A qualitative case study identifying leadership roles that significantly impact the integration of technology in secondary schools

by

Charles Andrew Kipp

B.A., Kansas State University, 2004
M.S., Kansas State University, 2009

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF EDUCATION

Department of Education
College of Educational Leadership

KANSAS STATE UNIVERSITY
Manhattan, Kansas

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Abstract

This case study explored leadership behaviors that are perceived to have significant impact in the integration of technology at the secondary level in a Southwest Kansas school district. The study focused on the identification of leadership methods in the supervision, management, and evaluation of effectively integrating educational technology into the classroom. The focus-group sessions were conducted with several secondary-level principals in order to determine issues concerning technology such as (a) vision, (b) curriculum and instructional practice, (c) professional learning communities, and (d) social advocacy/digital citizenship.

Furthermore, focus-group sessions were conducted with principals in order to determine (a) pre-existing policy and practice concerning technology integration, (b) significance of leadership behaviors and technology integration in the school and classrooms, (c) difficulties with implementation of additional supervisory criteria concerning technology, and (d) recommendations of the principals in terms of technology supervision and evaluation.

The study included two focus groups (one high school group and one middle school group) from one Kansas school district. The study involves multiple focus group interviews, field notes, and a review of documents and artifacts. The data analysis identified significant themes that illustrated existing and desired behaviors and practices that the participants perceived to have a significant impact on technology integration at the secondary school level.

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Approved by:

Major Professor
Dr. Robert Hachiya

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I would also like to thank the building-level leadership participants in the study, without whose permission and involvement, it would not be possible to complete this endeavor.

Dedication

To my wife Julie Russell and my children Kaylee, Garrett, and Hannah – you will always be my motivation to become better at whatever I do. You have always been supportive and provided me with love and encouragement.

To my late father and mother, Dr. John and Mary Kipp – It took me far too long to achieve what you always knew that I could accomplish. To Dennis and Ann Greene and Dr. Eugene and Mary Russell – I am truly lucky to have so many wonderful parents.

To all of my family and friends, you are always sources of motivation and support.

Chapter 1 - Introduction

"Educational Administrators inspire and lead development and implementation of a shared vision for comprehensive integration of technology to promote excellence and support transformation throughout the organization" (ISTE 2015). Reforms such as the implementation of technology-enhanced instruction require educational leadership. In order to encourage responsibility and accountability as well as promote and support excellence in education, it is essential to understand leadership roles and behaviors in the management, supervision, and evaluation of integrating technology in the classroom.

The sections of this chapter include (1) an overview of the issue, (2) statement of the problem (3) the purpose of the study, (3) methods and research questions, (4) theoretical and conceptual framework, (5) the limitations of the study, and (6) a chapter summary.

Overview of the Issue

Supervision and leadership has evolved into an extremely complex system in the public school system. The increasing development of educational and informational tools, especially digital technology, has made computer and electronic technology an integral element of teaching. The Association for Educational Communications and Technology (AECT) defines educational technology as "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" (Januszewski & Molenda, 2008). The current and continuing push for accountability in education has led to the development of standards for technology use in schools. According to the International Society for Technology in Education (ISTE), "Educational technology standards are the roadmap to teaching effectively and growing professionally in an increasingly digital world. Technology literacy is a crucial component of modern society. In fact, the globalizing economy and technological advances continue to place a premium on a highly skilled labor

force" (ISTE, 2008, p.1). The push for technology integration in schools adds another facet in the constantly changing educational landscape and has aroused efforts to hold teachers responsible and accountable for effectively integrating technology as well as evaluating the effective use of technology. "In this time of rapid change, school and district leaders are more important than ever. Standards guide administrators in supporting digital age learning, creating technology-rich learning environments and leading the transformation of the educational landscape" (ISTE 2015). Entities at the local, state, and national levels have dictated and will continue to dictate new supervision practices and measures to assess the competent integration of educational technology (Dagley & Veir, 2002; Elmore & Furhman, 1988, 2001). Research has shown that effective integration of technology stems from effective school leadership and leads to positive outcomes. (Lei Jing and Zhao Yong, 2007; Lockwood, 1999; Picciano, 1998).

The ISTE has established National Educational Technology Standards (NETS) for administrators, teachers, and students in order to promote the effective use of technology within school and classroom environments. NETS stem from vast research correlating student achievement with the use of technology. There is a significant amount of research (Akyeapong, A., Franklin, T., & Keengwe, J., 2010; Sivin-Kachala & Bialo, 2009; Bayraktar, 2002; Blombeyer, Ferdig, Moran, & Pearson, 2005; Lin, Michko, & Waxman, 2003; Bauer, J. & Kenton, J., 2005; Protheroe, N., 2005; Laffey, Espinosa, Moore, and Lodree, 2003; Stratham, liD.S. & Torrel, C. R., 1996; Schacter, 1999; Sivin-Kachala & Bialo, 1999; Brush, Armstrong, Barbrow, & Ulintz, 1999), primarily quantitative, revealing the positive impact between the integration of technology in the classroom, student achievement, and test scores. However, there has been little effort to determine how leadership roles, behaviors, and perspectives concerning technology standards and performance expectations play a role in implementing technology

within the classroom and throughout the school. There is a need for research that will reveal leadership roles and behaviors that have the most significant and meaningful impact on supervising and evaluating technology integration.

Today's educators are called upon to raise academic standards to the highest level in history with common core standards that align with international benchmarks (National Governors Association, Chief Council of State School Officials, & Achieve, Inc., 2008). The evolution of teacher supervision and evaluation has stemmed from various research concerning effective teaching practice as well as legislation focusing on quality instruction. Since the 1950s and 1960s, teacher supervision has utilized scientific method as well as incorporated additional elements considered to contribute to determine student learning and achievement (Badiali, 1998; Tanner & Tanner, 1987, 1990; Tracy & MacNaughton, 1993).

"With the enactment of the No Child Left Behind Act of 2001 (NCLB), the federal government determined that schools must improve K-12 education because of the changing demands of an unpredictable world [requires] an educational system capable of delivering world-class learning to all students" (Altshuler & Schmautz, 2006, p. 5). Accountability has become an essential factor in education. There are additional factors within the legislation that inherently affect teacher supervision and evaluation. Title II of the No Child Left Behind Act of 2001 addresses professional development, standards for teachers, state hiring, and "highly qualified" status for teachers (Birman et al., 2007). In 2009, several states joined to create a common set of standards with which to assess the student achievement. "In July 2009, nearly all state school superintendents and nation's governors joined in an effort to identify a common set of standards [The Common Core State Standards Initiative (CCSSI)] in mathematics and English language arts (ELA), with the goal of providing a clear, shared set of expectations that would prepare

students success in both college and career" (Ryan and Frazee, 2012, pg. 1).

The concept of accountability within public education will remain; however, the policies and systems will adapt to the culture and the various stakeholder's perceptions of the purpose of education. The establishment and implementation of standardized expectations will continue to expand into all aspects of teaching and learning, including technology. It has been determined that accountability and evaluation of practice affects the performance of teachers and leads to more rigorous content and increased student achievement (Au, 2007; Mintrop & Sunderman, 2009; Bishop & Mane, 2004; Borko, Elliot, & Uchiyama, 1999).

Statement of the Problem

Due to research findings revealing that effective use of technology in classrooms leads to increased student achievement, the goal of maintaining technology standards and expectations for classroom practice and determining leadership roles in technology integration is necessary. Research shows that effective integration of technology can stimulate and increase teacher-student interaction, encourage cooperative learning, promote collaboration, develop problem–solving skills, enhance inquiry skills (Akyeapong, A., Franklin, T., & Keengwe, J., 2010; &Sivin-Kachala, Bialo, E., & Rosso, J.L., 2009; Bauer, J. & Kenton, J., 2005; Protheroe, N., 2005; Stratham, D.S. & Torrel, C. R., 1996). The issues involved in supervising teacher practice and evaluating the effectiveness of technology in education are complex; however, leadership is the foundation for effective integration of technology. There is research that reveals a significant link between effectiveness and technology and leadership (Kopcha, T.J., 2012, Ottenbreit-Leftwich, et. al., 2010; Kaplan, Owings & Nunnery, 2005); however, the research does not describe or reveal leadership roles or behaviors in terms of technology behaviors. It appears as if the accumulated, rich evidence base regarding the process of leading and implementing complex

innovation (Fullan, 2007; Glickman et al., 2010; Hall and Hord, 2006) has been largely ignored. A review of literature shows that there is a need for research concerning leadership roles in the supervision and evaluation of technology integration. Yet technology, as a significant educational tool and major school expenditure, must be held accountable to its promise of enhancing teaching, learning, and achievement. "With the acknowledgement of the importance of the quality of technology use on student learning, more policy emphasis should be placed on promoting technology uses that have positive impacts in schools. The fundamental goal of integrating technology into schools is to improve student learning. Therefore, encouraging more educationally meaningful technology use should be the focus of educational technology integration efforts" (Lei, J. & Zhao, Y., 2007, p. 286). There has been little research examining the role of the principals as technology leader (Chang et al., 2008).

Identifying leadership behaviors in terms of supervision and evaluation may reveal additional issues that affect technology integration and practice in the classroom as well as teacher performance. Lein and Zhao (2007) notes that there is "a need for research connected to educational technology and leadership perceptions/beliefs as barriers that influence change there is a need to explore and develop evaluation methods and instruments to evaluate student learning with technology, which is often experience-related, hidden, and difficult to assess through traditional outcome evaluation" (p. 287). Educational administrators must not only understand the significance of effective technology integration, but must lead, through evaluation and supervision, the schools beyond making technology available toward useful and successful integration. "…unless administrators take the lead and make the difference, schools will lag behind other sectors in society" (Bauer, J. & Kenton, J., 2005).

Merely providing technology to classrooms, the "build it and they will come" idea, does not inherently lead to effective educational technology integration. Studies have found that the least effective technology programs were those that simply placed hardware in classrooms, with little or no regard for the integration of the technology into the curriculum, issues of equity, or the provision of teacher support" (Valdez, 2005).

Purpose of the Study

The vast majority of research concerning the integration of educational technology in schools focuses on the correlation between technology integration and student achievement and/or performance data. Although this information is important in determining the success of technology in terms of learning outcomes, there remains the necessity to investigate the leadership role as a factor in technology integration in the classroom

The purpose of the study, ultimately, was to better understand the leadership behaviors perceived by secondary principals to have meaningful impact on the integration of technology in the school environment. The secondary principals for this study were from a successful and technology-infused district in southwest Kansas. This study provided data concerning effective behaviors in the integration and implementation of technology and the practices that principals believe to have meaningful impact in their schools. Additionally, the study examined the correlation to dimensions in the theoretical framework for technology leadership, which includes critical aspects of educational leadership.

