interview was labeled according to the pseudonym assigned to the participant and corresponding school.

Transcripts of each interview were emailed to the respective interviewees to review for accuracy. Table 4 provides details about which interview questions provided information about supportive behaviors as well as evaluation of technology from the principals' perspective.

Table 4

Development of Principal Interview Questions

Question	Supportive Behavior	Evaluative Behavior
1	NA	NA
2	NA	NA
3	NA	NA
4	NA	NA
5	NA	NA
6	√	
7	√	
8	√	
9	√	
10		√
11	√	√
12		√
13		√
14		√
15	NA	NA

Note. Questions 1-5 were related to background. Question 15 offered interviewees the opportunity to share any additional comments.

Field Notes

Field notes for the study were gathered during the site visits to each school. My goal as I entered each school to interview the principal was to build a foundation of evidence that would support the findings from interviews and artifacts. To that end, I accumulated detailed notes about the material culture of the schools from site observations during campus walk throughs. Additional field notes were accumulated from the time I arrived on each campus until the time I left. As I approached each interview, I noticed wall decorations, posters, office space, signage and physical evidence

of technology as well as any elements related to the six domains of the National Educational Technology Standards for Administrators (NETS-A). The NETS-A was developed by the International Society for Technology in Education (ITSE) and identifies technology related standards for school administrators. The domains are: 1) Leadership and Vision, 2) Learning and Teaching, 3) Productivity and Professional Practice, 4) Support, Management and Operations, 5) Assessment and Evaluation, and 6) Social, Legal and Ethical Issues. While interviewing each principal, I documented behaviors, activities and practices related to each of the six domains. The field notes were then typed and filed by school and date. Triangulation was used to analyze the findings with results from other data sources.

Document Analysis. Merriam (2009) refers to documents as "a wide range of written, visual, digital, and physical material relevant to the study at hand" (p. 139). To provide triangulation for this study, document analysis was used to corroborate evidence gleaned from principal interviews and field notes. The documents used for this study were policy handbooks, school improvement plans, teacher evaluation documents, in-service agendas, professional development handouts, emails, and memos as provided by principals that pertain to technology leadership. Documents were examined for evidence related to the research questions and the principals' roles enacting policies related to implementation, support, and evaluation of technology in the classroom. All documents were retrieved in print form or electronically and labeled according to school pseudonym. Print copies were scanned and converted to digital copies, and originals were shredded. All digital copies will be kept on a university password protected cloud drive for three years, then destroyed.

See Table 5 for details regarding each data source's connection to the research questions.

Table 5

Data Source Connections to Research Questions

Research Questions	Data Sources
1. How do high school principals support teacher use of technology for classroom instruction in nonpublic schools?	Interview: Principals Documents: policy handbooks, school improvement plans, teacher evaluation documents, and professional development handouts as provided by principals that pertain to technology leadership Member checks: Transcript verification by principals Field Notes: from site visit during interview
2. How do high school principals evaluate teachers' use of technology for classroom instruction in nonpublic schools?	Interview: Principals Documents: teacher evaluation documents, and professional development handouts as provided by principals that pertain to technology leadership Member checks: Transcript verification by principals Field Notes: from site visit during interview

Data Analysis

I collected data for this study from multiple sites. The following sections detail how the data were analyzed from interviews and documents. A visual representation is used as well to show the iterative process used in qualitative data analysis as suggested by Hsieh and Shannon (2005) and Anfara, Brown, and Mangione (2002).

Interviews

Data analysis began with transcription of the interviews. I converted the transcription myself to be able to fully immerse myself in the data and record latent content as I went through the recordings. Subtle nonverbals such as sighs, laughter, long pauses and even silence offered additional cues to otherwise undetected meaning in transcribed text. The transcripts were uploaded to NVivo 12. I then read through each transcript and highlighted text specifically related to the 6 domains of the NETS-A. All highlighted passages were then coded using the predetermined codes within NVivo. Coding is "assigning some sort of shorthand designation to various aspects of your data so that you easily retrieve specific pieces of the data" (Merriam, 2009, p. 173). Initial codes were identified from the six domains of the NETS-A, the research questions and the interview protocol. The domains are based on the International Society for Technology in Education's (ISTE) National Educational Technology Standards for Administrators (NETS-A) with the intention of providing detailed and evaluative information about best practices in technology leadership. The six domains are: 1) Leadership and Vision; 2) Learning and Teaching; 3) Productivity and Professional Practice; 4) Support, Management, and Operations; 5) Assessment and Evaluation; and 6) Social, Legal, and Ethical Issues. As text was identified that couldn't be categorized

under one of the initial codes, new codes were created and assigned. Hsieh and Shannon (2005) suggest these newly identified categories offer refinement, extension and enrichment of data.

I constructed rank order comparisons of code frequency and gave particular attention to supportive and evaluative behaviors related to technology use in the classroom. During the second iteration of transcription analysis, codes were collapsed into categories with particular attention to incidences where principals perceived their roles were directly or indirectly related to technology use in the classroom. Finally, in the third iteration categories were analyzed for themes. Inherent to the theme development stage was a deliberate consideration of Role Identity theory and the three processes that individuals participate in to establish and maintain their identities: identity, identity salience, and commitment. See Table 6 for a visual representation of the various iterations and codes, categories, and themes that emerged from the principal interviews.

Table 6

Code Mapping: Three Iterations of Qualitative Data Analysis for Principal Interviews

Third Iteration: Themes		
Visionary Identity	Technology Leader Identity	Provider Identity
Second Iteration: Categories		
Vision	Physical Resources	Problem Solver
Technology Plan	Fiscal Resources	Learning and Teaching
Expectation Setting	Human Resources	Professional development
Role as a Tech Leader	Accountability	
First Iteration: Initial Codes		
Beliefs	Tools	Facilitators
Mission	Allocations	Collaboration
Ethical	Personnel	Consumption
Equity	Technical Support	Differentiated Instruction
Policies	Professional Development	Integration
Responsible Use	Organizational Improvement	Pedagogy
Infrastructure	Accountability	Meeting Objectives
Accessibility	Evaluator	Student Problem Solving
Security	Assessor	Modeling
Learning Environment	Barriers	Ideal School
Data: Principal Interviews		

Table 6 Continued

Note. Adapted from "Qualitative Analysis on Stage: Making the Research Process More Public," by V.A. Anfara, Jr., K.M. Brown, and T.L. Mangione, 2002, *Educational Researcher, 31*(7), p. 32 (adapted with permission)

Data were continually analyzed during collection, so further data were more meaningful in this iterative process. The same cyclical process was followed during and between all interviews and document analysis. After analyzing the first interview, all codes were integrated in the next schools' interview and so on. This iterative process allowed me to use a constant comparative method as described by Merriam (2009) to identify emerging patterns (Glaser & Strauss, 2007, Teddlie & Tashakorri, 2009). All interviews were analyzed and coded in NVivo to identify common categories and themes within the theoretical framework (Merriam, 2009), and the themes that emerged provided context and meaning of the principal's perceptions and experiences.

Documents

Merriam (2009) maintained that artifacts could be collected and analyzed to provide yet another source of evidence strengthening the rigor of the study. Therefore, document analysis was another source of data in this study. Through examination and interpretation of documents, I sought a deeper understanding of the topic at hand. Documents such as policy handbooks, school improvement plans, teacher evaluation documents, and professional development handouts as provided by principals, provided a different way of checking the perceptions of principals regarding technology support and evaluation. Examination of these documents occurred at each school around the same time the interview occurred at that school and that assisted me in looking for ways in

which principals had directly or indirectly supported technology in the classroom. The six domains of the NETS-A served as an outline for analyzing available documents, and the information obtained from them served to strengthen the emerging themes as well as provide triangulation of data.

Summary. Creswell (2003) characterizes the process of collapsing and grouping codes as the final step of data analysis and says it "involves making an interpretation or meaning of the data" (p. 194). The systematic coding process described in this section helped organize large amounts of text into fewer categories and eventually into themes "developing and extending knowledge of the human experience" (Hsieh & Shannon, 2005, p. 1286). At the conclusion of the coding process, 30 codes were collapsed into 11 categories and further condensed into 3 themes.

Methods of Verification

Credibility, for this study was achieved through the use of several strategies: triangulation, role of the researcher, member checks and the audit trail. The discussion of researcher bias or "investigator's position" (Merriam, 2009, p. 222) was discussed in a previous section, Role of the Researcher. Triangulation, member checks and the audit trail are discussed below.

Triangulation

To increase credibility of this study, I used data triangulation through the use of evidence from various sources – people and data – to ensure more accurate and credible conclusions (Creswell, 2003). The use of multiple data sources such as interviews, field notes, and artifacts helped minimize the biases and limitations (Anfara et al., 2002). Comparing and contrasting the findings within and across the schools provided the

opportunity for more detail and transferability. Therefore, using multiple sites and collecting data through the point of saturation and redundancy strengthened the trustworthiness of this study (Lincoln & Guba, 1985).

Member Checks

Member checks were performed as another verification procedure to increase credibility in this study. Member checks for this study were conducted with accuracy verification of interview transcripts. I provided transcripts to interviewees and they were asked to provide written feedback within two weeks. The email sent with the transcript specified that 2 weeks would be given for written feedback and if none was received, assent was assumed. As feedback was received, all suggested changes to transcripts were documented in the researcher's journal, and recordings were revisited to correct inaccuracies.

Audit Trail

Lincoln and Guba (1985) suggest the use of an audit trail to authenticate the findings of a study. This was accomplished with a researcher journal from the time data collection began. The journal documented the responses to email invitations to participate in the study by date and time, how sites were selected, how data were collected in initial principal interviews, how categories were created, how interview protocol were modified to fit emerging themes so future interviews could result in rich descriptions, my field notes, the kinds of documents that were collected, how documents were analyzed, and how decisions were made throughout the research process. Additionally, I used the journal to note any member check changes that were needed, and

to record reflections, questions, hunches, problems and issues for further study as they were encountered.

Ethical Issues

The Institutional Review Board (IRB) of the University of Tennessee has established protocol for treatment of human subjects to ensure that the research process was both ethical and safe for participants. Before any data were collected for this study, a request to conduct research was completed and approved by the university IRB. The human subjects in this study were protected in accordance with those rules. Upon obtaining informed voluntary consent (see Appendix B), participants were given the opportunity to participate further and gave consent to interviews (see Appendix C) and to be recorded during those interviews. They were provided transcripts of those interviews to check for accuracy within 30 days. Additionally, field notes were collected, and documents were retrieved from principals for analysis. The nature of this study did not allow for all data to be collected anonymously, however, every effort was made to ensure privacy and confidentiality of all participants including the assignment of pseudonyms for each participant for presentation purposes. As such, all recordings, transcripts, field notes in the form of a research journal, and documents collected for analysis were kept digitally on a password protected cloud-based storage account with the University of Tennessee. Finally, reviewing guidelines as established by the Institutional Review Board helped maintain strong ethical behavior throughout the study. All participants had the option to withdraw from the study at any time without penalty and no participants received any compensation or incentives for their participation. No students or minors were interviewed for this study.

Conclusion

Chapter Three detailed this explanatory qualitative inquiry that was conducted to discover how principals support and evaluate teacher use of technology in the classroom. This chapter included a discussion of the assumptions and rationale for a qualitative design as well as a discussion on the merits of directed content analysis followed by an examination of the role of the researcher, including possible biases. Site and sample selection, data collection and data analysis were explained for the study. Methods of verification were provided, including steps taken to increase credibility. Chapter Four will provide the results of the data collected, and Chapter Five will offer a discussion of the data through the lens of the Role Identity theory. Finally, implications for school administrations, district personnel and policy makers will be followed by recommendations for future research.

CHAPTER IV

ANALYSIS AND FINDINGS

In the previous chapter, the methodology used in this study was discussed. The purpose of this study was to explore and better understand how high school principals support and evaluate teacher use of technology for classroom instruction in nonpubkic schools. The research was guided by the following research questions:

1. How do high school principals support teachers' use of technology for classroom instruction in nonpublic schools?
2. How do high school principals evaluate teachers' use of technology for classroom instruction in nonpublic schools?

To accomplish the purpose and answer the research questions in the study, six principals from nonpublic schools were interviewed. The semi-structured interviews were guided by the study's purpose, the Role Identity theoretical framework, and the interview protocol which may be found in Appendix A.

This chapter begins by providing participant context and discussion of the three themes that emerged: Visionary Identity, Technology Leader Identity and Technology Provider Identity. Each of the three themes will serve as an outline for the data analysis discussion from the perspective of the principals. Following a review of the findings, Chapter 4 will conclude with a discussion of the research questions and how the data served to answer the research questions.

Participant Context

Background information on the six participants will provide a better understanding of how they perceive their roles in supporting technology. Five of the six

principals are former teachers and have no formal training that has prepared them for school leadership. They were recognized as having leadership potential and moved from the classroom to administration without the advantage of any formal preparation program for the role.

Mr. Jones is at Jefferson Academy and is a first-year principal. He is a former teacher of 17 years and described his preparation to be a technology leader as a "learn as you go" experience. He has had no detailed training but expressed he is adequately comfortable with technology given what he has had to do with it so far in his role as an administrator. He is serving at Jefferson Academy where there currently is not a one-to-one program, but the school has a new head of school with a vision positioning the school to become one-to-one in the near future.