Research Questions

In order to determine the leadership roles and/or behaviors pertaining to management, supervision, and evaluation of technology integration, this case study addresses the following primary research question:

How do secondary principals effectively lead the integration of technology in their schools as it relates to educational vision, curriculum and instruction, professional learning communities, and social advocacy?

The following are the subsequent and supporting research questions for this study:

1. *How do leaders successfully promote the educational vision in terms of technology within the classroom and school?*

2. *How is technology integration manifested by principals and leaders in terms of advancing curriculum and instruction?*

3. *How do leaders establish and positively maintain communities of learning in terms of technology integration?*

4. *How is social advocacy and digital citizenship promoted by leaders in conjunction with integrating technology?*

Theoretical Framework

Current research focuses on general theoretical leadership behaviors rather than specific behaviors impacting technology implementation. The theoretical or conceptual framework for this study, crafted by the researcher, was based on the common foundational elements from learning-centered leadership research by Vanderbilt University researchers Murphy, Elliott, Goldring, and Porter (2006), standards from the Council of Chief State School Officers (CCSSO) Interstate School Leaders Consortium and the updated version of the CCSSO Professional Standards for Educational Leaders (ISLLC 2008, PSEL 2015), as well as concepts from the International Society for Technology in Education (ISTE) Technology Standards for Administrators (2015). Leadership behaviors, as they relate to technology integration, are different than other processes within the school and district. The framework for this study was

developed to identify principal behaviors specific to technology leadership, for which the existing frameworks alone lack specificity and/or focus. The existing theoretical frameworks were not adequate and/or the frameworks covered aspects of leadership not particular to technology and therefore could not specify the scope of principal behaviors for this study. The researcher constructed the framework for this study based on the central idea that leadership roles and behaviors can impact educational outcomes specifically related to technology integration and implementation. As Murphy et al. state "…leaders influence the factors that, in turn, influence the outcomes (e.g., student graduation)" (p. 5).

Murphy et al. (2006) define learning-centered leaders as "…strong educators, anchoring their work on the central issues of learning and teaching and school improvement. They are moral agents and social advocates for the children and the communities they serve. Finally, they [Learning-Centered Leaders] make strong connections with other people, valuing and caring for others as individuals and as members of the educational community" (Murphy et al., 2006, p. 6).

The learner-centered leadership framework begins with behaviors that, as Murphy et al. contend, are shaped by four major conditions: previous experiences as a leader, the knowledge base of the leader accumulated over time, personal characteristics such as energy level, and values and beliefs that define the leader. Murphy et al. (2006) identified the dimensions of the learning-centered leader that have an impact throughout the school as well as in the classroom. For the purpose of this study, the researcher narrowed the focus to four areas including: vision for learning, curriculum and instructional program, communities of learning, and social advocacy. The dimensions of learning-centered leadership are discussed in greater detail in Chapter Two. This study examined the relationship between learning-centered leadership and behaviors of leaders that have meaningful impact on the integration of educational technology. In

order to fully understand what is needed to manage, provide support, and evaluate the integration

of technology, it is essential to identify meaningful leadership behaviors in relationship to the

dimensions that are distinct within technology leadership.

In addition to learning-centered leadership, educational leadership standards from the

Council of Chief State School Officers (CCSSO) Interstate School Leaders Consortium (ISLLC

2008) and standards developed by the International Society for Technology in Education (ISTE

2015) as resources for the framework for correlating the effective and successful integration of

technology were incorporated into this study will incorporate. Technology standards for

administrators have evolved in order to provide guidance in the following five areas of

leadership: (1) visionary leadership, (2) digital age learning, (3) excellence in professional

practice, (4) systematic improvement, and (5) digital citizenship.

Figure 1 - ISTE Framework

For this study, the researcher's conceptual framework focuses on effective leadership

roles and behaviors in four areas derived from ISTE (NETS), ISLLC (2008), and Learning-

Centered Leadership. The researcher utilized the four common leadership behaviors, from the leadership theories, related to technology integration and implementation:

1. Leadership Vision for Technology and Learning,

2. Social Advocacy/Digital Citizenship,

3. Communities of Learning/Excellence in Professional Practice, and

4. Curriculum and Instruction.
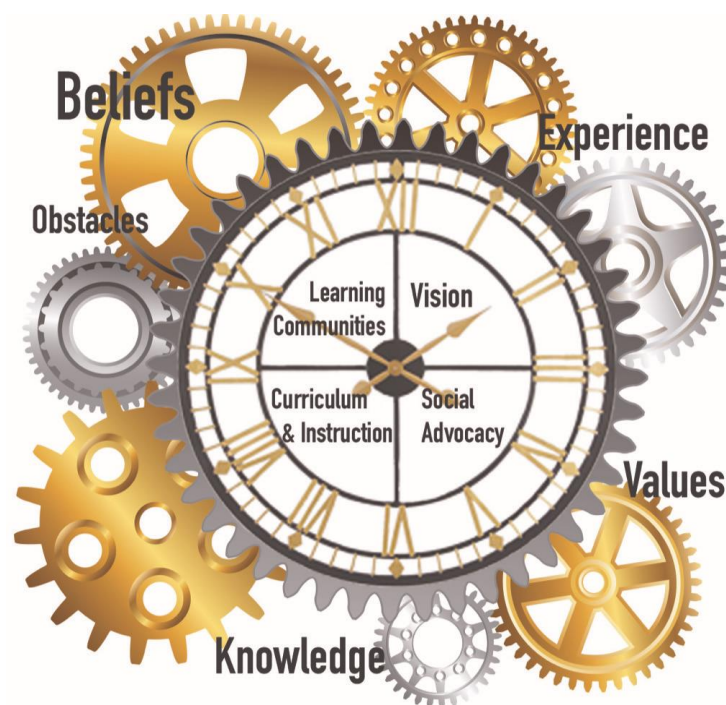
Figure 2 - Conceptual Framework

Design of Study

This case study explored the participants' perceptions of principals' roles and behaviors in integrating technology into secondary schools within a successful, technology-rich district. The large district afforded both an environment of plentiful and accessible technology and a relatively large number of qualified participants for the study. Utilizing interview data to gather rich, thick descriptions allows for an analysis of relationship between behaviors of leaders and

the impact on the integration of technology into schools. Qualitative case study appears to be the best medium for gaining an understanding of administrative roles in the supervision and evaluation of technology integration. "Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances" (Stake, 1995, p. xi). Individuals will perceive the educational environment in different ways. In this case, principals from a single district in the state of Kansas were observed in their practice and involved in focus-group discussion in order to provide thick and rich description revealing both patterns and themes.

The data analysis and collection process are described in detail in Chapter Three.

Limitations of the Study

Yin (2009), suggests "…the case study, like the experiment, does not represent a *sample*," the goal of case study research is to "expand and generalize theories (analytical generalization) and not to enumerate frequencies (statistical generalization)" (p. 15). This case study was limited to a small number of schools within a large southwestern Kansas district. As such, the findings may not be appropriate to generalize to other schools or districts. Each of the schools within the study had distinctive attributes and merely modeling the behaviors does not ensure that success in another school. Yin (2009) stated, "Case studies, like experiments, are generalizable to theoretical proposition and not to populations or universes" (p. 15).

Although the principals' behaviors in integration of technology can have the potential to improve instruction, learning, and processes, there are a number of other factors that limit the causality in this study. This study pursued an understanding of the behaviors of principals that they believed to have significant and meaningful impact on educational technology. The study

examined the connection of these behaviors to vision, curriculum and instruction, professional learning communities, and social advocacy.

Due to the fact that participants discussed their own perceptions in the focus group and with their peers, the methodological process could pose limitations. Although all participants appeared to be cooperative and forthcoming in both the focus group discussions and the follow up responses, there is a possibility that there was a level of discomfort speaking about negative or ineffective behaviors. This could have resulted in inaccuracies as to their behaviors or the significance of such behaviors.

The researcher applied measures in an attempt to compensate for possible limitations during the process. The researcher examined observation and field notes, artifacts/documents, and interview transcripts in order to determine if there were discrepancies in the principals' reported behaviors and follow-up questions included clarification for any contradictions as well as noting inconsistencies during the member checking process.

Summary of Chapter One

Technology has an ever-increasing role in both education and society. In an age of accountability and evaluation, the educational environment is facing new challenges in terms of change. Accountability in conjunction with educational technology has become a very important element of management, evaluation, performance, and ultimately success. By studying administrator behaviors that impact technology integration in schools, effective practices can be identified and barriers can perhaps be overcome. This study is intended to identify patterns in administrative leadership behaviors in management and supervision and how they affect the integration of technology in the district, school, and within the community. In the proceeding

chapter, a variety of the existing literature concerning technology standards and educational

leadership will be reviewed in order to show the justification and importance for this study.

Chapter 2 - Literature Review

There are numerous aspects to educational technology and the relationship to leadership and positive impact in the school. This chapter includes theoretical frameworks pertaining to and exploring the relationship between leadership management, supervisory, and evaluation behaviors as well as the positive integration of technology in secondary schools. The chapter also includes literature examining the areas in which successful principals have meaningful impact in the school and literature specific to the impact of leadership behaviors on technology integration and implementation.

Chapter Two is organized into three sections, beginning with the review of leadership theories integral in the development of the conceptual framework for this study including Learning-centered leadership, ISLLC standards for leaders, and ISTE NETS technology standards. There are many frameworks that have been developed to identify areas in which leaders must impact the educational process. This study utilized these frameworks to more specifically focus the research into major areas of concern in terms of the integration of technology.

The second section of the review includes literature and research related to the successful impact of educational leadership. The foundation of this study is based upon the theory that principal behaviors can successfully impact the school. This section includes research that ties principal behaviors to successful outcomes as well as approaches to effective leadership. This section is divided into two parts, the development of instructional leadership and transformational and distributed leadership.

The third section with the literature review focuses on the research more specifically conducted on technology leadership within the school. The integration of technology represents a

significant change that all principals face and the associated literature concerning technology leadership focuses on improving practice. The section is divided into the following topics: leadership roles and educational technology, 21st Century leadership, and technology leadership preparation. These areas were incorporated into the study in order to enhance understanding of leadership roles and behaviors in the integration of technology and the processes associated with educational change.

The chapter concludes with a review of the gaps in the literature as related to this study.

Conceptual Frameworks

Existing conceptual theories for leadership include a number of factors and behaviors for leaders in a broad sense of the system. There are a large number of existing frameworks concerning educational leadership. In order to design a conceptual framework that focuses the study on areas of principal practice more specific to technology integration that are impacted by leadership behaviors, the researcher utilized aspects of the following three existing theories.

The primary conceptual framework for this study was formed through the analysis of the eight dimensions of learning-centered leadership and their relationship to the ISSLC standards and ISTE technology standards for leaders. The goal of this study was to identify effective behaviors that intersect with these areas of principal practice and providing building principals with recommendations for significantly impacting the integration of technology into their schools.

Learning-Centered Leadership

The work of Murphy et al (2006) was the primary framework for this study. Learning-centered leaders are effective educators, who anchor their work in student learning, teaching, and positive school transformation. They are agents for change and social advocates for students. In

an analysis of learning-centered leadership, Murphy et al. (2006) identified the eight major dimensions of the learning-centered leader. The following dimensions, presented by Murphy et al. (2006), are the basis of learning-centered leadership theory: vision for learning, instructional program, curricular program, assessment program, communities of learning, resource acquisition and use, organizational culture, and social advocacy.

Vision for Learning

According to Murphy et al. (2006), learning-centered leaders develop the mission and vision for the school with the assistance of internal and external stakeholders. Leaders incorporate multiple sources of information when developing the vision including, student assessment data, community demographic data, culture, and information concerning learning patterns (Murphy et al., 2006). Learning-centered leaders facilitate a school vision with high expectations for student learning, a conviction that all students can learn, and clearly defined goals. Learning-centered leaders model the vision as well as communicate the vision to all stakeholders. These leaders utilize the vision and mission of the school as the anchor for practice and policy through formal and informal exchanges, symbols, and ceremonies. The following core leadership behaviors are used by learning-centered leaders in the implementation of the mission and vision: providing appropriate physical and emotional resources, developing and maintaining systems to enable stakeholders, delegating responsibility and accountability, building consensus and "buy-in" for policies, practices, and support systems, supervising faculty and staff committees responsible for identifying resources required for achieving teaching and learning goals, Supervising the development of performance criteria for achieving teaching and learning goals, supervising the analysis and reform of system requirements that are necessary to

achieving teaching and learning goals, and encouraging new policies and practices that lead to achieving results (Murphy, et al, 2006, p. 10).

Additionally, learning-centered leaders are agents and keepers of the vision; they continuously examine assumptions, beliefs, and values, assess the implementation of goals, and evaluating organizational performance and student learning (Murphy, et al., 2006; Louis & Miles, 1990).

Instructional Program

The second dimension of a learning-centered leader is a firm alignment with the instructional program. Effective learning-centered leaders understand and plan of the instructional programs in the school(s). Leaders allocate time to support faculty and staff in their efforts to strengthen teaching and student achievement. Learning-centered leaders provide detailed and specific feedback about teacher performance. Effective leaders recruit, hire, and promote effective teachers, counsel less-effective teachers to improve, and dismiss poor teachers. Learning-centered leaders appropriately schedule the school day in order to effectively balance instructional activities while minimizing non-instructional activities. Those in leadership limit interruptions to instructional time and coordinate time for teachers and classes. Highly effective leaders celebrate the instructional accomplishments and achievements of teachers (Murphy, et al., 2006).

Curricular Program

The next dimension incorporates curriculum leadership. Learning-centered leaders implement a curricular program with rigor. They safeguard opportunities for each and every student to learn content in all academic areas as well as monitor the effectiveness of the

curriculum. Learning-centered leaders work to coordinate standards, instruction, curricular

materials, and assessments (Murphy, et al., 2006).

Assessment program

The fourth dimension of learning-centered leadership focuses on the assessment program.

Learning-centered leaders are essential to the development, implementation, and monitoring of

the assessments within the classroom and throughout the school. Assessment systems in

learning-centered schools must be comprehensive. These systems feature a variety of data and

are monitored and collected in a variety of ways. Effective systems of assessment disaggregate

information by characteristics such as, but not limited to, gender, race, and class. Judgments are

made about the instructional effectiveness and curriculum through multi-source data

triangulation. Learning-centered leaders provide faculty and staff with results in a timely and

routine basis and facilitate dialogue individually, as well as in small and whole group settings.

Effective leaders ensure that student progress is reported to parents in an accessible fashion and

in a variety of formats (Murphy et al., 2006).

Communities of learning

Learning-centered leaders facilitate the development of positive learning communities.

Learning-centered leaders model a lifetime commitment to learning through personal growth

management. They focus on school improvement issues, assist teachers in strengthening

instructional skills by providing workshops, supply instructional coaches, and facilitating peer

observations and opportunities. Effective leaders utilize the principals of best-practice models

and learning theory to plan and provide professional development. Learning-centered leaders

promote formation of a learning organization that nurtures the collaborative process, establishes

organizational structures that promote shared responsibility for student learning, and facilitates

the building of shared beliefs. The actions of learning-centered leaders communicate the importance of community-building. Learning-centered leaders develop the foundations that support a focus on sharing, cooperation, and accountability while treating everyone with fairness and dignity. (Murphy et al., 2006).

Resource Allocation and Use

Resource allocation and resource use is another dimension of learning-centered leadership. Learning-centered leaders procure and utilize resources in the pursuit of each and every student achieving ambitious educational targets. These leaders are able to locate and obtain required resources. Resource distribution is linked to the mission and goals of the school, and learning-centered leaders strengthen the quality of school programs and student learning by spending only necessary time on the management and political aspects of acquisition (Murphy et al., 2006).

Organizational Culture

The seventh dimension of leadership is organizational culture. The five themes that emerge from the literature are production emphasis, accountability, continuous improvement, safe learning environment, and personalized community. A strong emphasis on production and/or commitment to results is indicators of an effective organization as well as learning-centered leaders. Effective leaders take chances in the pursuit of their goals and expectations, which are clearly defined. Learning-centered leaders utilize internal and external accountability systems. Everyone in the system is held accountable for aligning instruction and learning in conjunction with the achievement defined by the mission and vision. Effective leaders are unyielding in pursuing continuous improvement. They understand that settling for the status quo leads ultimately to failure. Learning-centered leaders make a commitment to establishing and

maintaining and orderly and safe educational environment. They address issues with facilities and address discipline quickly and consistently. Finally, learning-centered leaders create opportunities for student leadership and create personalized connections to the school community and appropriate role models (Murphy et al., 2006).

Social Advocacy

The final dimension of learning-centered leadership is social advocacy. Learning-centered leaders understand related developments and the possible impacts to the district, school, and to the community. These leaders anticipate the ways in which internal and external policy plans can impact schools and classrooms. Learning-centered leaders take a proactive position and act accordingly. They commit to educational diversity, proceed in an ethical manner with integrity and fairness. Learning-centered leaders are aware of, and follow appropriately, their personal values and beliefs. Ultimately, these leaders are adept at building relationships with all stakeholders in community, business, religious, legal, and political sectors (Murphy, et al., 2006).

For this study, vision, curriculum and instruction, professional learning communities, and social advocacy were of particular interest as they were influential elements in leadership roles and behaviors for this case study concerning technology integration. Other aspects of learning-centered leadership were not as significant to the study, for example resource allocation was not a factor due to the technology-infused nature of the district.

ISLLC Leadership Standards

The researcher found that there were consistencies across recognized leadership frameworks that aligned with leadership within technology integration. In order to identify significant factors within the case study, the researcher designed the study's conceptual framework by comparing existing leadership theoretical frameworks and incorporated ideals and

principals purported to lead to successful educational technology integration and usage. The Educational Leadership Policy Standards (ISLLC 2008, adopted by the National Policy Board for Educational Administration (NPBEA)) are comprehensive standards applied by successful instructional leaders (Gupton, 2010). The ISSLC is an organization of thirty-two educational agencies and thirteen educational administration associations that have created a comprehensive model for school leadership (Schrum & Levin, 2009). Gupton (2010) noted that forty-five states have implemented the ISSLC standards as a means of educational leadership and licensure programs. Basically, ISSLC Standards, or Professional Standards for Educational Leaders 2015, are continuously evolving and highlight the significance of instructional leaders' perception and their response to political, social, economic, and cultural change (Schrum & Levin, 2009). Although the standards were modified in 2015, this study utilized the fundamental concepts from the 2008 version of the ISSLC. Both the prior and updated versions of the standards incorporate the leadership elements utilized to develop the theoretical framework in this study. The 2008 standards are commonly used for leadership development as it takes time for integrating newer standards in educational practice.

The standards were established by the consortium in 1996 and revised in 2015 (Professional Standards for Educational Leaders). The ISSLCC, operated with the guidance of the Council of Chief State School Officers (CCSSO) (2008) developed the leadership standards identifying a vision for school principals, indicating specific performance indicators for expected content and abilities. The ISLLC (2015) added additional indicators to the standards. The following ten (10) leadership indicators are integral to student success: (1) Establishing and sustaining a mission, vision, and core values; (2) Understanding and modeling ethics and professional norms; (3) establishing and maintaining equity and cultural responsiveness; (4)

managing curriculum, instruction and assessment; (5) developing and a community of care and support for students; (6) Building professional capacity of school personnel; (7) Establishing and supporting a professional community for teachers and staff ; (8) Initiating and maintaining meaningful engagement of families and communities; (9) Directing operations and management; and (10) Guiding continual school improvement (p. 3). The ISSLC standards emphasized the leaders' fundamental responsibility ensuring student achievement (Schrum & Levin, 2009).

"The Council of Chief State School Officers published the first standards for educational leaders in 1996, followed by a modest update in 2008 based on the empirical research at the time. Both versions provided frameworks for policy on education leadership in 45 states and the District of Columbia. But the world in which schools operate today is very different from the one of just a few years ago—and all signs point to more change ahead" (NPBEA 2015). The 2015 ISSLC Standards were the result of an extensive review process and utilized empirical research that included more than 1,000 school leaders through surveys, interviews, and focus groups.

Several basic principles guided the policy standards: (a) student learning, (b) changing role of the school leader, (c) collaborative nature of school leadership, (d) professional growth and development, (e) assessment of school leaders, (f) integration and coherence, and (g) access, opportunity, and empowerment of stakeholders (Council of Chief State School Officers, 2008; Schrum & Levin, 2009, NPBEA 2015).

Many state agencies mandate that potential school leaders demonstrate proficiency on the Interstate School Leader Licensure Consortium (ISSLC) standards. The School Leadership Series (SLS) assessment instrument measures the school leaders' proficiency in targeted standards before receiving school-based leadership certification. School leaders must successfully respond to a series of scenario-based questions in order to demonstrate knowledge

of the ISLLC standards. In addition, many state agencies and local school districts utilize leadership standards in the licensure process.

In conjunction with learning-centered leadership, the ISLLC standards that corresponded with the conceptual framework, again, more specifically for technology integration were establishing and maintaining a vision, managing curriculum and instruction, and supporting professional learning community.