Mr. Anders is also a first-year principal with six years of prior experience as an assistant principal and former experience as a coach and classroom teacher. Mr. Anders serves at Ambassador High where there is not a one-to-one program and he admits to not having any great experience leading technology. When asked about his comfort level with technology he described himself as "getting better all the time".

Mrs. Mahoney has been at Masonville High School for seventeen years and in her current role for the past seven years. She is also a former classroom teacher and shared that her school has a one-to-one program. Her comfort level with leading technology has improved dramatically since going paperless 2-3 years ago, and she expressed she is "still on the journey" developing her own level of competence with technology.

Mr. Morgan is a second-year principal at Mountview High School where there is currently a one-to-one program. Mr. Morgan led a one-to-one initiative in his former

school six years ago as a principal, and he was a former teacher prior to that. He shared that his comfort level with technology is relatively high as he values a paperless environment and is encouraging his teachers and staff to adopt a similar philosophy. However, he has no formal training that has prepared him to be a technology leader.

Mr. Nash has been the principal at Northside Academy for almost three years. He has served as an assistant principal in another school where he was also a classroom teacher. Northside has a Bring Your Own Device (BYOD) program, and Mr. Nash admitted he doesn't have a lot of experience as a technology leader. He shared with nervous laughter that he would be in trouble if asked to run technology and his comfort level is relatively low. He is unbiased against the use and need for technology in the classroom but expressed he is still learning how to use it.

Mr. Turbish has been the principal at Thomasville High School for four years where there is currently a BYOD program. He has been in administration for thirteen years and been part of a technology initiative at a previous school. He also expressed he has some recent exposure on best practices in technology leadership while seeking a higher education degree. Regarding other formal training, Mr. Turbish said, "I cannot say I've had an overwhelming amount of formal training as it relates to technology." He perceives his comfort level is a seven out of ten in competently engaging with technology.

Visionary Identity

One theme that emerged from the directed content analysis centered on the principal assuming a visionary identity. A person with a visionary identity is defined for this study as a person who has a belief in the importance of technology and its

relationship to the mission of the school. The 'visionary' is able to translate that mission to a vision based on forward thinking and is reflective about the development, implementation, and ongoing assessment of a technology plan.

Belief and Mission

Data collected from participants revealed a need to have strong beliefs in the usefulness of technology to further the mission of the institution. Each of the participants was well-versed in the mission of their school and spoke about the need to stay true to that mission while making decisions regarding the integration of technology. Mrs. Mahoney from Masonville Academy captured this well by sharing her belief regarding technology:

> You know, many people think that it's a love-hate relationship with technology. But ultimately the sooner we realize that it can be a wonderful tool for great things, like for students to learn, and to advance God's kingdom, the sooner we see it this way, the sooner we don't see it as a villain. The sooner we see it as 'we are in this together and we can use that to accomplish these goals', and it's like the lightbulb switches, and technology is on your side, and you don't think 'it's against me'. I went through that transition years ago. Instead of technology being a foe it's like - it's on our side, I can look at all the great things we can do with technology. I think that mindset has to change.

Mrs. Mahoney went on to elaborate that part of her school's mission is to impact the culture. She furthered her thought by discussing the necessary link between technology and her school's mission:

> So if they [students] are not able to use technology effectively, I don't think we're fulfilling that goal, because technology is part of who we are, and how we function in this world - in this society. So they have to have the knowledge and the skills to do that.

Similarly, Mr. Anders at Ambassador High asserted his commitment to the school's mission and the importance of technology being aligned with the mission:

> If we are nurturing each person's body, mind, and spirit in the day we're living in, technology is a part of that, so we need to be interested in that. Our kids are growing up using that [technology], and that's going to be a collaboration across networks. It's going to be a big part.

Mr. Ander's school, Ambassador High, is the only school in the study that neither supplies, supports or encourages regular student use of technology.

As the leaders of their schools, the principals all acknowledged technology is here to stay. One challenge for principals who have a voice in decisions is to stay current and be forward thinking in policy-making and decision making. Mr. Turbish from Thomasville stated, "we need to be thoughtful about where culture is going, what implications this has for us." He went on to suggest the critical importance of being forward thinking "to create policy and procedure around a philosophy and facilities and devices." He stressed the importance of connecting policies and procedures with the school's mission and went on to offer one additional key element that goes beyond devices - the need to have the right people in the classroom to lead technology initiatives.

> So if we have done our job to put the right people on the bus, and to give them the best tools, and to give them a clear idea of what our philosophy is, then it should

> be supporting our mission. It should be helping us fulfill our mission as the kind of schools that we claim to be. (Mr. Turbish, Thomasville)

Mr. Morgan at Mountview and Mr. Nash at Northside Academy shared similar allegiance to their respective schools' missions which included preparing students for post-secondary education. Mr. Morgan furthered this thought by suggesting:

> Whatever tool helps us get this thing across so the students can think with it, that's what's important - we want them to be able to think critically. And it's not about the toys. It's not about the tools. It's about the concepts and solving the problem.

Mr. Nash stated his belief that technology, used correctly, teaches students to think critically and that plays a role in preparing students for college and beyond.

Part of a principal's role in a school is to lead the school in a direction that is befitting of the school's mission. Knowing the mission and reflecting on how technology intersects with the mission is an iterative process that must be revisited and realigned with beliefs held by principals who desire to be technology leaders. Those beliefs translate to actions and decisions and eventually goals and a vision.

Vision for Technology

While participants often spoke of their desire for more and different technology tools and resources, it was evident that each of them had a vision for the appropriate use of instructional technology in their school. Their visions were varied with Mr. Morgan putting his most succinctly, "For me it [technology] is a means to an end. But it's not the end. It will never be the end." Mr. Anders also had a simple explanation regarding his philosophy and vision of technology's place in his school. He said they would use it "if

it's going to support learning. I would rather support learning with technology than support technology." Mr. Jones has been at Jefferson Academy for almost two decades and has seen many changes come and go but he feels his new administration will "push us toward excellence, so I feel like we're heading that way and part of that is technology."

Several of the participants spoke of the need to be intentional and have a plan around the promotion of instructional technology and the need to do more than just provide hardware and software. Mr. Jones said, "There has to be a good reason and - with technology - let's equip our teachers on how to utilize these things in the class." Even though principals spoke of the need to do more than provide infrastructure, hardware, and software, in practice there is little evidence that training is occurring to support efforts toward true integration of technology into curriculum. Mr. Turbish shared his concern about more devices not being the solution, "I've said this a lot at our executive team table - I don't think it would be advisable for us to make large scale investments until we have truly determined the course that we're going to go." A limited perspective of providing more or better tools without support quickly amplifies the need for schools to have a technology plan.

Technology Plan

Part of effectively leading technology integration involves having a technology-rich school improvement plan that is aligned with the vision of the administration and the mission of the school. An administrator with a visionary identity recognizes there will be obstacles in the implementation, so problem solving becomes part of the plan. The principals' schools that were part of this study were nonpublic schools and, as such, are

funded primarily by tuition dollars and donations. Therefore, the equity of technology available from one school to the next varied greatly. Table 7 provides an overview of the technology structure for the six schools.

Table 7

Comparison of Available Technology at Participating Sites

School	Principal	1-to-1	School Owned Student Tech	School Owned Teacher Tech	Computer Cart	Computer Lab	>5 Computers in library
Ambassador High	Mr. Anders	No	No	Desktop	2	No	Yes
Jefferson Academy	Mr. Jones	No	No	Desktop or teacher owns	2	Yes	Yes
Masonville	Mrs. Mahoney	Yes	BYOD	Laptop and iPad	None	No	Yes
Mountview	Mr. Morgan	Yes	Yes	Laptop and iPad	None	No	Yes
Northside Academy	Mr. Nash	Yes	BYOD	Laptop and iPad	None	Yes	No
Thomasville	Mr. Turbish	Yes	BYOD	Laptop and iPad	None	No	Yes

As Table 7 illustrates, all but one school, Jefferson Academy, offer similar technology infrastructure to the teachers. Mountview school is the only school that provides a device for each student. Northside Academy, Thomasville, and Masonville have a Bring Your Own Device (BYOD) program, and Ambassador High allows students to bring a device, but they don't consider themselves a one-to-one school or offer support for student-owned technology. Coincidentally, the schools without one-to-one programs provide less technology for teachers. Ambassador High only offers desktops and Jefferson Academy offers desktops but Mr. Jones mentioned many of the teachers bring their own laptops because they like the mobility. However, Mr. Anders stated:

> We've done a lot to update our classrooms over the past 5 to 8 years with everything that they [teachers] would want - the Apple TV, the LCD projector. To say we are providing whatever resource you need – some with the interactive whiteboards we're saying figure out how to use it in your classroom.

Interestingly, Mr. Anders expressed he is disinclined to add any additional hardware. His school has WIFI available for student use and an abbreviated Technology Acceptable Use Policy in the Student Handbook, but there is no requirement for student use (Parent Student Handbook, Ambassador High, 2019-2020) nor encouragement from administration for teachers to use technology other than for communication and class presentations.

Part of establishing a successful technology plan is anticipating the barriers that may interfere with the plan and adjusting accordingly. One such barrier discussed by several of the principals was the need to have superior IT people to ensure the stability of the hardware and networks within a given school. Mr. Morgan emphasized the importance of the IT team being familiar with educational practices: "I can see the need to have an IT person who has a background in education that can help look and determine those programs - the best education programs - and at the same time turn around and make the server work better." Mr. Anders spoke of the importance of his relationship with his Director of IT.

> He tries to help me understand why it's important to use technology in the classroom. So, what I've been saying about informing learning and things, he's helped me understand that… How does it help students learn? And if it does, support it (pause) Be different, take risks. We don't do that well.

As schools look to develop technology plans, adequate staffing is a challenge. Without available support from an IT department, teachers quickly become disinclined to plan lessons around technology that may or may not work. At Masonville, Mrs. Mahoney has three people in her IT department as of this year and admits it has made a tremendous difference in teacher attitudes and their willingness to take risks.

Another barrier to a successful technology plan that emerged as a concern for several principals was finances. Mr. Jones from Jefferson Academy (a school without a one-to-one program), indicated they needed "a whole lot of infrastructure" to make the changes he desired. "There's certainly a lot more we can do, and I think our, as you might guess, our hold-back is money. It's never in the budget...But to do a total overhaul - it's never in the budget" (Mr. Jones, Jefferson Academy). Mr. Morgan brought up limited finances as a barrier as well:

> One of the issues was getting all the kids going at the same time and the internet would drag. So, the internet was slow and that frustrated the teachers, and teachers chose not to use it. That hurt that tool. So, we had to spend the big bucks to get the high-speed internet in here. That fixed that problem. Now it's an easier tool to use and now teachers are using it more.

As previously mentioned, nonpublic schools are dependent on tuition dollars and donations for their primary income sources. While some schools have managed to keep up with providing devices to teachers, and more still have the ability to get devices in students hands through BYOD programs and one to one initiatives, many schools have struggled with adequate staff to support the devices. Mr. Nash indicated he only had one IT Director and she was a tremendous resource in his technology plan. Unfortunately,

when situations did arise and decisions had to be made, he faced the same financial barrier. "Obviously most of it is going to come back to resources. Do we have the money to do that?" Mr. Nash went on to share that he had a relatively small voice in purchasing decisions that might be a barrier for some, but he admitted he was still learning and not well-informed enough yet to have a bigger voice in that arena.

Related to budgetary concerns, principals recognize the need to have financial resources available to adequately support teachers with meaningful training and continual professional development. Mr. Jones enthusiastically spoke of the importance of training teachers as part of the school's technology plan if money wasn't a hindrance.

> If someone dropped $100,000 in our lap, and we were able to get something like that, we would shut things down and have a half day of in-service on 'here is how you use that, not just use it but how do you get kids to learn, research, collaborate and use it together to make things.

Such training is not occurring and was confirmed by an analysis of Jefferson Academy's 5-year Strategic Plan. The plan suggests an annual survey will be conducted to determine current levels of faculty technology use. Mr. Jones had no knowledge of such a survey. Furthermore, Jefferson Academy's Strategic Plan included a goal that all high school students would have a tablet by 2020 (Strategic Plan, Jefferson Academy, 2018). Mr. Jones indicated that could not possibly happen, even if the funds were available for the devices because the infrastructure couldn't support them. Further analysis of documents revealed a separate Technology Plan for Jefferson Academy that was limited to inventorying equipment and a schedule for replacement. Beyond these two plans, additional training for teachers was limited to two hours of inservice at the beginning of

the year that was primarily focused on systems available for teacher tasks (Inservice Schedule, Jefferson Academy, 2018).

Schools that provide internet access assume a tremendous responsibility to keep students safe while they are online. Mr. Nash brought up the issue of controlling student use of technology with adequate filters and firewalls. He shared he hopes to have school-provided devices in the near future, and he anticipates the distraction of inappropriate use of the internet by students will be less problematic when the school owns the devices as opposed to having a BYOD program. He concluded, "I think if you want to keep them from playing games and all those things you have to have the firewalls and it costs money. All of that costs money."

One of the challenges that comes with the financial investment of educational technology is the growing cost of maintaining the various components and considering replacement of devices as they reach the end of their usable life or they are replaced with newer, better devices. Mr. Nash offers this advice about keeping students safe while surfing the web and teaching digital citizenship:

> Be constantly up to date with technology. Understand the big thing, one of the big things, is trying to understand how they get around the firewalls and how they get to where they're trying to get where you don't want your students to go. Try to make sure you have a way to secure your internet abilities, but have the best you can, I think. Always be up to date.