National Educational Technology Standards (NETS)

This study also utilized aspects of recognized leadership standards that were developed in order to guide educational leaders in the twenty-first century. The National Educational Technology Standards for Administrators (NETS-A) were created by the International Society for Technology in Education (ISTE). The standards of effective leadership competencies required to facilitate a technology-rich learning culture in schools include (a) visionary leadership, (b) digital age learning culture, (c) excellence in professional practice, (d) systemic improvement, and (e) digital citizenship (NETS-A 2008). The NETS-A outlined the expected abilities and understanding necessary for school leaders to effectively implement and manage technology integration in twenty-first century schools. Due to the fact that research has indicated that principals have a direct impact on the quantity and quality of instructional technology use in schools, these indicators are necessary (Brooks-Young, 2006, 2009; Creighton, 2003; Gupton, 2010; ISTE 2008; Miller, 2008; Seneca, 2009; Williamson & Redish, 2009). Professional development is necessary to ensure that principals become effective leaders in technology. Brooks-Young (2006, 2009) conveyed that NETS-A offers a comprehensive framework for instructional leaders, who can use them to identify materials and professional development opportunities that address their needs as leaders.

Observably, the ISLLC and NETS-A are standards that help to ensure that all students are equipped to function in the twenty-first century (Green, 2009; Williamson & Redish, 2009). The actions of instructional leaders must be measured by an objective accountability scale ensuring students achieve content, technology, communication, and career skills (Green, 2009; Schrum & Levin, 2009). Green (2009) asserted that applying standards established for instructional leaders promotes the growth of school principals and allow them to transform schools into professional learning communities where all stakeholders are valued.

Elements from NETS were incorporated into this study's conceptual framework in order to further define the leadership areas in which the study would focus. ISTE standards for leaders include key elements including visionary leadership, professional practice, and digital citizenship. The aspect of digital citizenship was incorporated into the discussion of social advocacy.

Development of Instructional Leadership

The behaviors of the school principal have evolved considerably over the past three decades. The expectations of leadership have moved away from traditional management functions such as planning, organizing, managing, and controlling (Green, 2009; Hoy & Hoy, 2006; Marzano et al., 2005; McEwan, 2003). Educational leadership has shifted to what is now termed as "instructional leadership." Gupton (2010) contends that educational researchers have linked effective instructional leadership practices to student achievement. Thus, school principals are instructional leaders who must be responsible for strategic management operations through effective collaboration and delegation in order to create and maintain a professional learning community promoting student achievement and success (DuFour, DuFour, Eaker, & Many, 2006; McEwan, 2003, Webster, 2013). The change in leadership role toward accountability and

student achievement symbolizes modern instructional leadership (Green, 2009; Gupton, 2010; Hoy & Hoy, 2006).

Current leadership models have developed from significantly influential early research work and publications that address instructional leadership. Sergiovanni (1984), a prominent educational figure, introduced one of the first instructional leadership models. It identified five leadership forces: (1) technical, (2) human, (3) educational, (4) symbolic, and (5) cultural. The technical aspects of Sergiovanni's model of instructional leadership aligned with traditional management practices that include planning, organizing, leading, and controlling as well as the human aspects that incorporate the interpersonal elements of communicating, motivating, and facilitating. Sergiovanni posed that the technical and human leadership influences are fundamental to groups or organizations in which leadership is essential. Over the past twenty-five years the researcher has refined and communicated twenty-first instructional leadership practices for educational leaders (Sergiovanni, 2006). Sergiovanni (1984) declared that educational, symbolic, and cultural influences are overtly important to the educational setting and constitute instructional leadership. The educational influence or force entails the instructional aspects of principals' roles: teaching, learning, and curriculum monitoring. Finally, the symbolic and cultural forces ensue from the instructional leader's ability to create, maintain, and exemplify the learning community as well as articulate stakeholder values. Principals must utilize leadership structures and apply them uniquely in the school. According to DuFour et al. (2006), this is essential aspect of effective leadership. Effective educational leadership must establish a professional learning community along with collaborative stakeholder teams working together to develop and accomplish shared goals that are aligned to the purpose of student success. Sergiovanni's (2006) model illustrated the essential responsibilities that twenty-first

century instructional leaders have for establishing and maintaining educational and cultural aspects in their learning community.

Hallinger (2005) presents an instructional leadership framework emphasizing the responsibility of the principal, working with stakeholders, ensuring a clear mission that focuses on student academic improvement and achievement. Hallinger states, "The focus on leadership development in schools was the result of external policy reforms aimed at driving school improvement forward by changing the practice of school leaders" (p. 222). Educational leaders are responsible for cultivating, monitoring, and improving student achievement due to the establishment of educational standards and enactment of accountability legislation in all academic subjects, including instructional technology. The principal, as empirical data on school improvement and school effectiveness has revealed, has significant impact as the instructional leader on school improvement initiatives (Marzano et al., 2005).

The instructional leadership definition differs greatly with widely published leadership models (Green, 2009; Gupton, 2010). Zepeda (2007) emphasized the abstract nature of theorizing instructional leadership. Instructional leadership is a complex term and has been extensively researched from the view of (1) the individual role of the principal (Sergiovanni, 2006), (2) the leadership characteristics of principals (Hallinger, 2008; Lambert, 2007, 2009; Marzano et al., 2005), (3) effectiveness of the school (Green, 2009), (4) educational change (Fullan, 2007, 2009; Hall & Hord, 2006; Reeves, 2009), and (5) school improvement (Glickman, Gordon, & Ross-Gordon, 2010; Marzano et al., 2005; Reeves, 2006). All of these areas are of concern for effective leaders when leading implementation of educational policies and practices throughout the school. Additionally, the meaning of instructional leadership has been associated with several trends: 1. Transformational leadership and distributed leadership (Bass & Riggio,

2006; Green, 2009; Gupton, 2010; Hallinger, 2005; Marzano et al., 2005; Schlechty, 2009; Spillane, 2009); 2. Principals preparation and practice standards (Council of Chief State School Officers, 2008; Green, 2009; Gupton, 2010; Schrum & Levin, 2009); 3. Professional learning communities (DuFour et al., 2005; DuFour et al., 2006; Fullan, 2008); 4. Leadership and Diversity (Creighton, 2003; National Association of Elementary School Principals, 2008); and 5. Twenty-first century leadership (National Association of Elementary School Principals, 2008; Trilling, 2010).

Ultimately, leaders who endorse, encourage and commit to continuous student improvement and staff development as instructional leaders are essential to school success (Green, 2009; Gupton, 2010). High levels of accountability associated with school reform in the twenty-first century are closely linked to the development of instructional leadership capacity. Effective principal practice supports the expected high levels of academic achievement for all students. The following section provides literature on leadership practices and perspectives for educational change, which is essential to supporting continued success in schools.

Transformational and Distributed Leadership

In the ever-changing educational environment it has become clear that successful leadership is based on influence rather than authority. Effective leadership has become more enabling, participative, and distributed as opposed to directive. The concept of transformational leadership coupled with distributive leadership has become more prevalent in educational culture.

Transformational leadership is defined as practices implemented by leaders to initiate and accomplish change (Leithwood, 2005; Spillane, 2006). Valdez (2006) attests that transformational leaders employ broad perspectives, an inclusive vision and mission,

organizational goals, and system-wide initiatives to impact change. Bass and Riggio (2006) designed a framework for instructional leaders consisting of four focus areas to incorporate when tackling the demands of accountability and change concerning twenty-first century reform: (1) individual consideration, (2) intellectual stimulation, (3) inspirational motivation, and (4) idealized influence. Marzano et al. (2005) contend that it is essential that the school leader attend to the needs of individual staff members and provide personal attention, especially those who appear to be left out (individual consideration). Effective school leaders must assist staff members to think in new ways about previous situations and problems (intellectual stimulation). The school administrator must establish and convey high expectations for all teachers and students (inspirational motivation). Finally, an effective leader must model expectations via personal accomplishments and demonstrations of character (idealized influence) (p. 15). Modeling effective practice is a significant factor in transforming practice and culture. Marzano et al. (2005) asserted that transformational leadership appears to produce results beyond expectations.

Fullan (2002) identified similar characteristics comparing aspects of successful transformational leaders and successful business leaders. Importantly, effective leaders throughout all organizations demonstrate five indistinguishable behaviors and beliefs: (1) a strong moral purpose, (2) an understanding of change dynamics, (3) an emotional intelligence when building relationships, (4) a dedication to acquiring and sharing new knowledge, and (5) a capacity for using and articulating reason. These behaviors and beliefs are collectively found in effective transformational leaders and have the capacity to implement and facilitate sustainable change (Fullan, 2002).

According to Leithwood (2007), Hallinger et al (2005) have offered the most complete model of instructional leadership, supported by empirical data, including the facets and outcomes of successful transformational school leadership. The model incorporates three categories of leadership practices: 1. Defining the mission including framing and communicating the school's goals; 2. Managing the instructional program including observing, managing, and evaluating instruction, coordinating curriculum, and monitoring student achievement; 3. Promoting a positive learning environment, protecting instructional time, providing and encouraging professional development, maintaining visibility, providing faculty and staff incentives, and providing learning incentives (pp. 190-191).

Additionally, Leithwood upheld Hallinger's appraisal of the data concerning the significance of principals developing the district and school mission as a transformational leadership practice. As pertaining to school reform, the importance of a well-defined mission has been maintained by many researchers (DuFour et al., 2005; DuFour et al., 2006; Gupton, 2010; Hallinger, 2005; Hoerr, 2005; Marzano et al., 2005). Schlechty (2009) highlights the fact that leading transformational change is a challenging endeavor, requiring enormous effort and the ability to succeed. Principals, dedicated to sustained school improvement and unceasing transformation, must develop their leadership capacity and that of others. Principals must establish and be actively involved in collaborative networks with instructional leaders in order to transform school learning communities. In addition, Schlechty (2009) contends that collaboration from colleagues allow principals to experience support, identifying and sharing similar situations, risks, and indecision. Collaboration and networking opportunities impart perceptions of community and purpose extending beyond the individual. Finally, transformation leadership is challenging and demanding; implementing reform is an extension of instructional leadership as

leaders attempt to encourage and expand involvement of stakeholders as well as increase capacity and improve policies and practice (Marzano et al., 2005).

Transformational and distributed leadership are the predominant models for providing structural guides for instructional leaders (Marzano et al., 2005). According to Leithwood (2005) "At its root, the concept of distributed leadership is quite simple: Initiatives or practices used to influence members of the organization are exercised by more than a single person" (p. 17). Marzano et al. (2005) declare that via transformational leadership, educational leaders develop and enhance the capacity of stakeholders, yield results above and beyond expectations, and ensure continuous student improvement. These leadership models directly influence the development and evolution of instructional leadership through expanded stakeholder involvement. In addition, the primary aspects of transformative leadership and distributive leadership are aligned to the principals' roles as technology leaders (Hallinger, 2005; Valdez, 2004).