With the rapidly changing world of technology, it is not a surprise that principals understand the need to keep physical resources up to date as well as keeping their own knowledge up to date. Mr. Turbish from Thomasville shared his frustration about not

having a plan for perpetual technology turnover, and he stressed those decisions are not his alone to make:

> We know that we have some aging technology that needs to be updated, but we have not come to a clear consensus for what that means for a future, so we have done more deferred maintenance stop-gapping than we should simply because we don't have a solid plan yet.

Principals recognize the need for turnover of outdated devices, but they are unable to keep up due to the rising demands and associated costs. A technology plan is, therefore, only as good as the commitment of the constituents who are implementing it and holding each other accountable to adhering to it.

Teacher buy-in is an issue that several principals mentioned as a factor that determines the success or failure of a technology plan. The primary concern expressed was with regard to initial teacher training and then regular technology integration support. As Mrs. Mahoney reflected on her technology plan, she shared:

> Making sure that they [teachers] know we will provide support and they are not on their own is key. It's like a teacher [with students] in the classroom, you can have the highest expectation, but when you communicate to your students that 'I will help you meet those high standards', the students are willing to work hard. It's the same thing for the teachers. We made it very clear that we will help them get there, and they will have time to get there, and we will provide all of the professional development.

Mrs. Mahoney's school has a quarterly technology plan that includes not only upgrade provisions for systems, hardware, and software, but provisions for various faculty and

administrators to attend three technology conferences each year and to attend two inservice opportunities that have some technology component built in (2019-2021 Technology Plan, Masonville, 2019). Beyond the technology plan, Masonville has an Academic Strategic Plan that includes the ISTE Standards for Administrators, teachers and students (Academic Strategic Plan, Masonville, 2019).

As Mr. Morgan reflected on his school's technology plan, he shared his desire to have buy-in, but at the end of the day he concluded it had very little to do with his decision to adopt a piece of hardware or software. He said, instead, that he was looking for "enthusiastic people championing what they are doing with technology."

Technology Leader Identity

One of the overarching themes that emerged in the data analysis of this study was the importance of the principal having a technology leader identity. A person with a leader identity understands the importance of setting and communicating expectations as well as assuming responsibility for being a technology leader. A leader who identifies with the role of technology leader is engaged in setting and enforcing policies, setting and communicating expectations, and modeling technology use regularly.

Setting and Enforcing Policies

Regardless of the types of technologies each of the schools in this study had available, all of them had internet access available for students and each of the schools had a Responsible Use Agreement (RUA), Acceptable Use Policy (AUP), or some type of published contract that required student and/or parent signatures to denote agreement. Such practice is widely accepted in most educational institutions and in addition to the expectations stated in a RUA, most schools provide a firewall and a filter to protect

students from unlimited access and inappropriate material on the internet. At Northside Academy Mr. Nash indicated they have a filter that logs students' internet traffic on and off campus. He shared that the student online activity logs have helped identify everything from potential suicide threats to drugs, weapons, and cyberbullying. Additionally, this level of oversight provides a platform for administrators and counselors to have conversations with students about those serious topics. An added benefit to Northside Academy's filter is that it is also available for parents to use at home so they can monitor their child's online activity. At Mountview Mr. Morgan also shared his strong desire to support parents in their efforts to provide safe online environments for their children. His school has two levels of filters. One is heavy and filters all student internet traffic while students are on the school's network, and the second one is available to parents after school hours. He went on to say violations of the RUA weren't happening as much with the school-owned devices as they were with students using their own phones and data plans. He added:

> We've also moved to the phase where many, many parents realize that it's dangerous to let them have unrestricted access. Not all of them. It's really more about the phones than anything else. But I think we're moving to a time when people will say no, we need to have limits, we need to create limits. We're still devising this kind of digital etiquette. We're still trying to figure it out.

Mr. Turbish confirmed part of Thomasville's implementation of the RUA includes teaching the students about digital citizenship as well. He remarked their policies were specifically designed to support that effort:

> It's our responsibility to come alongside parents. There are real things that we, as principals, have to know. And that goes beyond just 'how we're going to use technology in the classroom to facilitate learning outcomes?' There are very real social and safety protocols that we have to be responsible for helping to effectively partner with students on.

The partnership with parents that Mr. Turbish and Mr. Morgan referred to has become more important as technology has become more available through cell phones and social media. Students' abilities to access internet and communicate with others anywhere, anytime has necessitated policy changes and in many cases parents are a key component as they provide 24/7 access to the internet via cellular technology.

Role as Technology Leader

Another part of the leader identity was revealed as participants shared how they viewed their role related to technology leadership. The differences in the principals' comfort levels assigning themselves a label of "technology leader" was stark. Five of the six principals agreed they promote highly effective practices in technology education. Mr. Anders, however, acknowledged he didn't really have great experience that equipped him to lead in this area. "I don't know that I'm leading anybody in technology here. We have several people that do technology here; that's what they do." Given that his school, Ambassador High, isn't a one-to-one school or even promotes student use of technology, he was content to be in a supervisory role of the person who most directly supports faculty technology use, his IT director.

Two of the principals, Mr. Morgan and Mrs. Mahoney, referred to themselves as instructional leaders as opposed to technology leaders. Mr. Morgan indicated he saw

himself in the role of supporting instruction and in this day and age that includes technology.

> I care about instruction. Technology just supports instruction. It doesn't wag the dog. What do we want them to learn - be able to work with and discuss? How can we get them a few points higher on the ACT? I care about that because that's turning into money. I care about that for them. What can they learn; how can I help them succeed? And whatever tool we can use - great. And when it's outlived its usefulness, fine. I'm not going to say you can have any color you want as long as it's black.

Mrs. Mahoney shared a similar view of her role. She was not comfortable calling herself a technology leader.

> I don't know if I would consider myself a technology leader. We rely a lot on our technology department, so I work a lot with them, and take advantage of their expertise, listening to their feedback because they are the ones propelling us to what we need. But from the instructional perspective - I am most responsible for monitoring and directing technology integration.

Mr. Turbish easily identified as a technology leader but shared it's not always the part of his role that he can devote his time and attention to because he, like so many principals, is limited by needing to be responsive to the tyranny of the urgent. "It's all about what's important versus what has to happen right then and how we balance those things, and how we balance the long-term thinking and planning around what we're trying to do with the imminent things that need to take place right now." Part of being a technology leader is sharing expectations with teachers about the frequency and types of use the

administration expects as a return on the investment. Mr. Nash acknowledged it was his responsibility as principal to share expectations. "It's a big responsibility and a good thing to look at. When I find a teacher that's not using that [technology], then we have a conversation." Mr. Jones concurred saying, "I have to give them [expectations]. I am the one in charge. With the admin team, we are the ones in charge of teacher development."

One of the questions the principals were asked to reflect on was the advice they would offer a new principal regarding technology leadership. I sought to glean what each deemed most significant to their role in providing technology leadership in their schools. All of them spoke of the need to be intentional in what they were supporting. Mr. Anders had this to say: "Learn as much as you can before you start making rash generalizations about what should be done and what shouldn't be done." Mr. Jones emphasized being intentional with training.

> The biggest thing I would say is it doesn't matter what technology you have if it sits in a closet and doesn't get used. Give your teachers the means and teach your students how to use those things so they can utilize and make their learning experience better and more thorough, deeper.

Mrs. Mahoney's advice was to be intentional about continuing to learn and grow in your own knowledge of what will best help teachers and students. Her thorough answer highlighted three areas for a new principal to focus on: humility, a desire to learn, and determination to implement.

> My advice would be humility, because even if you think you know things, Socrates said, "I grow old because I keep learning things." I know the Greek saying but not the translated one. I think humility is important to understand that

> you may be knowledgeable, but you don't know everything, and be willing to hear advice from your technology people. Hopefully there's a technology department to give you advice. But also to listen to the needs of the teachers, and what they think works and doesn't work instead of thinking 'I know everything and how to do it.' I think there is wisdom in that. To make sure you hear, and you have the humility to really listen before you impose things on people and say 'this is what you need to do.' And then once you have gotten feedback from everybody, and you have researched things, and you have done your homework, have the determination and the willingness to see it through - to implement it, to provide the help that is needed, because challenges happen. Just have that determination to not back down.

Mr. Turbish's response also centered on being thoughtful about the importance placed on technology.

> The more things we know about the way we learn as human beings - technology can assist with that. But it can also be a distraction if we aren't thoughtful about how we ask our students to engage with it. So, if we aren't thoughtful about that, at the end of the day, are they better walking away having acquired a better set of skills and knowledge than if they didn't have it? Because if not, we should just get rid of it. If it's not facilitating and leading to better outcomes then what are we doing it for?

Mr. Morgan's answer was broader but again required reflection and speaks to being intentional. "We need to talk more about thinking and how they [students] market themselves and where they fit in the global marketplace." Mr. Nash's advice was born

out of his experience of letting technology get away from him. He indicated he would tell a new principal "to constantly stay up to date with technology."

Staying current with educational technology practices and technology leadership is a goal of principals but fitting this into an already full job description presents challenges. The balance of adequate funding is an issue with administrative professional development as well. It won't matter what a principal is capable and knowledgeable of if resources don't exist to support it.

Setting and Communicating Expectations

As the leader of a school, the principal is expected to convey expectations related to technology use in and out of the classroom. Whether technology is being used for productivity, presentation, or projects, each principal expressed expectations and shared the different ways they communicated those with their faculty. Occasionally, technology use was a component of the teacher evaluation instrument, but most frequently, a relationship of familiarity between faculty and the principal was the foundation that gave way to conversations about expectations within the classroom. Mr. Morgan emphasized his transparency in sharing his expectations with his teachers:

> I want some fundamental things locked in for everybody, so everybody knows what I'm looking for. And if they haven't met it, they'll know they haven't met it. And they'll know that I know they haven't met it.

Mrs. Mahoney at Masonville shares expectations with teachers in the Faculty Handbook. Teachers are expected to turn in digital lesson plans each week using a provided template. One section of the template is labeled "Teaching Method/Technology: the teaching strategies and the technology you will be using in your

lesson to engage students in the learning process. Using a video as a class assignment should be indicated on your lesson plan and approved" (Faculty Handbook, Masonville, 2019-2020). Mrs. Mahoney also shares expectations in the form of rubrics that are used for teacher evaluation and provided to teachers during in-service training. Under a domain titled "USE OF TECHNOLOGY", there are three indicators used as part of the teacher evaluation:

1. Teacher uses technology frequently, meets expectations for Academy Central, and utilizes time spent with Instructional Technology Director.
2. Teacher consistently develops new lessons using technology that work at achieving objectives which could not be met without using technology.
3. Teacher uses technology to the extent that other teachers seek him/her out for help. This teacher demonstrates that technology and education in the 21st century must go together. (Teacher evaluation instrument, Masonville, 2019-2020)

Mrs. Mahoney reinforced these expectations in the interview:

> In their lesson plans there is a technology integration component, so they have to indicate how they're using technology that day, or if they are not. It's not like they have to use technology every day. But it is one of those domains that we want to know how frequently and what they're using, because we have other things like the STEAM component. They may be doing something STEAM related that does not necessarily involve technology. Making sure that they know we will provide support and they are not on their own is key. We made it very

clear that we will help them get there, and they will have time to get there, and we will provide all of the professional development.

Mrs. Mahoney went on to share that teachers not only prepare lesson plans and submit them digitally, but they are also expected to keep their curriculum maps current in digital format. She expects to see something almost every day and can track what the teachers are planning long-term by following their curriculum maps.

> I will check with their curriculum map, because on their map there is also a technology integration component. So, they have to indicate what they're doing. I would know if they were planning to use technology that day or if they were not planning to use technology. If I do see that there is a discrepancy, I would ask. I think it is something every day, but it would either be the student doing something with their device or the teacher utilizing something like the Apple TV or the Smart Board.

Mr. Nash from Northside Academy also uses a rubric model for teacher evaluation that includes an indicator regarding technology expectations. The indicator reads, "Consistently designs lessons that use an effective mix of well-matched and diverse instructional materials, including a seamless integration of technology, sharing with others where appropriate" (Teacher evaluation instrument, Northside Academy, 2019-2020). In the interview, Mr. Nash gave an example of how he communicates his expectations to his teachers.

> My expectation would be 'that you integrate and use your devices that you have in there with and in connection with your students' that would be my expectation and what I would say. I would also tell them, 'when you do your self-assessment'

> - I require them to do that and I say 'you need to look through there, and see what I am looking for when I come into your classroom.' I make sure that they are modifying or mixing that in their strategies. I haven't seen one that doesn't yet. Most all of them use it. A few of the ones who were nervous about it and weren't as up-to-date, were like 'I am not as comfortable with technology', now they've learned and they love it.