Schlechty (2009) states that the motivation for leaders to engage in shared leadership skills that actively involving stakeholders in the development and integration of relevant and rigorous instruction as well as professional and positive relationships ensure the successful integration of technology into daily instruction. The No Child Left Behind Act of 2001 (NCLB) and more recently the Every Student Succeeds Act of 2015 (ESSA) provide standards and accountability requirements which place and will continue to place greater demands on school leadership. Therefore, the roles and behaviors of school leaders are continually redefined by the community and stakeholder's shared vision and mission. Green (2009) contends that it is essential for principals to distribute or delegate appropriate leadership tasks and responsibilities

to stakeholders and for teachers to increase participation in the process of policy decisions and instructional reform and educational leadership (Hall & Hord, 2006).

Principals must attempt to create a balance between management and empowering stakeholders (Green, 2009). A positive attribute of distributed leadership is that both school administration and teachers collaborate in the selection, development, and implementation of new strategies and technology as well as the evaluation of results (Schlechty, 2009). Additionally, the professional learning community benefits from enhanced capacities and the diversity of the stakeholders and allows them to benefit from diverse individual assets. A greater appreciation of stakeholder involvement can be achieved and an understanding of the effect of behavior on the learning community (Leithwood, 2005). Gupton (2010) mentions that distributed leadership is shared amid all community stakeholders in order to further student performance. The distributed leadership model is chiefly associated with: (a) shared leadership, (b) collaborative leadership, (c) democratic leadership, and (d) participative leadership constructs (Leithwood, 2005). This leadership theory exemplifies a leadership shift away from the top-town or hierarchal framework. Similarly, Leithwood (2005) acknowledges that distributed leadership initiatives are implemented to impact more than one individual, but rather attempt to achieve positive and successful outcomes for the entire school community.

Spillane (2006, 2009) explained distributed leadership as basically several individuals shouldering the responsibility for leadership activities. Spillane (2006) highlighted that the meaning of distributed leadership extends beyond shared leadership. Specifically, within distributed leadership there is a connotation of a leader of other leaders acting together to sustain the school community. This model necessitates collective leadership and follower interactions, and their fundamental school-based routines and circumstances. Spillane (2006) identifies the

following imperatives of distributed leadership: (1) Leadership practice is the central anchoring concern; (2) Leadership practice is generated through the interaction of leaders, followers, and situations; each element is essential for leadership practice; (3) The situation both defines leadership practice and is defined through leadership practice (p. 4).

The distributed leadership perspective involves an assortment of stakeholders and the focus is on leadership practice and interactions, not only on the roles of the stakeholders. Finally, distributive leadership provides a framework for leadership practices and the interactions between leaders and followers in the school environment. Distributed leadership enhances the opportunity for stakeholders to learn from one another. Some staff may have technical expertise and feel more comfortable with technology than others who may not be accustomed to using technology (Gordon, 2005). The distributed leadership paradigm allows the opportunity to staff take an active role educational reform.

Transformational and distributed leadership allows for categorizing behaviors and can be important in identifying how behaviors influence change. In this study, technology is the impetus for change and principals must acknowledge the pathways for change and understand the behaviors that can impact the process. Transformative and distributed leadership perspectives help to pinpoint and better understand behaviors that impact the educational process.

Leadership Roles and Educational Technology

The district leader and school principal are key figures within the public educational system and stand as primary elements underlying most studies (Lecklider, Britten, and Clausen, 2009). School principals and district administrators are essential to the process of integrating technology into the schools. Researchers and educational organizations have confirmed that leadership is a vital component of technology-based educational reform (Anderson & Dexter,

2005; Byrom & Bingham, 2001; Gibson, 2002; Martin, Gersick, Nudell, & Culp, 2002; Wagner, 2004; Wells, 2007).

Technology integration and implementation has been a significant addition to the roles and responsibilities of principals as curricular and instructional leaders and has led to the need for identifying successful principal behaviors. Without a doubt, integrating technology into teaching and learning necessitates growth in the leadership capacity in response to change as well as positive and effective integration of instructional technology (Brockmeier et al., 2005; Brooks-Young, 2009; Seneca, 2009). Effective leaders are essential in developing an environment in which technology improves/increases student learning (Brooks-Young, 2009; Kara-Soteriou, 2009; Pitler, 2006). As with this study, the leaders, referenced in the literature, were observed to establish a vision, model successful behaviors and practices, provide support to the faculty, organization and focus, developing leadership capacity, and supplying in-service and professional growth opportunities (International Society of Technology in Education, 2007; Rudnesky, 2008; Schrum & Levin, 2009).

Technology is a continually changing element in the school system and leaders must transform practices to reflect the changing environment. In order to create enduring change and build staff capacity, effective educational leaders understand the dedication of both time and energy. It is important to understand that many school leaders may be uncertain about the implementation of technology strategies in order to enhance learning, or may feel their personal knowledge of technology is insufficient to make determinations (Brockmeier et al., 2005; Hess & Kelly, 2005; Kara-Soteriou, 2009; Valdez, 2006). The intent of this study is to provide effective behaviors for principals in order to better implement and maintain technology in the school.

As school principals face the challenge of integrating technology into the educational process, it is essential to maintain a current and relevant understanding of technology and associated strategies. According to McLeod (2008), technology leaders must understand twenty-first century globalization, innovative tools available for student learning, and new and impending instructional technologies. Specifically, instructional leaders must develop insight about the ease in which students function and learn within a fast paced, rapidly changing technology media-rich environment. Additionally, Prenky (2001) refers to students as digital natives who think differently because they have developed "hypertext" mental pathways through the playing electronic games and interactive media. Therefore, educational leaders must be agents of change who can assist stakeholders to look beyond the current system in the school. Essentially, educational leaders are and will be expected to be active participants in technology and school reform, utilizing technology to direct instructional changes that will be of critical importance in the twenty-first century (Brooks-Young, 2009). In conjunction with the previously mentioned goals, McLeod (2008) identified school leadership tasks that include identifying the objective of technology use and establish a shared vision, communicating with stakeholders, establishing a supportive climate, promoting collaboration and cooperation, creating a professional learning community, implementing a structure of professional development, providing technology support, monitoring classroom implementation, and utilizing technology for data management administrative tasks. The effective application of instructional technology must support student growth and achievement in the acquisition of twenty-first century skills. Utilizing available technology in the school and classroom is a necessity and not a luxury or option in providing effective instructional leadership.

Sandra Gupton (2010) states that principals must tap into the potential of technology and that it is essential to demonstrate effective instructional leadership in the integration of technology. Gupton contends that "It is an essential, twenty-first century power tool that has significant versatility in the hands of a skilled principal and staff in facilitating the school and community's efforts to improve the quality of teaching and learning for each child" (p. 166). According to Gupton, leaders must apply the following strategies in order effectively integrate technology in schools: use technology to access and analyze a variety of instructional and student performance data, create and maintain databases for all stakeholders within the learning community, integrate school-wide management systems and curriculum; integrate and transform technology throughout the curriculum, regard and acknowledge that technology is a necessary instructional tool, rather than an extravagance or luxury in terms of class content; develop in-service programming and demand that staff participate in continual professional development to develop skill and build capacity, and employ and utilize technology support specialists based at the school.

In order to improve student engagement and achievement, principals must be technology leaders in order to influence, transform, and harness instructional technology. Flanagan and Jacobson (2003) identify five common themes linked to the effective integration of instructional technology across the curriculum: (a) student engagement; (b) shared vision; (c) equity of access; (d) professional development and in-service; and (e) universal or global networks. According to Flanagan and Jacobson, these themes provide a contextual framework for principals and educational leaders shouldering the responsibilities of successful integration of technology and enhancing student improvement and success. Specifically, the framework includes goals, tasks, and specific outcomes aligning with the five themes.

Finally, Flanagan and Jacobson (2003) highlight significant issues regarding the role of district and school leadership in the integration of technology. They offer a framework to guide leaders in their efforts. Flanagan and Jacobson (2003) lack empirical data needed to validate the proposed framework; however, the model has a strong connection to the role of school leadership in transforming educational practices through the integration of technology.

Additionally, Brooks-Young (2009) support the contention that principals must have more than minimal technology proficiency in order to be a successful instructional leader within a school in which technology plays an integral role. According to Brooks-Young, the essential proficiencies for effectively implementing instructional technology include the establishment and articulation of a vision, motivation to engage in life-long learning, comprehension of varied instructional practices, implementation of the change process, and manifestation of interpersonal skills. Brooks-Young (2009) states that principals who demonstrate vision, knowledge, and skills has the capacity to work with all stakeholders to investigate, develop, implement, and evaluate comprehensive programs maximizing the effectiveness of technology and promote student success. Successful principals work collaboratively and influence stakeholders to commit to the integration of educational technology.

There are many resources and references that suggest best practices, strategies, and frameworks in which provide guidance for instructional leaders in the integration of technology (Brooks-Young, 2009; Flanagan & Jacobson, 2003; King, 2002; McLeod, 2008; Schrum & Levin, 2009; Willamson & Redish, 2009). Although these suggestions are addressed in the literature, there is a lack of empirical studies to determine roles and behaviors that are essential to developing a technology-rich instructional environment, integrating technology across the curriculum, and positively impacting student achievement. Additionally, the educational leaders

are ultimately responsible and accountable for establishing a learning environment in which stakeholders effectively integrate technology and ensuring successful implementation to benefit all learners (Brooks-Young, 2009; Creighton, 2003; Gupton, 2010; National Association of Elementary School Principals, 2008).

Although it is difficult to determine consistency in the effective implementation of technology in schools, research demonstrates that leadership roles play an important part in integrating and/or reforming school processes (Becker, 2000; Shapley et al., 2009). Technology leadership, sometimes known as e-leadership, that impacts technology integration must be researched in order to better understand the processes and outcomes of technology in schools.

Miller (2008), in a mixed method research study in Virginia, highlighted the essential role that school principals have in successfully integrating educational technology into the school curriculum. Additionally, quantitative data via a technology survey as well as qualitative interview data were gathered to examine school principals' roles in order to determine the professional development needs related to technology leadership. Twelve school principals were included in the study. The principals participating in the study indicate that the factors defined as electronic learning (iLearning) and the Social, Legal, and Ethical Issues factors delineated in the National Education Technology Standards for Administrators (NETS-A) were essential to successful technology leadership. The ISTE developed standards for educational technology in the 1990s. Over the past two decades, the ISTE has updated the National Educational Technology Standards in order to support a transformation in education toward a connected, collaborative learning environment through the use of educational technology. In addition, due to the impact of leadership on integrating technology, the ISTE established the National

Educational Technology Standards for Administrators (NETS-A) with the goal of promoting and supporting the integration of technology in schools.

Notably, the study identifies a disparity on three of the measurement scales: (a) Learning and Teaching, (b) Productivity and Professional Practice, and (c) Leadership and Vision. In analyzing the participant responses, it was determined that principals of schools who actively integrate instructional technology apply leadership codes as Leadership and Vision, Learning and Teaching, and Productivity and Practice notably more as compared to those who lead schools less involved in technology integration. The study reveals an increased need for professional development in conjunction with the six measures of the National Education Technology Standards for Administrators (NETS-A); the most significant areas of need in Learning and Teaching, Leadership and Vision, and Productivity and Professional Practice (Miller, 2008). The results punctuate the importance of school principals as technology leaders and show an increased need to build capacity in school leaders in the area of technology integration. The study revealed differences between principals who lead schools with high levels of technology integration and principals who lead schools with low technology integration.

A mixed-methods study, conducted by Seneca (2009), addressed the deficiency in the literature regarding professional development for principals and technology leaders. According to Seneca, school principals must increase leadership capacity in order to keep current with the broad-scoping technology skills that students acquire from a technology rich contemporary culture. Seneca's study investigated and explored specific technological skills principals consider significant for creating and maintaining a successful technology-rich school. More specifically, the qualitative interviews reveal the types of technology and leadership skills practiced by effective leaders. The survey results indicated that principals had a greater insight of leadership

and vision, learning and teaching, ethical issues as compared to operational skills. Secondly, there was an inversely proportional relationship between experience and confidence when comparing to technology skills. Thirdly, principals recognized the necessity of theory and operational skills, but are not able to communicate and/or support those proficiencies in the school. Finally, principals reported difficulty in evaluating and assessing instructional technology practices. Similarly, there are themes that emerge from the interview data including: support for on-going professional development at all educational levels; integrating technology into daily instruction in order to improve student engagement and success; the effectiveness of technology as a communication tool; and educational leaders must advocate for and utilize technology to attain stakeholder buy-in. Seneca (2009) found that principals understood that theory-based skills are essential for a technology-rich learning environment. Staff development is necessary to build the required capacity to be successful when integrating technology into the curriculum. Seneca's study supported the results from Miller's study (2008) indicating that principals require increased capacity via professional development in order to establish a technology-rich learning environment. Miller (2008) and Seneca (2009) proposed providing professional development opportunities, addressing the needs of educational leaders.

In an analogous study, Kozloski (2006) investigated perceptions of principals regarding their ability to lead technology integration utilizing a mixed-methodology process. The study examines the relationship between principals with professional development in technology to identify the correlation between the levels of integrated technology and examines approaches principals apply to contribute to technology integration. During the professional development program, principals, in this study, were introduced to technology skills and educational theory associated with technology integration during the professional development programming. The

training program was aligned to the Technology Standards for School Administrators (TSSA), but it excluded certain performance outcomes aligned to the standards. Data was obtained via surveys and thorough interviews to discover information concerning the impact of the professional development programs concerning technology for educational leadership. The results of the study indicate that schools were successfully integrating instructional technology into the curriculum; however, there remained a need for a robust infrastructure including personnel, funding, resources, and physical space. Collectively, the literature strongly suggests the need for additional technological resources (Bull & Garofalo, 2004; Price, 2009; Schlechty, 2009; Weinstock, 2010). Additionally, numerous research studies assert that it is necessary for educational leaders to allocate resources effectively in order to lead the necessary change leading to successful technology integration (Schlechty. 2009).

This study reported that principals' perception of their role is characterized as traditional, focused on managerial and organizational tasks. Previous examples in the literature underscore the pronounced role of management and organization as it applies to the roles and behaviors of the school leader (Green, 2009; Gupton, 2010; Lumpkin, 2008; Marzano et al., 2005). The contemporary the role of the principal as an instructional leader incorporating consistent technology leadership practices differs from these examples. Additionally, it is essential for school leaders to implement job-embedded staff development with teachers and to model the appropriate use of technology.

The literature and research reports the significance of the principal's ability to model technology practices as an authentic example and fosters the integration of technology providing a rich learning community. Simkins (2006) emphasizes the need for principals and leaders to create and maintain a receptive and responsive climate for innovative technology in schools and

districts by enthusiastically modeling the use of technology for faculty, staff, students, and the community. Likewise, Kozloski (2006) emphasizes that principals must exhibit instructional leadership by guiding technology implementation through seamlessly integrated modeling strategies in the teaching and learning process.

Kozloski (2006) identifies five fundamental concepts principals should practice in order to successfully direct and guide technology integration: (a) incorporate technology into daily practice, personally, and professionally, (b) balance roles as manager and instructional leader to guide and employ a vision of technology integration, (c) monitor and support technology use as an instructional strategy, (d) demonstrate reflective leadership by examining technology use and integration, and (e) establish expectations and accountability from teachers and students to apply technology in teaching and learning process. Kosloski contends that it is critical for principals as technology leaders to recognize that technology integration is about more than just the technology, it requires leading faculty and staff in the implementation of pedagogy that enhances twenty-first century learning strategies which leads to increases in student achievement.

Research investigating issues of school technology leadership by garnering survey data from 1,150 schools, including 4,100 teachers, 800 technology coordinators, and 867 principals was conducted by Anderson and Dexter (2005). This sizeable study, funded by the National Science Foundation, focuses on the identifying essential and successful leadership characteristics that support effective implementation and integration of educational technology. These leadership characteristics were aligned with the National Educational Standards for Administrators (NETS-A), established by the International Society for Technology in Education. The NETS-A standards are divided into six relevant areas as identified by Anderson and Dexter. The six NETS-A standards areas are as follows: (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.

Learning-Centered Leadership , Murphy et al. (2006) as selected for this study is aligned to the NETS-A with regard to the principal's essential roles as instructional and technology leader promoting student achievement. Specifically, Learning-Centered Leadership, Murphy et al. (2006) is aligned to the National Educational Standards for Administrators (NETS-A) in terms of development and communication of goals and vision, involvement in the teaching and learning process, and promoting professional development.

The study conducted by Anderson and Dexter (2005) verified that technology leadership has a fundamental role in guaranteeing the successful integration of educational technology in schools. While the infrastructure including resources provided and funding spent on educational technology is essential, technology leadership is an imperative for the successful integration of technology in schools. Anderson and Dexter recognized leadership as guidance and management in (a) shaping policies, (b) utilizing software applications, (c) tendering grant applications, (d) providing technology professional development, and (e) modeling use for stakeholders. Categorically, the researchers propose that school technology initiatives are reliant upon the active role of a principal as a technology leader. Throughout the literature, there are common themes that were utilized in this study to narrow the scope and identify successful, effective, and productive behaviors of principals that meaningfully impact the integration of technology in the school.

The NETS-A standards provide a framework for school leaders to develop professional goals for instructional technology. Leaders must devise a plan that identifies instructional priorities (Brooks-Young, 2009). Likewise, Persaud (2006) studied the perspective of twenty

high school principals and eighteen district superintendents regarding their roles aligned to the NETS-A standards in a mixed methods study. The study's survey utilized 31 questions from NETS-A standards and employed Likert scale measurements. In addition to the survey, semi-structured interviews were conducted to obtain data concerning the subject's technology leadership performance. The study found that school administrators were adept in the use of data management, analysis, and administrative technology functions; however, leaders often lacked capability in (a) leadership and vision, (b) learning and teaching, (c) productivity and professional practice, (d) support, management and operations, (e) assessment and evaluation, and (f) social, legal, and ethical issues. The results of the survey indicate that educational leaders need professional development for all standards presented in the National Educational Standards for Administration.

Langran (2006), in a mixed methods study, investigates a school district's initiative to establish technology leadership throughout school leaders in seven schools. The quantitative and qualitative data from the study indicates that the principal's role is fundamental in successfully integrating technology as well as creating and maintaining a technology-rich school. The principals instituted expectations for integrating technology, by observing, monitoring, and evaluating the implementation of technology throughout instruction.

Notably, Langran's (2006) study is aligns to research conducted by Anderson and Dexter, 2005; Brockmeir et al, 2005; Kozloski, 2006; Miller, 2008; Seneca, 2009; Simkins, 2006 in emphasizing the role of the principal in effectively integrating instructional technology. Additionally, Langran (2006) confirmed the essential nature of building the leadership capacity of stakeholders through a leadership model in order to sustain educational technology initiatives.

Langran (2006) also asserts that utilizing a distributed leadership model when guiding technology initiatives in the school had a higher probability of continuing when there were changes to personnel. Establishing leadership capacity in stakeholders, including the technology coordinator, team leaders, and teacher leaders, technology planning and initiatives will persist. In addition, promoting a culture of exploration and building trust were cited as required elements in sustaining enduring innovation with technology. Few empirical studies have been carried out to determine the impact of instructional leadership roles and behaviors on technology integration.

Further study is needed to identify effective leadership roles, behaviors, and strategies in successfully integrating technology into the school. New standards and expectations of accountability are influencing and determining the roles of school leaders (Schrum & Levin, 2009). Effective school leaders and instructional leaders have a significant impact on teaching and learning. A review of the literature found that a limited number of research studies have been to examine the roles of school principals as instructional technology leaders. Likewise, although there have been several researchers who identify the importance of professional development needs of principals and effective methods of integrating technology into the curriculum, specific roles, behaviors, and strategies are not adequately presented in the literature (Baker et al., 2006; Persaud, 2006; Rudnesky, 2008; Valdez, 2006). Thus, technology integration into the school curriculum requires effective educational leadership to be successful. Determining the leadership practices of secondary school leaders will be valuable in recognizing possible methods that support the roles and responsibilities of twenty-first century technology leadership.

Twenty-first century leadership

In the twenty-first century, effective educational leaders must be willing and able to accept a number of wide-ranging responsibilities (Green, 2009). Marzano et al. (2005) identify

twenty-one fundamental responsibilities of school leaders that align with accountability

standards. These twenty-one responsibilities are meaningfully connected to student achievement.

Consequently, twenty-first century leaders, fulfilling their roles as educational leaders, directly

impact achievement.

Schrum and Levin (2009) indicate that twenty-first leaders require an abundance of

knowledge and an array of skills to initiate change and transform their schools into twenty-first

century learning communities. Effective instructional leaders must do more than just manage and

operate schools; they must also lead and guide continuous improvement of instruction, policy,

and process. According to the National Association of Elementary School Principals (2008),

principals have the fundamental duty of appropriating and allocating resources such as

instructional materials, assessments, and professional development opportunities in order for

teachers to develop successful, twenty-first century skills. A principal's foremost responsibility is

to ensure student learning through positive relationships as well as rigorous and relevant

curriculum. There are four factors applied by successful twenty-first century leaders that indicate

classroom efficiency: (1) time on task, (2) alignment with standards, (3) broad coverage of

standards, and (4) effective instruction (National Association of Secondary School Principals,

2008). Additionally, Rotherham and Willingham (2009) indicate that instructional leaders must

direct attention to curriculum, teacher quality, and assessment in order for twenty-first century

skills to be sufficiently implemented. It is absolutely essential for twenty-first century

instructional leaders to have the mission and vision that students must be prepared for post-

secondary life (Schrum & Levin, 2009; Trilling & Fadel, 2009). Incorporating 21st century

technology in terms of curriculum and instruction is a key element of this study and part of the

conceptual framework that allowed for investigation of behaviors related to principal leadership

in schools. Technology has become an essential aspect of instructional leadership and requires specialized behaviors and skills in order to be effective.