At Ambassador High, Mr. Anders was seemingly frustrated with his school's lack of expressing expectations and his ability to reinforce them through meaningful evaluation. As previously stated, he relies heavily on his IT Director to be the technology leader of the school. He admitted Ambassador High does not have a model for formal teacher evaluation: "We need an instrument. And we need more accountability from our teachers about what the expectations are. Why would we be investing all this money and equipping classrooms with technology if we weren't going to use it? It's just implied right now." Technology expectations are implied rather than formally expressed at Jefferson Academy, too, according to Mr. Jones. "I would hope to see it, but it would depend on what the lesson of the day would be. I would love to see that utilization and that's something that if I didn't see it, I'd follow up with the teacher and say, 'Hey is it possible that you could've used technology during that session?'" (Mr. Jones, Jefferson Academy). The lack of formally expressing expectations for technology was common at Mountview as well. Mr. Morgan shared there were no expectations before he came to the school last year. Since his arrival, he's made it known:

> There are certain things that are non-negotiable, that people just do. You're going to have to learn how to use our school information system. You're going to have

> to learn how to use the [teacher evaluation] program. You're going to have to learn how to use the curriculum program. There are different interfaces. We will have people to help, but it's up to you to take the initiative and figure it out. I want them to use the projectors. I want them to use the interactive boards as they find meets their needs.

One of the challenges for principals in nonpublic schools is the lack of consistency in a state mandated teacher evaluation model. Without such a model, clear benchmarks are nonexistent and administrators are left to establish or adopt whatever instrument they perceive best fits their goals and objectives. Many times throughout the interview, Mr. Morgan emphasized the importance of technology fitting into the objectives being taught - not fitting the objectives around technology. He gave an example of what he might tell a teacher:

> The object is to have your units organized and your lessons based upon your units. Know what your objectives are and do it! And whatever it takes to get the kids there, do it. I am more concerned about what we're really here for, as opposed to any of our technology to help us get there.

Mr. Turbish had a great deal to say about what he expects from his teachers regarding technology use and integration in the classroom. First, he expects all of his teachers to participate in training annually using the school's Student Information System (SIS). Second, Thomasville has a formal teacher evaluation model that he indicated includes a component involving technology use. Their instrument is open ended and not rubric-based. He gave an example of his thought process as he writes a teacher's evaluation of technology within an observed lesson: "So we want to see how are you - or are you -

using technology? In what way are you using technology? How is that facilitating instruction in your classroom? Are you doing it just to check a box or are you doing it in a meaningful way?" Mr. Turbish interjected that there is follow-up conversation to each observation that includes setting up a professional growth plan and a lot of the teachers "do list technology as an area they want to grow." He was asked to share his action steps for teachers who may be more averse to using technology.

> Last year we really targeted some of these teachers and said 'this is our expectation. We want you to be assessing. We want you to be using this more and I don't mean just show a five minute clip of something to reinforce what you're doing. Go beyond presentation.' And thankfully they've done pretty well with it.

And finally, Mr. Turbish conceded his school could do more. "I think in the coming days we will do a better job of identifying an answer to that question [what are the expectations?], but there is an expectation." Further analysis of Thomasville's teacher evaluation instrument revealed there was not an indicator or prompt to include comments regarding observing technology use which confirmed the ideas seen throughout the study that most technology integration expectations are implied.

Technology Provider Identity

The third theme that emerged from the data analysis was the most prevalent and can best be summed up as a technology provider identity. For purposes of this study, the provider is defined as the person who has the ability to offer tangible provisions such as physical, fiscal and human resources. The provider is additionally responsible for providing intangible provisions related to technology integration such as instructional

support, professional development and accountability/organizational improvement. Combined, these are the issues a principal would need to consider providing in order to adequately support technology in teaching and learning.

Tangible Provisions

In analyzing data for this study, a category of tangible provisions emerged. Tangible elements are necessary to support technology in the classroom and advance implementation of the school's technology plans. When the principals in this study reflected on the tangible types of support they provide, they had much to say about what they desire to provide versus how they actually provide support for three areas of resources: physical, fiscal, and human.

Physical Resources Provider. A key ingredient to having adequate technology integration in the classroom is having the right devices and having them available in adequate numbers for teachers and students. Additionally, schools need to have an infrastructure that can dependably support those devices and ensure student and teacher technologies are compatible. Each principal spoke with pride about the upgrades they have been able to make but also expressed frustration with the limitations that created ongoing barriers to what they really would like to see in place in their schools. For example, Mr. Jones shared that his school recently replaced their phone system and then had to upgrade their bandwidth because the "internet was shutting down all the time, and we can't have that. Imagine if that's happening from new phones…imagine if we have three hundred kids on devices, but it is important." Mr. Jones was also quick to point out Jefferson Academy had provided projectors in the classrooms, but the projectors were

sitting on desks and media carts in rooms that still had bulky televisions and DVD players mounted on cantilevered shelves in the corner (Field Notes, 2019).

As previously stated, the schools varied greatly in hardware available to teachers and students. With the exception of Mr. Anders at Ambassador High, all of the principals had some voice in the decision-making process for technology purchases. Ambassador High has LCD projectors in the classrooms and Apple TVs so teachers and students can use Airplay to project their device screens for class viewing (Field Notes, 2019). However, Ambassador High doesn't have a one-to-one program, but they had one cart of iPads and laptops available for student use.

Mr. Jones' school, Jefferson Academy, has two smart boards and one computer lab with 24 computers, one portable iPad cart, and an additional seven computers in the library for student use (Field Notes, 2019). Every classroom has an LCD projector as well. In contrast to Ambassador High and Jefferson Academy, Masonville is an Apple school so all of Mrs. Mahoney's teachers have Apple products. She elaborated on the reasons they are transitioning their BYOD program for students from iPads to laptops:

> Teachers have desktops, Macs in the classroom, but they also have iPads in the classroom-all our teachers do. In the high school because of our Dual Enrollment programs, we encourage our students to switch to a laptop because it is easier especially with the Dual Enrollment pre-calculus. They need the keyboard, and to access the software that we are using. I would say the majority of our students transition by the time they are juniors or seniors to laptops. It has been like an option. Now starting next year, we are making it mandatory, so they will have to have a laptop by the time they are juniors and seniors. We do have LCD

> projectors in every classroom for middle and high school. The interactive whiteboards are there with touchscreens. All of our science classes have digital cameras and document cameras to project things.

In addition to requiring all students to have their own laptop, Mr. Nash's school has chosen a smart screen to replace projectors in the classrooms. Mr. Nash indicated that each classroom has a desktop computer but teachers could request a laptop or iPad if they wanted more mobility. Mr. Nash went on to stress the importance of keeping replacement costs within your plan:

> If you are in charge of budgeting, and have money, budget, budget! One of the things we're going through since I've been here, there hasn't been a budget every year of putting money over here to say 'OK down the line things are going to get old and will need to be replaced.' Because things change fast.

Developing and adhering to a technology replacement cycle is an important part of the provider identity. Without such a plan, an already stressed technology budget would quickly become unmanageable. Mountview has managed to plan and provide devices for student use. In fact, Mr. Morgan's school is the only school in the study that has school-provided devices for the students.

> What we have now is the one-plus-one Chrome Books. With touchscreens, that was the big choice we made a couple years ago. This is our third year now - we have these devices for one more year, and then we have to switch them. They're leased, so we will switch to a different device. And we have Promethean or smart screens or touchscreens in every classroom as well.

Mr. Turbish also reflected on the need to perpetually plan to replace outdated technology as well as the need to constantly reassess if the current technology is capable of meeting the ever-changing needs of teachers and students. He shared that his school had a good number of Promethean boards for many years, but as they neared the end of their usable life, the school went back to projectors that were not touch screen enabled. Teachers have the ability to mirror their screens or students' screens through Airplay. Regarding student technology, Mr. Turbish said his school started retiring iPads 4 years ago:

> So at that point students could use laptops or iPads. But we were finding that iPads were a little bit limited with word processing and some of the other things we hoped to do so we kind of retired that and now we're in - at least with our students – one-to-one with laptops only. We do a BYOD, so we don't issue them.

Mr. Turbish went on to say the school does provide laptops to the teachers and most of the teachers have projection-based screens. He added, "We do have a couple of Promethean boards that we resuscitated for the time being that are operating and working as they should." As principals consider providing physical resources, attention should be given to what types of technology best meet the needs of students and teachers while accomplishing the objectives of the administration.

Fiscal Resources Provider. All six principals that participated in this study are part of independent, nonpublic schools. As such, they are limited in their funding sources to allocations from their annual budgets that are the result of tuition dollars and donations. Generally, budgets are submitted to the Board of Trustees by the administration and the Board is responsible for approving the budget. Fiscal allocations and the high cost of technology were topics that came up in each interview.

Mr. Anders, does not currently have a one-to-one program but he perceives Ambassador High has invested heavily in classroom technology in the form of teacher tools, and he had this to say about their current technology in the classrooms: "We've spent a lot of money on it, and I'm hopeful that we're … it's making a difference." Mr. Morgan acknowledged money was a driving factor for his school in choosing a delivery platform, "At the time, basically dollars were the biggest driver and Google was free." He went on to emphasize his school had recently spent a tremendous amount of money on improving their internet broadband speed because one of the problems that came with their one-to-one program was overcrowding on the network and slow internet. Due to limited resources, many of Mr. Morgan's teachers provide their own laptops, "because we don't have the resources to provide them, and it's primarily the younger teachers that want that flexibility to wander around, because that changes the dynamic of their classroom." At Jefferson Academy, Mr. Jones lamented that he has found several pieces of technology, things he would love to see in every room, but they have just been too expensive. In his ideal situation, Mr. Jones says:

> Every room would have a projector and that's just a minimum. You have to be able to hook that up and plug it in and be able to project. I think you're limiting yourself when you have to pass out papers and can't just do the work on the board. So, having a screen in every room would be awesome as well. I'd love to see that in every room.

Fiscal resources are not only necessary for physical equipment, but some of the principals spoke about the need for funds to provide quality training related to technology in the classroom. Mrs. Mahoney reported several of her teachers would be attending a multi-

day conference in a nearby state: “So this year we’ve made an investment in that professional development. That is a big thing for me. Because it’s three days and you are immersed in everything.” Furthermore, Masonville was the only school in the study to include technology conferences as part of a formal technology plan (2019-2021 Technology Plan, Masonville, 2019)

Due to the unique differences in school governance from one nonpublic school to the next, purchasing decisions may or may not involve building level principals. Mr. Morgan, for instance, suggested he only had input on expenditures at the instructional level while all IT decisions were made between the IT Director and the Head of School. He also discussed the importance of maximizing the resources they are allocated:

> If we have just one teacher that wants to use something - Well, ok, it’s not worth it. At the point when we get a great resource for five or six teachers that want to use it, and we think it would be good - do we find the money for it or not? Do we replace a similar product that we’re using now? We’ve done that several years in the past, and it’s all about allocation of resources we don’t have.

Mr. Nash also shared his school is limited in what they can provide: “Obviously, most of it is going to come back to resources. Do we have the resources to do that? If I had the resources to do that, I'd have the Chrome Books already.” He goes on to emphasize that some of the resources needed are infrastructure related. “If you want to keep them from playing games and all those things you have to have the firewalls and it costs money.” Mr. Nash summarized Northside’s financial state regarding technology growth by saying, “You're looking at the big difference - this is how much our cost is and we're dealing with a deficit [motions size difference with hands] trying to stay above board. The church

helps. That's one of the benefits we have." Thomasville has similar challenges. The school has an annual fund and according to Mr. Turbish, there are regular discussions about how much of that should be used to impact technology. Mr. Turbish reflected on his desire to do and see more:

> There are always limits. In the fictional world of unlimited resources, we could do so much more, but we have to live within the reality of what our resources can enable us to do. But when our benefactors come through and say 'I want to make a pledge specifically for this' - and we have some of that - it is nice. But we can always do more.

Mr. Turbish continued reflecting on the fiscal provider role by discussing the teamwork approach used at Thomasville to make decisions related to technology spending.

> We have a great group here that aren't reckless. They exercise good judgment. So that allows us, when we are doing things, to ask 'what are your needs?' and we are going to try to meet those needs. And there are wants and there are dreams, but we are going to meet the needs and try to address the wants as we can. A lot of times that might come from an annual fund. But, in developing a budget, we ask our team to speak into it and then it kind of filters forward and then we would take a proposal forward to our CFO at our executive team table and say 'what can we do?' and thankfully thus far we've been able to meet the needs that are out there and some of the wants that are out there as well.

Making purchasing decisions is not always left up to the principal in nonpublic schools. However, a collaborative team approach is more common and necessary in budgeting and allocation decisions. Such an approach offers a wide perspective on

making wise decisions related to compatible technologies that align with student and faculty devices, even though limited funds seem to be the determining driver on fiscal allocations for technology.

Human Resources Provider. Several times in the data analysis, the subject of personnel came up as an area that was challenging for the principals. There was considerable consistency among the participants in the value of having a team of people who were direct reports to the principal that collaboratively lead their technology efforts. There was also common frustration in five of the six schools that only had one IT person and that they were seriously understaffed in that department. Ambassador High only has one IT person and Mr. Anders emphasized how much he depends on his IT Director. As previously stated, Mr. Anders doesn't self-identify with the role of a technology leader but identifies more as a supporter of his IT director. When discussing the teacher hiring process, Mr. Anders stated he looks for those who are able to offer diversity in learning, content delivery, and assessment. Not surprisingly, younger teachers have adapted more easily to the presence of technology in the classroom, and principals recognize the energy they bring to a faculty culture (see section on Instructional Support). At Jefferson Academy for example, Mr. Jones spoke with enthusiasm about his faculty saying, "we don't have a bunch of 85-year-old people who are stuck in their ways. I think we have people who are willing and want to, and are willing to learn better ways to make their job easier." He also spoke of the need to add more IT experts as they expand their technology platforms in the classrooms.

A situation which is common in many nonpublic schools is that staff often wear many hats and assume multiple roles. Mr. Nash claims to have such a situation with

many people on his administrative team who have experience with technology. Mr. Nash's school shares technology responsibilities among his personnel: "I have others that have experience within the administration - if I have questions, I can pull them in, and they can help me." He officially only has one IT person and said, "She's whole school, that's 1100 when you bring in the pre-K and all the teachers, so that's crazy. There are three computer labs and she's trying to keep them all updated. It's too much for her, and we know that. Our administration knows it, too." Northside Academy also has an Academic Dean who researches the instructional components of technology support and Mr. Nash also relies heavily on his guidance counselor, particularly for the digital citizenship training of students: "She keeps me up-to-date on those things and some of the changes there."

The teamwork approach was echoed by Mr. Turbish. He spoke of the need to have a competent team around him:

> So we have a Director of IT on the church side, and a support staff member for that team that goes in between. We have a direct school employee that is our IT person who operates out of this building, but is campus wide. So there are three primary people who are overseeing technology throughout the campus.

Mr. Turbish also emphasized what an asset his assistant principal is as part of the teamwork approach:

> We divide and conquer a lot of the things in the upper school. She is very competent as it relates to apps and the SIS and classroom technology. She was in the classroom until just a couple of years ago so there is still a freshness about her which is a great attribute to have.

One additional point Mr. Turbish made was related to the quality of the teachers and the need to have the right people, not just the right tools.

> It would be foolish for us to suggest that a good technology philosophy would be more important than a capable educator in the classroom, right? That would be silly. We can have the best technology plan and philosophy, but if we put an educator in there that is not trained and accomplished and capable of delivering what needs to be done, it doesn't really matter. It's the person in the room that is driving and facilitating and should be doing that well.

Mrs. Mahoney was the only principal in this study to express satisfaction with the number of personnel in her IT department. Mrs. Mahoney spoke of the usefulness of her technology support team of three. She said one of them is always available to help teachers. "He will be right in your room, and figure it out. And usually it's the click of a few buttons, and resetting things. But it is good to know that you have that support at your fingertips." Additionally, she stated she is fortunate to have teachers with a collaborative mindset: "All of our new hires have been younger teachers. So that has helped, because they are like 'I know how to do that'. So they are teaching the older ones, which is really cool to see."

The tangible provisions offered by a leader with a technology provider identity include physical, fiscal and human resources. As was evidenced in this section, there is quite a bit of overlap in these resources. An interdependence on the team approach affords the best model for tangible support of technology in the classroom.

Intangible Provisions

When the principals in this study reflected on the intangible support they provide for technology in the classroom, they referenced three main areas of leadership where they assume the role of provider. Those three areas can best be categorized as instructional technology support, professional development, and accountability/organizational improvement. These three areas support effectiveness of technology in the teaching process.

Instructional Technology Support. Instructional support takes many forms. All of the principals in this study spoke of their responsibility to provide ongoing instructional feedback to teachers. They spoke of their efforts to accomplish this through various practices such as classroom walk-throughs, teacher evaluations, curricular mapping software and in-service training, among other things. Additionally, all six of the principals stated the importance of providing instructional technology support for teachers in the form of tools, collaborative time, and encouragement to take risks to explore new ways to do old things.

Providing curriculum mapping software and Student Information Systems has significantly changed collaborative efforts within and between departments in schools. The principals spoke of lesson plans submitted digitally and department heads having instant access to what is being taught in various classes. Mrs. Mahoney offered, "With the click of a button you can see all of the learning objectives and see any holes in the scope and sequence. The technology has really helped with instructional components."

In addition to technology tools, principals spoke of the value of collaborative opportunities to support technology integration. Mr. Morgan found that one of the most useful ways he could offer instructional support was to provide collaborative time in addition to directed training.

> We found though - the biggest thing - was that if we got one teacher interested in one thing and they really drove the bus for that one piece of technology then the rest of the teachers would get on board with it. That was kind of our job, I guess, for two years - to listen to the teachers and they said 'well, I can't do this' and we'd say 'let us help you with it' and kind of get them started and get really excited about it. We'd drive that a little more and they would go into meetings and say 'you guys won't believe what I can do with this', and more teachers would do it and then more.

Mr. Turbish offers instructional support to his teachers through the development of professional growth plans that are part of his school's formal teacher evaluation process. Teachers are then provided professional leave days away from their regular classroom responsibilities to observe professionals at other schools in order to enhance their practice.

> We encourage that. In fact a couple of my teachers this week said 'Do you know of any teacher that teaches this somewhere that I could go spend some time interacting with?' And then a lot of our teachers in their professional growth plan list technology as an area they want to grow, so we have conversations about that as well.

Multiple times in the data analysis, the topic of multi-generational teaching staff came up. Mr. Anders said, "We have some faculty who are all about it and everything they do is somehow technologically integrated." He went on to describe his teachers who have been in the profession longer, "It's [technology] been an addition since they started teaching. It's not part of their pedagogy. They are uncomfortable" (Mr. Anders, Ambassador High). Mr. Anders also had this to say about the other part of his faculty who are in their first decade of teaching: "They grew up with YouTube and having a device in their hands. Many of them started on an iPad and they don't know anything different. Their comfort level is a lot better with technology, any kind of technology."

Many of the principals indicated that a paradigm shift was needed in their more experienced faculty who were more set in their ways. Mr. Anders stressed this when he suggested that teachers no longer have the information that students need.

> Should we be teaching content? Because they can Google content. What are the skills that we need to be teaching across curriculum that they can't Google? They can Google the Gettysburg Address so do they need to memorize it? All they need to do is click something and they've got it. But that doesn't work on their critical thinking, and their ability to ask questions or their ability to form problems and solve problems to access and analyze information - all of those soft skills that they are going to need for college and beyond.

Mrs. Mahoney also shared that she saw teacher age difference as a factor that had to be considered when giving teachers instructional support: "As the older ones are teaching from their experience, the younger ones are teaching from what they know - which is

technology integration". Mr. Morgan provided an example of an older teacher that was presented with intentional training and became an advocate.

> One of the older teachers, or experienced teachers, was incredibly reluctant and didn't want to deal with it. I'm surprised she's even here. She's an English teacher. We showed her in one of these classes how to use Google Keep, and let her see how she could use it as a resource. And we asked her if she thought it could work and suggested that she could even use it for notecards and students could share it with you. So we went through and showed her how to do that and it was the greatest thing on the planet. It helped her be a better teacher. She was able to see that resource, share that resource and it became the greatest thing. She wondered why she hadn't used it for years.

Mr. Turbish shared this thought about the paradigm shift necessary for teachers, "So when we're giving students technology, we want them to be generative. We want them to be learning, but also creating something that ultimately is contributing to something better versus consumption."

Jefferson Academy has struggled to move forward with technology integration, partly due to lack of devices which stems from lack of funding which is an issue Mr. Jones can't control. He is, however, optimistic that Jefferson Academy will be in a better place financially in the future to have more technology available to teachers and students. He says,

> Technology integration is giving them stuff so they can be active learners. I want the kids to be active, collaborative. Lecturing is for passive learners. We should be getting students to figure out what's going on there instead of just telling them.

It's about using technology to research and learn. Learning is the big thing - to help them learn and understand. I think we'll get there someday here.

Supporting and modeling technology for teachers has potential to indirectly improve student opportunities. As teachers give more initiative to find new ways of researching and presenting, teaching becomes "less prescriptive on the teacher's part, which allows more student creativity to find the technological means on how to achieve what they want to achieve which is part of that critical thinking process," according to Mrs. Mahoney. The value of improved critical thinking is part of the preparation for post-secondary education.

Professional Development. One of a principal's primary roles as an instructional leader is to provide professional development opportunities for teachers. What is not consistent from one school to another is what topics are most crucial and likely to have the greatest impact on improving school culture or supporting faculty growth and student learning. Without exception, all of the principals in this study spoke about the ongoing professional development they offer their faculty. From on-site training with outside specialists performing the training to conferences and workshops, there was an obvious commitment to providing needed resources to support teachers in technology integration efforts. Mr. Anders' school offers a 2-day orientation mid-year that is conducted by the IT person. "We've had on-site professional development when we've gotten a new piece of technology; and our technology people will take everybody through how to use it, and we're sending people [to conferences] all the time" (Mr. Anders, Ambassador High). Mr. Anders added that Ambassador High offers specific training for teachers on using the school's SIS. He acknowledged the big need for that training was because, "People who

aren't doing what we'd like for them to, aren't going to change on their own." Mr. Jones is unwavering in his commitment to providing professional development for his teachers: "So, we have to teach them how to do it - finding someone who is an expert at something and having them come in and teach us."

Mrs. Mahoney is a big promoter of sending as many teachers as possible to educational technology conferences, and explains why she values those experiences for her faculty:

> I can go there and benefit from what I'm learning but when I come back to share with a math teacher or history teacher, it's like hearing from a third person and it's not as effective. So we want them to be there and hear it directly, and see the excitement, it's just different. Plus, when you see cool technology integration, many times, unless I'm teaching that subject, I may think "oh that's how I can do that" so this year, we've made an investment in that professional development.

Mr. Morgan's school offers weekly morning mini-sessions on focused technology topics. Mr. Nash's school takes advantage of summer and in-service days as well as after-school sessions for in-house professional development on a variety of current topics. Mr. Turbish acknowledged everyone does not come with the same knowledge bank when it comes to educational technology, but he spoke about his ongoing commitment to regular technology training:

> We are giving teachers the opportunity to - and encouraging teachers to - go to conferences that are based around this very idea of technology infusion so they, in turn, can come back and teach out some of the things they've learned. We try to be really good about that, so we are always encouraging people to go out, and

> learn, and bring back what they learned as a practice - as we deem it's a good fit for our culture and our community. That's probably the first thing in terms of a bigger influence that we try to do.

Mr. Turbish added his thoughts about the need to do more with professional development:

> I think we can always do more to provide our teachers with some research that is current. I think we try to do a good job. We almost always have somebody at a conference. We do unconferences here as well during some of our PLCs. We will do one in November where we have a couple of weeks and where we will offer - teachers and or administrators will sign up - to offer any one of a number of breakouts, if you will. So we want to always try to keep things in front of our team, but can we do more? I think we can always do more around that, so there's a limit to how much more to be realistic.

One of the challenges that was made more evident by the data analysis was the idea of providing professional development that is meaningful to deepen technology integration. The technology training the principals spoke about could be categorized as surface "how to" training. By contrast, professional development could teach teachers how to restructure curriculum in such a way as to allow students to use technology to research, learn, collaborate and solve problems in real world contexts. The professional development most of the participants in this study discussed and was evidenced in document analysis was limited to training in how to use the school's chosen SIS, software packages and communication methods.

Accountability/Organizational Improvement. As educational leaders, principals are expected to provide comprehensive assessments and evaluations of all matters pertaining to teaching and learning. An important component in the process is accountability and ensuring teachers are accomplishing goals, meeting expectations and helping students progress to the next goal. An outcome of a good assessment and evaluation system is a plan for organizational improvement.

Mr. Anders freely shared that his school lacked a formal instrument for evaluating teachers and that has affected his ability to hold them accountable. He expressed a desire to change that. "We need an instrument, and we need more accountability from our teachers about what the expectations are. We've had difficulty before saying, 'Do this'." He reported spending a lot of time in the classrooms and said, "they are absolutely overjoyed that I'm in the classroom." Nonetheless, Mr. Anders revealed his teachers are less than collaborative and very autonomous. He described them as "Silos. Very much silos. Independent maybe." Mr. Jones admitted he also spends a great deal of time in the classrooms with teachers. He is in the process of revising an old model used for teacher evaluation and indicated "part of it will have technology", but he was very noncommittal about the scope of the instrument and when or how he expects to use it. Even though Mr. Jones is new to the principal role, he's approaching the end of his second decade at Jefferson Academy. His knowledge of the culture and the relationships he has forged as a classroom teacher have given him the hope and energy to seek organizational improvements related to technology integration in his new role as principal.

Mrs. Mahoney's school has been a one-to-one school for almost ten years. She talked about the transition years and the accountability she implemented with teachers:

> When we first started, it was much more diligent on my part. So saying 'where is your technology integration?' So we were training the teachers to have that on their mind. So 'how are you doing that? What are the students doing to integrate technology? What are you doing?' Now, it's like second nature, and students have their own devices.

Mrs. Mahoney and Mr. Morgan both spoke about becoming paperless administrators and leading paperless initiatives in their respective schools. The appearance of Mr. Morgan's office offered clear evidence of this philosophy as he didn't have any papers on his desk, nor did he have any filing cabinets in his office. Mrs. Mahoney proudly shared that it has been a three-year process and she was further ahead than most administrators in her school but not completely there. She did suggest the biggest reason she values a paperless environment as an intentional organizational improvement that technology has afforded:

> I think that's a big thing for an administrator to know that you can digitize things and have quick access and not have to seek for all the paper sticky notes and all that. So it is a journey. You are never there. But you learn to enjoy the journey as you're trying to get there.

Mr. Morgan referred to himself as an intentional transitional leader. "I'm trying to continue to perpetuate that value of keeping on paper only what's necessary and that isn't much. You just scan it and keep it. And that's just the new normal." He is also very careful in stressing his philosophy behind the use of his teacher evaluation instrument. Evaluations are completed on a digital platform. He summarized his

thoughts about the various forms of technology that his teachers have access to: "The tool itself isn't something that drives instruction - we drive instruction."