Due to economic globalization, professional and occupational opportunities have and will continue to significantly change and evolve. Indeed, many current jobs will vanish, replaced by those emerging needs influenced by technology and innovation (Friedman, 2007). Educational leaders must develop and implement a framework of standards cognizant of the change required in twenty-first century instruction (Green, 2009; National Association of Elementary School Principals, 2008; Rotherham & Willingham, 2009; Schrum & Levin, 2009; Trilling, 2010). Schrum and Levin (2009) also indicated that states have continually evolving and changing student outcomes and accountability processes. Furthermore, many professional educational organizations have developed and proposed standards for specific content. Several organizations have joined forces in order to align and implement twenty-first century standards. The Partnership for Twenty-first Century Skills, an association comprised of education, government, business, and nonprofit organizations, developed a model of twenty-first skills, classified into three categories. According to Trilling (2010), the model includes three sets of curricular and instructional skills necessary for an inter-connected world:

1. Learning and innovation skills (creativity and innovation, critical thinking and problem solving, and communication and collaboration);

2. Information, media, and technology skills (information literacy, media literacy, and information and communication technology literacy); and

3. Life and career skills (flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility) (p. 11).

Principals understand that many twenty-first century skills are enduring skills that have been essential to successful professions through time and are not necessarily novel or new (National Association of Elementary School Principals, 2008; Schrum & Levin, 2009; Trilling, 2010; Trilling & Fadel, 2009). Trilling (2010) contends that the methods through which the skills are being learned are new. Utilizing technology and digital literacy competencies that enhance the acquisition of other skills must be integrated into instruction. Innovation is what allows the traditional skills an avenue for the twenty-first century. It is essential for principals to display behaviors that encourage the integration of technology into schools in order to allow for students to learn life and career skills including communication, critical thinking, and collaboration.

As twenty-first century educational leaders, principals must provide a technology-rich culture connecting learning to society (Gupton, 2010; National Association of Elementary School Principals, 2008; Schrum & Levin, 2009; Trilling, 2010). According to The National Association of Elementary School Principals (2008), one of the key competencies that students require in the twenty-first century is the capacity to use technology effectively. Successful and effective leaders design and implement integrated opportunities and provide opportunities for all learners through instructional technology. It is essential that leaders ensure that curriculum, including twenty-first century learning skills, integrate innovative instruction through multiple media. Effective principals and leaders use assessments that evaluate a range of competencies and skills. Technology, globalization, communication, economics, and politics have transformed and will continue to shape the way people live, work, and learn. In an era of new standards and accountability, twenty-first century school leaders confront vast and varied challenges and must become agents for positive change in order to connect instruction and learning with a global

society (Green, 2009; National Association of Elementary School Principals, 2008; Schrum & Levin, 2009).

SAMR Model

The SAMR Model is a framework originated by Dr. Ruben Puentedura categorizing educational technology into four different degrees of integration. The acronym "SAMR" stands for Substitution, Augmentation, Modification, and Redefinition. The SAMR model was developed in order to share common technology language across disciplines and for educators to visualize complex concepts concerning the implementation of technology in the classroom.
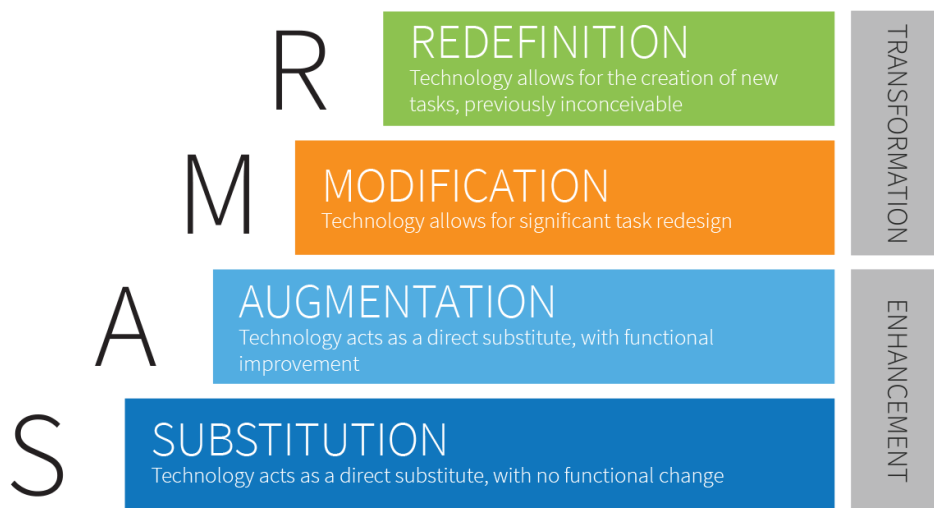
Figure 3 - SAMR Model

The SAMR model is comprised of four levels including Substitution, Augmentation, Modification, and Redefinition (Puentedura, 2013). Substitution and Augmentation are considered enhancement levels. Modification and Redefinition are termed "Transformation" levels. Substitution is the simple or direct replacement by technology of a traditional method of instruction such as replacing an online document for a paper version with the same content. Augmentation level is the replacement of a traditional method, but with added enhancements such as adding an external hyperlink to a presentation that allows for additional information.

Modification allows for a transformation from traditional methods by changing the design of the lesson to incorporate technology into the task itself such as creating a unique graphic organizer to include multimedia resources. Finally, Redefinition allows for technology to become indispensable for the lesson or activity such as utilizing real-time interaction with external sources such as a variety of people from another area of the world.

Successful principals integrate successful methods for the use of technology in the educational environment, which includes enhancing, redefining, and transforming learning. If principals promote, support, and model purposeful learning activities involving technology that are designed to be personalized, situated, and connected, the resulting activities have the potential to redefine and transform learning (Puentedura, 2013).

Technology Leadership Preparation

This study focuses on how principals can effectively lead technology integration and implementation. The majority of the literature conveys the idea that a prevalent barrier that impedes the successful integration of technology into public education is the lack of effective leadership (Brooks-Young, 2009; Bull & Garofalo, 2004; Kara-Soteriou, 2009; Miller, 2008; Persaud, 2006; Schrum & Levin, 2009; Valdez, 2006). The researchers reported that many school principals are uncomfortable and unprepared to be technology leaders. In order to more effectively lead technology integration, principals must model and communicate expectations as well as be engaged in implementation. Research suggests that there has not been adequate training provided for principals and their roles as technology leaders; therefore, these leaders often have deficits in the knowledge required to make knowledgeable decisions concerning logistical and technical issues (Brockmeier et al., 2005; Flanagan & Jacobsen, 2003; Kara-Soteriou, 2009; Persaud, 2006).

Brockmeier et al. (2005) conducted a large quantitative survey study including elementary, middle, and high school principals in Florida. In particular, the participants in the study responded to a Computer Technology Survey, which included 40 questions incorporating a Likert scale. The researchers identify four basic questions in the study:

1. Are principals prepared to facilitate the attainment of technology's promise through the integration of computer technology into the teaching and learning process?

2. Have principals acquired computer technology expertise sufficient enough to counteract the researchers' indictments?

3. Are principals prepared to use computer technology to accomplish administrative and managerial tasks?

4. What can be stated about the current state of principals' expertise to use computer technology? (pp. 54-55)

Overall, the responses on the survey highlighted the importance of technology in the teaching and learning process. The principals recognize the value of technology; however, they were not able to recognize themselves as technology leaders. Additionally, the principals revealed that they were reluctant or disinclined to communicate technology decisions with stakeholders. Moreover, the principals needed professional development concerning the use of technology for research, budget development, database creation and multimedia presentations Principals did, however, use document production and distribution technology (email, word processing) on a daily basis. These findings underscore the necessity of professional development to direct principals in integrating technology in their schools. Finally, these findings align with findings shared by Miller (2008) and Seneca (2009) indicating the need for principals, through professional development, to acquire skills as technology leaders.

The educational reform movement has created a belief that the principal must be accountable for the academic achievement and success of all students (Green, 2009). According to Green (2009), reformers agreed that school leaders, although licensed, must be capable to effectively practice instructional leadership. Due to the educational reform movement, advocating accountability in schools, national standards relevant to public education have been established: (a) curriculum, (b) student performance, (c) teacher preparation and licensing programs, (d) teacher performance, (e) school leader preparation and state licensing, and (f) school leader performance (Gupton, 2010). The shift from responsibility to accountability of school principals resulted in the creation of national standards to ensure highly effective leadership. Explicitly, the basic concept highlighted by the standards movement is high expectations for all students and accountability for educators. National standards are being utilized to develop frameworks to assess school effectiveness and to determine whether or not school leaders have amassed the knowledge and skills required to generate collaborative learning communities that prepare students for the twenty-first century (Green, 2009; Gupton, 2010). These skills, that principals need in order to be effective leaders, should include technology leadership proficiencies. This study was designed to investigate those behaviors that coincide with those proficiencies.

National school leadership standards are being used in many college preparation programs for school principals and are transitioning from course-based programs to standards driven programs. Colleges are offering standards-driven preparation programs developed by the National Policy Board for Educational Administration, endorsed by professional organizations including the National Association of Secondary School Principals. National standards have been applied to the development of school leader assessments. Many state agencies mandate that

potential school leaders demonstrate proficiency on the Interstate School Leader Licensure Consortium (ISSLC) standards. Additionally, the NETS-A were established to guide principals and leaders to effectively implement and integrate technology into the schools.

Observably, the ISLLC and NETS-A are standards that help to ensure that all students are equipped to function in the twenty-first century (Green, 2009; Williamson & Redish, 2009). The actions of instructional leaders must be measured by an objective accountability scale ensuring students achieve content, technology, communication, and career skills (Green, 2009; Schrum & Levin, 2009). Green (2009) asserted that applying standards established for instructional leaders promotes the growth of school principals and allow them to transform schools into professional learning communities where all stakeholders are valued.

Gaps in Technology Leader Research

Although much of the literature reinforces leadership as influential in student achievement, teacher performance, and change, there are gaps in the research concerning the specific behaviors that influence technology integration. There are a few studies that have identified some general qualities that may have a correlation with successful and effective technology leadership; however, the data is generalized and does not focus on specific behaviors and/or roles in conjunction with technology integration. There is a substantial gap in researching leadership roles and behaviors that significantly affect technology integration due to the historical focus of research on technology implementation, barriers to integrating technology such as resource allocation, student achievement, and delivery method. "In effect, leadership, management and governance issues appear on the whole to be either perceived as irrelevant to, or ignored by, educational technology researchers who regard the "real" focus of the field to be the delivery of the primary function of learning technology-focused enhancements in learning

and teaching" (Jameson, 2013, p. 892). Basically, the roles and behaviors of principals and district leaders in the integration of technology have not adequately been addressed (Brockmeier, Pate, & Leech, 2010). Research including investigations of the roles and behaviors of secondary school principals and instructional technology leaders is inadequate and must be pursued further (Anderson & Dexter, 2005; Brockmeier et al., 2005; Camp, 2007; Flanagan & Jacobsen, 2003; Langran, 2006; Miller, 2008; Seneca, 2009; Jackson & Philip, 2010).