Mr. Turbish's focus for organizational improvement with technology is based on the need to prepare students for college. To that end, he has promoted students taking online assessments, at least once a quarter, for each class. He furthered the conversation on organizational improvement by sharing details of how Thomasville's 2-tier teacher evaluation system leads to ongoing professional growth:

> So, tier-one involves a formal classroom evaluation that would have a pre-and post-conference as well as some walk-throughs over the course of the year, and when we do that one of the components of our formal evaluation does involve technology. So, we want to see how are you, or are you, using technology? In what way are using technology? How is that facilitating instruction in your classroom? Are you doing it just to check a box or are you doing it in a meaningful way? So that is a portion of that, and we do have conversations with that as well. Our tier-two teachers go on a professional growth plan where they are speaking into areas they want to see growth. We ask all of our teachers to do observations of other teachers. We encourage that.

Even though Mr. Turbish spoke specifically about the expectations of technology integration as a part of teacher evaluations, the document analysis for Thomasville's tier-one evaluation instrument and the tier-two instrument did not reflect any indication that technology was an element that would be expected or evaluated. I could only infer from the interview with Mr. Turbish that this is part of the written feedback he includes with the documents.

Principals who identify as providers are responsible for providing tangible resources such as physical, fiscal, and human resources. They also provide intangible resources such as instructional support, professional development, and accountability/organizational improvement. As seen in this section, being a thoughtful leader with a technology provider identity can lead to organizational improvements. One of the most obvious needs that was not found in data analysis was a teacher evaluation instrument with a strong technology integration component.

Findings of Research Questions

This study sought to explore how high school principals in nonpublic secondary schools support and evaluate teacher use of technology for classroom instruction. The analysis of the common themes that emerged in this study provided answers to the study's research questions. The data were analyzed through the lens of Role Identity theory which states there are three processes that an individual accesses to maintain a healthy self-perception. The first is the identity which is the accepted role a person performs in and is based on social expectations in a given situation. The second process is identity salience which is the notable significance of a particular role in a given situation and the third is commitment which speaks to self-meaning placed on a role that is used to sustain and support the identity and thereby determines behavior.

Findings on Research Question 1

This section will present findings for research question 1) How do high school principals support teachers' use of technology for classroom instruction in nonpublic schools? The findings gleaned from interviews with high school principals are based on

their self-perceptions. Additionally, data were gathered from document analysis and field notes.

Throughout this chapter, I review data that begins to substantiate identities of principals as they supported technology use in the classroom. Two of the six principals rejected their identity as a technology leader. Their subsequent behavior was to rely more heavily on their IT personnel to support teacher efforts with technology in the classroom. The other four principals accepted the identity as a technology leader although they each seemed to struggle with the saliency of that role. Saliency, or the subjective importance of the technology leader role, is interdependent on society's expectations, one's own expectations and one's ability to sustain and support those expectations (Thoits, 2012). The principals voiced the expectations placed on them by their upper level administrators included being promoters of their schools' missions. Mr. Jones demonstrated this when he was asked how valuable he thought technology was to the mission of his school: "I think it's valuable. I don't know if that's stated, but I think coming from the head of school, it's very valuable. I think it's one of those things we will be discussing - again you have to understand the position we're in. New headmaster - new principal." When Mr. Nash discussed his school's mission, he validated his saliency based on society's expectation: "If we're going to keep up with education and the rapid rate of what our students and how they are learning, we have to have it."

In theory, all six principals said they supported the use of technology for furthering learning. In practice, however, two of the principals were unable to express full commitment to that identity due to lack of resources. Mr. Jones and Mr. Anders didn't have a one-to-one or BYOD program in their schools making it difficult for them

to sustain the technology supporter identity. Being a technology supporter is not a well-defined role, and within the constraints of available technology, adequate (or inadequate) preparation and training for that leadership role, and small IT staff, the performance of the principals in this study presented varied levels of commitment.

Beyond the expectation of supporting the mission, principals shared their perceptions that their roles were significant in establishing and communicating a vision with the faculty as it related to technology support and use in the classroom. Part of setting the vision was having an 'all-in' attitude and believing that the vision and mission needed to be part of the decision-making processes regarding technology in the school. As part of the technology visionary identity, principals spoke of their schools' technology plans and the importance of aligning the goals for students and faculty with all aspects of technology. The components that were considered most noteworthy included infrastructure, hardware, software, policies, training opportunities, and proper staffing to support the efforts.

Based on the perceptions of principals, identifying as a technology leader was another important component to supporting technology use in the classroom. The principals differed in their perceptions of the types of leaders they were. Two of them identified as instructional leaders who support technology use while three of them identified as technology leaders. The sixth principal identified as a leader and supporter to his direct reports who support technology or instruction that involves technology. In their respective technology leader identities, the principals saw significance having and enforcing policies that protected students when using technology was part of their role. The majority of the principals went further to extend resources such as firewalls and

internet filters to off-campus student use in efforts to partner with parents who desired similar protections after school hours. A common thread among all of the principals was the need to continue learning and staying current with technology to keep policies fresh and relevant and to be able to model technology use for faculty. Mrs. Mahoney demonstrated her commitment by sharing her level of determination, "Provide the help that is needed because challenges happen. Just have determination to not back down." As much as they valued their need to stay current with technology devices and instructional practices, most principals were prevented from attaining full commitment to that role by things outside of their control, primarily limited financial resources. Additional resources could help sustain and support the identity thereby impacting principals' behavior.

Beyond having a technology visionary identity and a technology leader identity, principals identified as having a provider identity. They expressed the importance of accepting their role as a provider of tangible and intangible support for teachers in their efforts to integrate technology in the classroom. For tangible support, the majority of the principals spoke of their involvement and extensive knowledge of the physical resources their teachers and students had available. They also had some voice, if not final purchasing decisions, regarding budgetary decisions related to technology in their schools. The other tangible support the principals assumed as part of their role was responsibility for the hiring and retaining of appropriate technology support staff as well as faculty who were willing to adhere to the mission, vision and expectations around technology use in the classroom. Mr. Morgan expressed his value this way: "I want people who are really enthusiastic and championing their program." Mrs. Mahoney also established her value of having the right staff and the resultant behavior was to hire

younger teachers: “They are teaching the older ones … the older ones are teaching from their experience and the younger ones are teaching from what they know which is technology integration.” Regarding intangible support as part of the provider identity, principals in this study expressed the relevance of providing instructional support in the form of collaborative opportunities. Whether these opportunities were formal or informal, principals agreed they were invaluable. Additionally, principals spoke about the value of professional training with new devices and ongoing professional development to help teachers maximize use of the technology tools available in the classroom. The majority of the principals in this study are in new or unfamiliar roles as technology leaders and according to Role Identity theory, they need to experience self-satisfaction and receive social support to delve further into the technology supporter role.

Findings on Research Question 2

This section will present findings for research question 2) How do high school principals evaluate teachers’ use of technology for classroom instruction in nonpublic schools? The findings gleaned from interviews with high school principals are based on their self-perceptions. Additionally, data were gathered from document analysis and field notes.

The question of evaluation of technology in the classroom was a complex issue for most of the principals in this study. One aspect most of them agreed upon was the need to set and communicate expectations for teachers and students regarding technology use in the classroom. Mr. Jones articulated this by saying “I have to give them [expectations]. I am the one in charge.” However, there was substantial disagreement and a lack of evidence that those expectations were formally shared. In one school, the

expectations were simply implied. Document analysis provided evidence that two schools used an approved state model for teacher evaluation that included one brief statement regarding technology expectations. Yet another principal indicated technology use is always noted on teacher evaluation documents, despite having no prompt for it on the instrument made available for analysis. In fact, only one of the schools that provided teacher evaluation instruments had multiple statements and formal expressions of expectations regarding technology use in the classroom. In interviews, principals stated they were more comfortable with an informal, almost casual, evaluation of how teachers used technology in the classroom. Thus, analysis found that saliency of evaluating technology use in the classroom was low. If the role of technology evaluator was measured against all the other technology roles of a principal, findings from this study indicate relative insignificance The principals reported hope for technology making a difference; however, they were more concerned about accomplishing objectives and teaching students how to think critically than actually trying to pair technology integration to these same goals.

Of the three identities, visionary, leader, and provider, assuming a role as evaluator of technology was part of the intangible provider identity. Even though the majority of the principals in this study did not identify as a formal evaluator of teacher technology use in the classroom, they did, in fact, assume the role of holding teachers accountable for accomplishing goals and meeting other curricular expectations to provide needed information for organizational improvement. There was, however, expressed frustration with the imbalance of the conventional, culturally accepted role as a technology integrator and what the principals perceived to be true about their role, or

their own idiosyncratic, individual embellishments of what technology evaluation should entail. One reasonable explanation for the principals' frustration may be their lack of formal training and experience as administrators.

The three main tenets of Role Identity theory (identity, identity salience, and commitment) are in constant negotiation to garner social feedback and adjust self-perceptions and commitments to roles. This verification and rebalancing is not solely the work of the principal. The behavior of the principal in relation to teachers is important because without support and leadership provided by principals, teachers will lack the necessary feedback resulting in teachers' inability to fully commit to the role of technology integration. With decreased commitment, teachers are less likely to engage in behaviors that promote technology integration. Further discussion of these findings with regard to the Role Identity theoretical framework will be provided in Chapter 5. Finally, implications for this study and recommendations for future studies will also be supplied.

CHAPTER V

LIMITATIONS, DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was to explore and better understand how high school principals support and evaluate teacher use of technology for classroom instruction in nonpublic schools. The research was guided by the following research questions:

1. How do high school principals support teachers' use of technology for classroom instruction in nonpublic schools?
2. How do high school principals evaluate teachers' use of technology for classroom instruction in nonpublic schools?

Chapter 4 provided an analysis of data collected through interviews with six principals, field notes and collected artifacts. Common themes were identified regarding principals' perceptions of how they support and evaluate teacher use of technology for classroom instruction. This chapter will include discussion of the findings and the relation of those findings to the Role Identity theory as well as implications for this study. Finally, recommendations for future research will be offered.

Limitations of the Study

The study may have been limited by the use of only one coder, the researcher. A second or third coder may have improved the perceived reliability of the study's findings. Finally, the study may be limited by my role in data analysis. At the time of the study, I was a secondary principal employed in a private school in a southeastern state. Therefore, controlling the potential for bias was important. Bracketing was used to keep any preconceived ideas in check with my own experiences. This aided me in understanding how and what meaning participants constructed about events in their lives and created

distance from previously held notions as I became a nonparticipant observer. This place of suspended judgement was achieved by practicing reflexivity, a key thinking activity to keep me more aware of positions and potential biases and thereby minimizing their influence. To eliminate the opportunity for bias as an influence, I maintained a reflexivity journal where I documented my positions as well as thoughts, feelings and perceptions during the data collection and analysis of this study. Another bracketing strategy employed during this study included using semi-structured interviews which allowed me to take cues from the participants. Being reflexive and conducting bracketing decreased the likelihood of bias and added to the trustworthiness of data collection and analysis. Using multiple data collection tools, the data were triangulated with interviews, field notes, and document reviews. Furthermore, confirmability with member checks increased objectivity by validating the interview data. Such an approach allowed me to study the reality of technology support and evaluation as the principals constructed it.

Discussion

This section includes nonpublic school barriers to the support of technology as well as a discussion regarding the influence of administrative factors on technology integration. Additionally, the evaluation of technology use is the classroom is considered. There is also discussion about how the previously discussed Technology Standards for School Administrators (TSSA) are applied.

Findings from this study indicated that principals viewed themselves as an important component in the successful use of technology in the classroom. However, there was a high degree of variance in what that entailed, stemming first and foremost from their level of commitment to their role as a direct or indirect supporter of

technology. Generally, findings from this study indicated principals believed they supported technology use in the classroom by sharing a vision that aligned with the school's mission with the faculty, establishing and actively supporting a technology plan, instituting and enforcing policies around technology use, voicing expectations with faculty about how technology should be used and how it would be evaluated, and making provisions for sustainable support of devices, financial resources and professional development. In practice, however, there remains a high degree of inconsistency in how principals in nonpublic schools perceive they supported technology and even greater deficiencies in how they evaluated technology use in the classroom.

Even though literature showed the importance of principals' competency of technology to successful leadership of technology integration, the results of this study revealed a lack of formal training for principals in this area. Limited experience and opportunity to gain competency are ongoing concerns for their ability as technology leaders. Both of these first order barriers were identified by Ertmer (1999), Afshari et al. (2009), Murphy and Gunter (1997), and Ritchie (1996) and was confirmed with these findings. Additionally, principals' inabilities to keep abreast with this rapidly changing field continue to be a concern.

Nonpublic School Barriers to Support Technology

Funding. One of the challenges to supporting technology can best be attributed to lack of resources, particularly financial resources that limit available devices as well as adequate IT support staff and professional development training. The study affirmed the findings of Hew and Brush (2007) who reported that lack of resources is one of the most common barriers to successful integration. The current study was conducted in

nonpublic secondary schools where funding was limited to private donations and tuition dollars. To remain competitive with other private schools, keeping tuition at a reasonable rate meant not charging more than it currently costs to educate one child. This financial structure does not typically allow for surplus funds to consider future investments. Thinking longitudinally affords schools greater opportunities to plan for necessary changes and resultant support needed to sustain future technology initiatives. One of the many challenges that impedes such longitudinal thinking, however, is the rapidly changing environment around educational technology.

Site-based governance. An additional challenge to nonpublic school technology integration stems from the differences in school governance. From one school to the next, principals had different levels of input on budgetary allocations of resources. In some nonpublic schools, school boards and heads of schools offer the principal little autonomy over financial decisions. That type of governance limits a principal's ability to prioritize technology resources, both physically and through professional development.

Furthermore, one additional barrier unique to smaller nonpublic schools is the need for administrators, and building level principals in particular, to perform multiple roles. With limited resources and fewer personnel, multiple roles and varied expectations are placed on principals and may result in doing much well but little with excellence. Mr. Turbish (Thomasville High School) spoke of the challenges of the many demands placed on principals and the inclusion of technology being one additional time constraint on an already full job description.

Administrative Factors

Literature frequently points to administrative factors having an influence on successful integration of technology in the classroom. Findings from this study confirmed the findings of Hew and Brush (2007) that suggested stronger technology leadership from principals through communication of a technology vision as well as a school technology plan increases the likelihood that teachers will attempt technology integration. Hew and Brush (2007) and Inan and Lowther (2010) also concluded that administrators who prioritize professional development see higher incidences of teachers using technology in their classroom. This study's findings concur that sustained professional development is a necessary component in empowering teachers and building teacher efficacy in the usefulness of technology.

Several studies identified other administrative factors that impact teachers' willingness to engage in technology integration. Studies by Afshari et al., (2009), Murphy and Gunter (1997), and Ritchie (1996) supported the idea that the confidence of an administrator is a factor to successfully supporting technology integration. This study confirmed the same notion that a principal's level of efficacy regarding technology use is another influential factor in determining the effectiveness of technology leadership.

Evaluation of Technology Use in the Classroom

Through cross case analysis, this study revealed that principals evaluated classroom technology use casually, informally and tenuously as was seen in four of the six participating schools. Only one school in this study, Masonville, had evidence of rigorous expectations that matched evaluation of technology. This same school had a principal leading technology with the most experience of all participating principals and

who also had the most longevity at the current school. By contrast, one school, Ambassador High, had no model for evaluation of teachers, with or without technology, and Ambassador's principal was in his first year on the job. Comparing principal evaluation of technology from this study to other studies presented a challenge given the significant gap in the literature surrounding this topic. Apart from discrepancies in teacher evaluation instruments, the variance in the level of competence in technology use of the principals could explain the lack of consistency in communicating expectations and formally evaluating technology use and integration in teacher evaluations.

Technology Standards

Findings from this study indicated that principal support and evaluation of technology use in the classroom was inconsistent. The International Society for Technology and Education (ISTE) undertook a project to provide standards to administrators aligned to six identified domains known as the National Technology Education Standards for Administrators (NETS-A). These standards provided a framework for what administrators should know and practice to optimize effective use of technology in the classroom (Technology Standards for School Administrators Collaborative, 2001). The six domains of the NETS-A are 1) Leadership and Vision, 2) Learning and Teaching, 3) Productivity and Professional Practice, 4) Support, Management and Operations, 5) Assessment and Evaluation, and 6) Social, Legal and Ethical Issues. These standards represent the most widely accepted model of performance indicators and leadership tasks principals may use to evaluate their own performance as effective leaders of technology integration (Anderson & Dexter, 2005).

While the findings here suggested there was some adherence to these standards, there was loose commitment to the standards due to barriers previously mentioned. Five of the six principals in this study were following the standards to some degree or had oversight of an employee to whom they had delegated the responsibility. The variance came from each principal's interpretation of the standards and what was considered "best practice" for educational technology integration, as well as the principals' commitment to their role as a technology leader. Continuing education training with research-based standards such as NETS-A, and professional development aimed at equipping principals with necessary skills for technology leadership could provide clarity to the role of technology supporter, improve the saliency of the role, and impact behavior and commitment to that role. Adapted from the NETS-A, some additional suggestions that might be applicable to nonpublic school principals would be:

- Identify current research-based best practices for technology use in the classroom;
- Facilitate professional development that supports teachers in creating technology-rich learning environments where students to research, collaborate and develop higher order thinking skills;
- Participate in programs that expand current leadership practices to be able to model technology use in educational settings;
- Prioritize advocacy for financial and human resources and a sustainable technology plan;
- Incorporate expectations of rigorous classroom technology use in teacher evaluation instruments;

- Ensure all faculty and students have equitable access to technology resources;
- Institute leadership practices that encourage a paradigm shift for teachers from individual user to innovative leader.

Role Identity Theoretical Framework

Role Identity theory was the theoretical lens used to analyze the data in this study. Each of the principals in this study shared their own interpretation of a technology leader. According to McCall and Simmons (1966) there are three main tenets of Role Identity theory: identity, identity salience and commitment. These principals are operating within their identities that are rooted in the expectations society has placed on them.

The three themes that emerged in the analysis of data provided an identity structure for considering the effectiveness of support and evaluation of technology use in the classroom. The visionary identity, technology leader identity, and provider identity all center on roles the principals addressed as desirable to successfully leading and supporting instructional technology. All the principals accepted the visionary identity role and expressed the importance of providing a technology vision that is consistent and aligned to the school's mission.

As the principals reflected on their role as technology leaders, two principals were reluctant to self-identify and all six of them admitted they didn't carry the role alone. Each principal had a support person who helped their efforts overtly or that played a behind the scenes role as part of the IT department. The third identity that presented as a theme in this study was that of a provider. Each participant accepted some degree of responsibility in this role although the differences in school governance and resources

created a high degree of variance. By accepting this identity, each of the principals was more likely to take on the associated roles that included advocating for physical, fiscal and human resources.

The depth of each principal's willingness to engage in supportive and evaluative behavior of classroom technology speaks to their identity salience. In other words, their actions were directly related to what each of them valued. The values can easily be influenced by their own beliefs and perceptions about the usefulness of technology as well as their own level of confidence with technology. The principals who voiced expectations of teachers demonstrated more strongly their salience hierarchy which determines how a person will behave in a given situation. At given times some roles are more salient than others. If resources were available, professional development to support technology integration became more highly valued and sought after.

The third component of Role Identity is commitment. The principals in this study expressed varying levels of commitment to their identities as technology leaders and according to Stryker and Burke's (2000) work with Identity theory, people are in a constant state of re-balancing and negotiating all three facets of Role Identity theory. When a principal's self-identity, identity salience, and commitment are aligned, positive emotions result, and principal's self-efficacy increases. Through the lens of Role Identity theory this study has provided a foundation for principals and heads of school to understand the importance of a principal's identity, salience and commitment to supporting and evaluating technology. As principals explore their visionary identities, leader identities and provider identities, they will increase their identity congruence and self-efficacy.

However, principals in this study reported conflicting information regarding their self-identification as technology leaders. This speaks to the need to be knowledgeable about what a technology leader is and a willingness to perform those tasks that best support teachers in integrating technology in the classroom, including evaluating teacher use of technology. If little importance is placed on evaluating technology use, the result is inconsistent implementation and poor adherence to any technology initiative that is part of the school's strategic plan or technology plan. One possible explanation for this is that there are inconsistent evaluations of administrators in nonpublic schools and a lack of comparative norms and even colleagues to collaborate with since most nonpublic schools are in a district with just one school.

Implications

The findings from this study have implications for both policy and practice. Implications for governing bodies, leadership groups, higher education educators, and constituent groups are considered. Specifically, influences on accrediting agencies, policy makers, school leadership, principals, teachers and students will be discussed.

Governing Bodies

The majority of the participating schools in this study lack a formal model for evaluating technology in the classroom. Accredited schools such as these have a process of reviewing their practices; however, the accrediting agencies should be intentional about providing guidelines for incorporation of technology standards for administrators, teachers and students. A framework such as that offered by the International Society of Technology Education (ISTE) can provide the framework needed to guide practitioners to more thorough support and evaluation of technology in the classroom. Likewise,

policy makers attention should be given to policies that require accountability for following prescribed technology standards that lead to best practice. Such policies and framework can aid a school's board of trustees in strategically planning for technology integration.

Resource allocation is the job of the board of trustees for public and nonpublic schools. The findings here suggest that schools with limited technology resources are disadvantaged when it comes to integrating technology successfully. To overcome this, boards should think longitudinally and be proactive in the development and implementation of a technology plan that makes technology support and evaluation a priority.

As the primary employee of the board of trustees, it is incumbent on the head of school to provide direction to school leadership based on the mission and policies of the board. While the study's findings have implications for heads of school, they could also impact hiring practices. In hiring principals, heads of school should seek to identify, and place principals based on needs of schools according to technology vision and teacher beliefs and attitudes regarding technology use in the classroom. In supporting principals, heads of schools and district leaders should aim to provide principals with targeted opportunities to grow and adapt as technology grows and adapts. As principals grow and develop their knowledge of educational technology, they will be better equipped to provide sustainable support and training for in-depth professional development for teachers.

Leadership Groups

The results of this study provide some initial evidence suggesting principal confidence in technology leadership is lacking in nonpublic schools. Therefore, higher education programs and licensing programs should aim to equip future principals with targeted opportunities to develop competencies in available technology. In addition, leadership programs should be intentional in preparing principal candidates to lead teacher use of technology. These preparation programs should require some demonstration of knowledge or skills with technology standards.

Consistently providing a variety of experiences with skilled professionals who are adept at performing their roles as technology leaders could enhance the confidence and broaden the scope of principal candidates. As competent principals accept the role of technology leader, they would likely find sharing a vision for technology integration a much more organic process. Furthermore, communicating expectations for classroom technology use and engaging teachers in ongoing professional development become part of the workflow of the principalship.

Higher Education Educators

Higher education educators can glean implications from this study as they reflect on training practices for future principals. Ensuring that the Technology Standards for School Administrators (TSSA) are part of the education for up and coming principals is significant. In addition to engaging with the standards, higher education educators need to provide opportunities for principals in training to evaluate technology integration.

The three identities identified in this study, the visionary, the technology leader and the technology provider, may provide a sequence of training topics for future

principals. The importance of each leadership identity to the successful support of teacher use of technology can reinforce teachers' own identities. Such support for teachers can increase the likelihood that teachers will have a stronger commitment to their role and take risks to successfully implement technology in the classroom.

Constituent Groups

A final implication involves the two groups of people most directly impacted by a principal's efforts at supporting and evaluating technology use in the classroom, the teachers and students. With ongoing support of technology use from a principal, a teacher's confidence in current technology will increase resulting in more frequent integration efforts. As principals engage teachers in meaningful conversations and provide collaborative opportunities with other teachers who challenge them to take risks and try new methods involving technology, teacher confidence grows and technology use is extended to create new learning environments where students research, learn, teach, learn, collaborate and solve problems in real world contexts.

The ultimate impact then is on student learning. As students are exposed to teachers who are supported and held accountable to a set of rigorous standards for technology use, students will be better prepared for post-secondary education. With that increased preparation comes better opportunities in the workplace. The goal can then be accomplished in advancing our students' abilities to communicate and compete in a global market.

Concluding Contribution to Literature

This study offers two major contributions to the body of literature on leadership with technology integration. First, the results reveal principal roles are an important

component of successful technology integration in the classroom. More specifically, principal training and preparation to assume the role of technology leader is necessary to ensure adequate technology integration. Findings from this study also support the need for principals to assume a leadership role in supporting and evaluating teacher use of technology in the classroom. Principals could provide structure and guidance in the form of expectations to teachers. Such expectations should include the level of engagement teachers should have with a school's student information system as well as other management platforms, software, and applications. Additionally, principals should provide clear expectations for how and when technology should be used for presentation, exploration, creation and research. A second component of supporting teachers is providing opportunities for collaboration. Such opportunities should be creatively staged to pair teachers of various abilities and strengths for maximum impact. For example, younger teachers should be paired with older teachers, teacher with less experience should be paired with more experienced teachers, teachers who are willing to take risks in trying new things should be paired with more conservatively minded teachers. As teachers attend conferences, they should have the opportunity to present what they've learned to their colleagues in their own school. Such an approach encourages a culture of teachers teaching teachers. Finally, principals should provide support by offering consistent feedback based on research-based technology standards instead of assuming teachers will "figure it out" for themselves.

The study also implies evaluation models are needed to provide assessment and accountability for how technology is being used in classrooms. The limited availability of technology indicators in existing evaluation models is a problem that is not

unique to just the principals and schools in this study. Even though principals may have expressed expectations for technology use in the classroom, without a formal evaluation instrument that includes a technology integration component, there is a missing link for providing meaningful feedback to teachers. As teachers respond to expressed expectations and sustained support of educational technology leadership, students will benefit through increased engagement with technology.

Recommendations for Future Research

Based on the findings of this study, recommendations for future studies were considered. First, the population used for this study was limited to principals in nonpublic schools. Future studies could be conducted in public schools and could investigate the impact of available resources based on public funding versus private tuition and donations.

Second, only schools of a particular size were considered. By nonpublic school standards, the schools in this study are considered relatively large but compared to public schools, they have much lower enrollment and may net quite different results. Therefore, future studies could expand to public schools and consider schools of larger size to determine if support and evaluation of technology differs due to those factors.

The six principals in this study were at various ages/stages of their careers and had a wide range of years of experience at their current schools. Therefore, a future study may identify one age category of administrator or one range of years of experience for administrators to provide a better comparative analysis. Additionally, all administrative experience is not the same so narrowing the participant field to administrators who have been doing the same job in the same school for the same number of years might result in

more comparable results. Furthermore, studies of principals within their first few years as a school leader would add to the literature both in terms of principal preparation for technology but also in terms of conflict of the technology leader role with the responsibilities of new principals as they are socialized into the agency of principalship.

Data collection for the current study was limited to interviews with principals. A future study could include perceptions of teachers to examine how they align with principals' self-perceptions of support and evaluation of technology use in the classroom. Adding observations to such a study could also provide more evidence to support the findings. Observations may include classroom walk-throughs, faculty meetings, administrative meetings, or IT planning sessions.

As technology availability continues to grow in schools, it is likely that an awareness of the need to integrate technology will grow as well. Schools could be identified based on administrator knowledge and use of the NETS-A standards before an exploration was conducted on the principal's support and evaluation of technology. Likewise, schools could be identified to participate in a future study based on having incorporated detailed technology standards in a formal teacher evaluation model. Such similarities in participating schools could provide a more reliable cross case analysis and add to the broader literature on teacher supervision and evaluation.

To gain a wider perspective, a larger sample size could offer more generalized and verifiable results. A larger sample might also include cross case analysis of schools with similar technology available for teachers as well as similar technology available for students. The current study did not include any schools with the same technology resources available to teachers or students. Narrowing the sample in such a way might

even provide the ability to identify schools that are at similar places in their adoption cycle which could provide another layer of investigation given that schools tend to perfect policies surrounding technology use over the first few years.

Finally, in light of the current global pandemic that is occurring in 2020, a future study could take the themes identified in this study and consider the support and evaluation of technology integration in distance learning programs. The current study only considered brick and mortar schools, but evidence suggests administrators, teachers, and students are not limited to being in geographical proximity to maximize teaching and learning. The effects of the pandemic on the educational community have caught most schools completely ill-prepared in matters of equity, leadership, and basic technology know-how. A future study could be important as new procedures and policies will likely emerge from the current distant learning efforts.

Summary of Discussion/Concluding Thoughts

The motivation for this study stemmed from my own experience as a technology leader. As part of a leadership training program, I began a one-to-one initiative at a school where I was the secondary principal. With little formal training, I assumed the role of technology leader. I was determined to be able to do everything I was asking my teachers to do and attended technology conferences to broaden my understanding. Interfacing with numerous educators and hearing their frustrations and successes, led me on a journey of understanding what was truly happening in the field to support teachers' use of technology in the classroom. I was also inspired to investigate how my colleagues at other schools were holding teachers accountable to following through with using technology in such a way that warranted the financial investment the schools made. The

logical way to do that seemed to be through the teacher evaluation instrument. The instrument I accessed contained only one statement among hundreds about 'using technology to further instruction'. The ambiguity frustrated me further and my curiosity grew.

My participants were eager and willing to help and disclose what they did and did not know about technology leadership and I was surprised to find that the lack of formal support and evaluation of technology use was too common in nonpublic schools. What they desired versus what they were equipped to do were in conflict with one another. Sharing a vision, providing solid policies, voicing clear expectations, providing tangible and intangible resources were all worthy objectives. However, the limits of their environments were constraining them. As one of my participants said, "We can do better." I believe that as well, but it will take a concerted and combined effort of policy makers, heads of school, principals, and teachers. This journey has inspired me to not only stay abreast of NETS-A but to continue to educate myself on best practices in the field of educational technology and to be a resource for those who desire deeper understanding of technology leadership.

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APPENDICES

Appendix A

Interview Protocol for Principal Interview

Digital recording

Do I have your permission to digitally record the interview? ---{wait for response}---

Thank you.

Before we begin the questions, I would like to provide you with a reference point for what I mean when I say instructional technology to be sure we are talking about the same types of technology as we go through the interview. I also have a printed copy for you to refer to throughout the interview.

{Read aloud}

- *Instructional Technology – Information technology such as computers, iPads, devices that can be attached to computers such as: LCD projectors, interactive whiteboards and touchscreens, digital cameras, document cameras, electronic voters, devices used for projection/casting of digital information, networks (Internet and local), and any computer software that can be used for enhancing planning, teaching and/or learning.*

P1. How many years have you been in your current position?

P2. What other experiences have you had that have helped prepare you to be a technology leader?

P3. What is your current comfort level with technology?

P4. I would like to offer you the working definition for technology integration as it relates to this study. I also have a printed copy for you to refer to throughout the

interview: Technology integration is the use of technology for communication, student productivity, curricular design and teaching practice that includes creating new learning environments where students research, learn, teach, collaborate and solve problems in real world contexts. Given that definition what would you say successful integration of technology in the classroom means to you?

4a. Probing question: What types of technology do your teachers have in their classrooms?

4b. Probing question: How did you come to have technology in your school?

P5. How do you communicate expectations of technology use with your teachers?

P6. What do you believe is the biggest barrier to teachers using technology in their classrooms?

6a. Probing question: What do you believe are the things that promote or encourage teachers to integrate technology in the classroom?

P7. Some people say that it's the principal's responsibility to monitor and direct technology integration. What would you say to them?

7a. Probing question: How important do you believe a principal's role is in supporting technology in the classroom?

P8. What do you do to support your teachers' use of technology in the classroom?

8a. Probing question: Will you please give me an example of a time you demonstrated support of teacher use of technology?

P9. Suppose you were concerned about a teacher's effectiveness integrating technology. What would you do?

P10. Once expectations have been made known to teachers, how do you evaluate teacher's use of technology?

10a. Probing question: How do you feel about evaluating teachers on their use of technology?

P11. Educational technology is a rapidly changing environment. What are some of the things you have done to stay abreast of the trends?

11a. Probing question: What does your support network look like related to leading technology integration?

P12. If you imagined working at an ideal school, in what ways would the available resources related to technology be different from your school?

P13. How valuable is technology integration to the mission of your school?

P14. What type of advice would you give to other principals who are in the role of technology leaders in their school in the future?

P15. Is there anything else you would like to add?

Appendix B

Request for Research Participation – Letter to Head of School

Dear [Head of School]:

My name is Susan Wallis and I am a doctoral candidate in Educational Leadership and Policy Studies at The University of Tennessee. I am contacting you with an invitation for your secondary principal to participate in a dissertation research study that seeks to understand principals' leadership roles as they relate to technology integration. The purpose of this study is to explore and better understand principals' support and evaluation of teacher use of technology in the classroom. I am requesting permission to contact your secondary principal.

I am seeking secondary principals at ACSI Category 2 schools to assist me by completing an interview that is approximately 30-60 minutes in length. I would sincerely appreciate your approval to contact your secondary principal for participation in this study. This project is being conducted under the advisement of Dr. Pamela Angelle and has been approved by The Institutional Review Board at The University of Tennessee - Knoxville.

I certainly respect your principal's time, and I will schedule the interview at his/her convenience. The results of this study will inform educators and administrators of potential reform needs in technology leadership as well as help focus future professional development. Additionally, accrediting agencies may find this information useful for development of up-to-date teacher observation tools that better assess technology use in the classroom. Collected data will be kept in a secure location and destroyed three years after completion of the study. Results reported in the dissertation study will not include names or any other information that could be used to identify participants or participating schools. Participants reserve the right to withdraw from the study at any time before, during or after the interview is completed up to the date of formal publication.

If you are willing to allow me to contact your secondary principal, please respond to the primary researcher of this study, Susan Wallis, at swallis@vols.utk.edu. Please do not hesitate to contact me if there are questions or concerns regarding the study.

Thank you for considering this request,

Susan B. Wallis
Doctoral Candidate
The University of Tennessee
Cell: (865) 719-0663
swallis@vols.utk.edu

Appendix C

Request for Research Participation – Letter to Secondary Principal

Dear [Secondary Principal]:

My name is Susan Wallis and I am a doctoral candidate in Educational Leadership and Policy Studies at The University of Tennessee. I am contacting you with an invitation for you to participate in a dissertation research study that seeks to understand principals' leadership roles as they relate to technology integration. The purpose of this study is to explore and better understand principals' support and evaluation of teacher use of technology in the classroom.

I am seeking secondary principals at ACSI Category 2 schools to assist me by completing an interview that is approximately 30-60 minutes in length. This project is being conducted under the advisement of Dr. Pamela Angelle and has been approved by The Institutional Review Board at The University of Tennessee - Knoxville.

I certainly respect your time, and I will schedule the interview at your convenience. The results of this study will inform educators and administrators of potential reform needs in this area as well as help focus future professional development. Additionally, accrediting agencies may find this information useful for development of up-to-date teacher observation tools that better assess technology use in the classroom. Collected data will be kept in a secure location and destroyed three years after completion of the study. Results reported in the dissertation study will not include names or any other information that could be used to identify participants or participating schools. Participants reserve the right to withdraw from the study at any time before, during or after the interview is completed up to the date of formal publication.

If you are willing to participate in this research, please respond to the primary researcher of this study, Susan Wallis, at swallis@vols.utk.edu. Please do not hesitate to contact me if there are questions or concerns regarding the study.

Thank you for considering this request,

Susan B. Wallis
Doctoral Candidate
The University of Tennessee
Cell: (865) 719-0663
swallis@vols.utk.edu

Appendix D

Informed Consent Statement

Technology Support & Evaluation

INTRODUCTION
You are invited to participate in a dissertation research study survey which explores principals' roles in leading technology in the classroom by assessing their knowledge, promotion and use of technology. The objective of this study is to understand principals' leadership roles as they relate to technology integration. The purpose of this study is to explore and better understand principals' support and evaluation of teacher use of technology in the classroom. The results of this study will inform educators and administrators of potential reform needs in this area as well as help focus future professional development. Additionally, accrediting agencies may find this information useful for development of up-to-date teacher observation tools that better assess technology use in the classroom.

This project is being conducted under the advisement of Dr. Pamela Angelle and has been approved by The Institutional Review Board at The University of Tennessee - Knoxville.

INFORMATION ABOUT PARTICIPANTS' INVOLVEMENT IN THE STUDY
Participation in this study will require involvement in one face-to-face interview with the primary investigator of this study. Interviews are expected to be 30-45 minutes in length and will include a series of open ended questions regarding your experiences supporting and evaluating teacher use of technology in the classroom.

Upon completion of the interview, you will be provided with an electronic transcription to ensure that your responses were accurately recorded and consistent with your experiences. Review of your interview transcript should take approximately an hour, depending on the level of feedback you wish to provide. You will have 2 weeks from the receipt of the transcript to respond with any changes. If you do not respond within this timeframe, the data will remain unchanged from the interview and will be included without revision in the data analysis. While review of your interview transcript is not required for participation in this study, it is helpful in determining that your experience is documented and reflected in a way that is accurate.

Additionally, as this study is heavily interview based, ensuring accuracy of participant responses is fundamental to ethical and professional research practice. To accomplish this, all interviews will be audio recorded so that they may be transcribed for data analysis. To protect against the loss of any data, interviews will have two simultaneous methods of audio recording. Review of these recorded interviews will be limited to the primary investigator and the faculty dissertation advisor.

RISKS
This study has minimal level of risk as it requires reflection of lived personal experiences. Additionally, as this study includes the use of audio recording for participant interviews, a breach of confidentiality, while unlikely, is possible.

BENEFITS
While there are no known direct participant benefits as a result of participation in this study, the study seeks to add to an area of literature that is relatively sparse through acknowledgement and exploration of participant's lived experiences. The findings have potential implications for educators and administrators who are participating in technology integration.

CONFIDENTIALITY

Participant information will be kept confidential throughout collection, analysis, and publication of findings. Audio recordings will be saved in password protected files. Only the primary researcher and faculty advisor will have access to audio recordings. Any electronic files, such as transcribed interviews and data analysis documents will be password protected on the primary researcher's personal computer. Upon completion of the study, all audio recordings will be destroyed and printed study documents will be kept in a secure location at The University of Tennessee – Knoxville for a period of three years. After this period they will be permanently destroyed.

Additionally, as this study relies on personal narratives, published findings will omit any specific references that might link participants to this study. The researcher will select a pseudonym that will be used to identify comments in the final publication.

CONTACT INFORMATION

If you have questions at any time about the study or the procedures of this study you may contact the researcher, Susan Wallis, Doctoral Candidate at The University of Tennessee, at (865)719-0663,or swallis@vols.utk.edu, or the supervising faculty advisor, Pamela Angelle. If you have questions about your rights as a participant, you may contact The University of Tennessee IRB Compliance Officer at utkirb@utkedu or (865) 974-7697.

PARTICIPATION

Your participation in this survey is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your interview audio recordings and any transcribed data will be permanently destroyed and not used in the data analysis and findings of this study.

CONSENT

I have read the above information. I have received a copy of this form. I agree to participate in this study.

Participant's Name (printed) _____

Participant's Signature _____ Date _____

VITA

Susan Byrkit Wallis was born in Springfield, Illinois and currently resides in Knoxville, Tennessee. She completed her Bachelor of Arts degree from The University of Tennessee in 1986 and her Master of Arts degree in Education from The University of Tennessee in 1990. She completed her Doctor of Philosophy degree in Education with a concentration in Leadership Studies from The University of Tennessee in 2020. She currently works as a secondary school principal and assistant head of school with Christian Academy of Knoxville in Knoxville, Tennessee and is a Southeast Regional Commissioner for the Association of Christian Schools International (ACSI).