There are multiple factors in the integration and implementation of technology in the school environment that have not been fully explored. "If we conceptualize the adoption of technology as a learning process for individuals and organizations, and if we acknowledge that the multiple factors affecting the adoption of technology reflect both individual and organizational variables as well as pedagogical and technology-related variables, then it becomes clear that simply examining isolated factors or variable lists and typologies will not further our understanding of technology use in schools" (Levin & Wadmany, 2008, p. 234). Additional information is necessary to understand the behaviors of leadership in technology integration in order to improve student achievement. "However, the importance of the quality of technology use is increasingly recognized because research indicates that even if technologies are used at a certain frequency, not all technology uses are constructive and helpful" (Lei & Zhao 2007, pg. 285).

Although the innate importance of the principal's role in effective instructional leadership and guiding the integration of technology has been noted in the literature, the essential roles, practices, and professional development needs of educational leaders is marginal (Flanagan & Jacobsen, 2003; Seneca, 2009). Notably, data obtained in Miller's study provided insight

regarding the perception of the school teachers and implications for future educational practice in conjunction with technology integration and use.

Specifically, is it relates to this study, there is a gap in the research identifying leadership behaviors that have meaningful impact technology integration. In order to identify those behaviors, the researcher noted gaps associated with educational vision, curriculum and instruction, professional learning communities, and social advocacy in the integration and implementation of technology throughout the school.

Summary

This study adds to the ongoing research examining educational leadership and technology integration. It analyzed principals' behaviors that are believed to have meaningful impact in supporting effective integration of technology in the secondary schools by examining a successful, technology-infused district. This study examined the connections between educational leadership principles and principals' action and performance pertaining to technology. The following chapter describes the method and process, the setting, and participants within the study.

Chapter 3 - Methodology

Introduction

The purpose of this case study was to investigate the behaviors of secondary school principals in the integration of technology. Specifically, the study sought to find behaviors that were regarded to have the most meaningful contributions to technology integration by secondary-school principals.

The researcher in this study sought to better understand principal behaviors in integrating technology into the educational environment by investigating how principals make sense of technology integration and their socially-constructed meaning of successful technology integration. Contemporary schools are implementing technology as a means to enhance student learning and improve functions within the school and principals have a significant role in determining those outcomes. Qualitative data was collected through the use of focus group interviews/discussions, observations, field notes, and artifacts in order to develop a contextual foundation and structure for empowering principals when planning for and implementing technology. The following over-arching research question was used to guide data collection and analysis:

> *How do secondary principals effectively lead the integration of technology in their schools as it relates to educational vision, curriculum and instruction, professional learning communities, and social advocacy?*

Research Design

An interpretive qualitative case study was deemed by the researcher to be the appropriate methodology to gain a better understanding of the perceptions of principals for this study. Qualitative research, more specifically case study research, is designed to explore a particular

phenomenon in order to describe and discover through experiences. The participants in this study

provided opportunities to investigate secondary principal experiences when integrating

technology into the schools. Creswell (2007) explains case study research as a study of an issue

explored through one or more cases within a bounded system. The district and schools within

this study offered an avenue to reveal the experiences and behaviors of secondary school

principals in a successful, technology-rich district. This study explored the phenomenon, within a

single district, of secondary principals' experiences and behaviors with technology integration.

The schools in the study offered a bounded system in which there were abundant technology

resources, access, and infrastructure, allowing for the researcher to focus on principal behaviors.

The study provided data from the principals' perspectives concerning effective behaviors in the

integration and implementation of technology and the practices that principals believe to have

meaningful impact in their schools.

According to Creswell (2007), qualitative analysis is research that begins with

assumptions, a worldview, the possible use of a theoretical lens, and the study of research

problems inquiring into the meaning individuals or groups ascribe to a social or human problem.

In order to study this issue, the researcher used an qualitative approach to inquiry, the collection

of data in a natural setting particular to the principals within the study, and data analysis that is

inductive and establishes patterns and themes.

Meriam's (2002) study found the following:

The key to understanding qualitative research lies with the idea that meaning is

socially constructed by individuals in interaction with their world. The world, or

reality, is not the fixed, single, agreed upon, or measurable phenomenon…Instead,

there are multiple constructions and interpretations of reality that are influx and that

change over time" (p. 3).

The ways that the participating secondary school principals made sense of their roles for technology integration were socially constructed through their interactions with the district administration, faculty, staff, and students. As such, qualitative research allowed the researcher to attend to these social contexts and the interactions in shaping these principals' views, their understanding, and subsequently their actions. Qualitative research by its very purpose, examines a social situation or interaction by permitting the researcher to enter the world of others and attempt to achieve a holistic understanding (Creswell, 2007). The qualitative approach is frequently selected when there is a topic that needs to be explored, when studying participants in their natural setting, a desire to tell the story from the participants' point of view, and when it corresponds to the nature of the research questions (Bogdan & Biklen, 2007; Creswell, 1998; Merriam, 1998; Stake, 1995). The researcher utilized observations of the principals in the school setting and the focus group interview allowed them to tell their story from their point of view. Additionally, "qualitative research, which is guided by the participant's or insider's view, allows for exploration beyond what can be obtained by quantitative methods" (Tillery, Varjas, Meyers, & Collins, 2010, p. 88). Because this study took place within schools and relied on the subjective perspectives of participants to discuss and answer the research questions as well as the use of researcher observations, qualitative design was determined to be the appropriate approach to inquiry. The researcher emphasized discovery and description; the study's objectives are focused on the extraction and interpretation of the meaning of experience (Bloomberg & Volpe, 2008).

In order to gain insight into the perceptions of educational leaders, qualitative research allows for interpreting experiences, describing the experiences, and interpreting the information. Additionally, case studies are valuable when there is a requirement to examine the context of a

case in order to get a deeper understanding of the situation and what it means to those involved (Merriam, 1998). In this case, the school district represents an example of a successful educational environment in which principals influence the implementation and integration of technology.

The use of a case study allows for the study of particular experiences, in this case those of secondary school principals within a bounded system (the district's secondary schools). "In case studies, researchers focus their attention on the activities, events, or individual purposes, which may not necessarily involve the group per se" (Creswell, 2005, p. 439). Due to the fact that this study focused interest on the individual perceptions of leadership roles and behaviors and the implementation of evaluation applied to their utilization of technology, the case study method was employed. Yin (2009) defined case study as, "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 13). The intent of this study is not to generalize to a particular population, but to methodically explore the behaviors, actions, and perceptions of educational leaders in order to determine possible procedures and obstacles to effectively integrating technology in schools. Yin (2009) stated, "Case studies, like experiments, are generalizable to theoretical proposition and not to populations or universes" (p. 15). Additionally, Yin (2009), suggests "…the case study, like the experiment, does not represent a *sample*," the goal of case study research is to "expand and generalize theories (analytical generalization) and not to enumerate frequencies (statistical generalization)" (p. 15).

A qualitative case study approach is appropriate for this research as the method provided the opportunity to focus on the unique issues and organizational culture characteristics that may impact educational technology integration (Yin, 2009). A qualitative case study research design

is appropriate due to the fact that the source for qualitative data analysis allows for a description of the findings (Yin, 2009).

This case study incorporated data from focus group interviews/discussions with multiple secondary-level principals, observations within four secondary-level schools, and artifacts from a large school district in which technology initiatives have been implemented and technology resources are prevalent.

The goal of understanding leadership roles and behaviors that have significant impact is promising due to research findings revealing that technology leads to increased student achievement. The issues involved in evaluating the effectiveness of technology in education are complex. In practicality, the leaders' perceptions toward technology expectations and evaluation processes may lead to an understanding of practices that enhance as well as barriers that hinder effective usage of technology in schools. There is a need for research connected to educational technology and leadership behaviors that influence change.

Creswell suggests five types of qualitative study including ethnography, grounded theory, case study, phenomenology, and narrative research. Each of these types of qualitative analysis varies in terms of context. Case studies are a strategy of inquiry in which the researcher explores in depth a program, event, activity, process, or one or more individuals. Cases are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time. In terms of technology and leadership roles and behaviors, this particular research methodology provides an avenue for the research due to the nature of the program initiated in the school environment.

In order to study the perceptions of leadership in schools, a case study is an appropriate approach to study the process of developing a program for evaluation of technology integration

within the context of the school. The primary research method for this case study is focus group interviews. Qualitative case study appears to be the best medium for gaining an understanding of leader perceptions concerning technology. Case study is the study of the particularity and complex nature of a single case and venturing to understand its activity within significant circumstances, in this case it is the perceptions of leadership concerning technology integration and evaluation of performance. Various individuals will perceive the educational environment in different ways; therefore, In order to determine patterns in perceptions, multiple focus group interviews will be conducted. During the analysis phase, which could be concurrent with the interview process, pattern matching, explanation building, and logic models, will be utilized as applicable to the data set. This analysis could be developed in terms of possible applications of the findings.

The following sections of the chapter will include descriptions of the setting, participant identification and recruitment, and background of the researcher. This is followed by the sources of and data collection methods, which included focus-group interviews, observations, documents and artifacts, and field notes. Subsequently, the data analysis process is presented followed by the credibility of data describing triangulation, audit trail, member checking, and peer debriefing.

Setting

The study site was a large Midwestern school district in Southwest Kansas. The district has an enrollment of nearly 7450 students, approximately 1050 students at the middle school level and over 2150 at the High School and Alternative Center. The district was chosen, partly due to the relatively unlimited access of the researcher to meetings, classrooms, events, and technological media as a member of the administrative staff within the district and partly because of the existing technology resources found within the district. Further, a focus on the secondary

level was based on considerations related to the levels of technology development and implementation in the district and the background and experiences of the researcher such as previous technology leadership and expertise (i.e. technology management and technology-based marketing and advertising in a corporate environment).

In 2012, approximately six years before the study was conducted, the district's community and administration developed and passed a bond issue that included building a new high school in order to provide a safe and modern environment for learning. The district had relatively low graduation rates, 74% in 2010 and 76% in 2011, and low averages in state assessment results, as well as limited technology integration (less than 450 total computers at the high school with over 1800 students at that time). The Board of Education and administration provided the funding and human resources in order to enhance technology at the secondary level, with the intent of adding technology to the elementary and intermediate levels over time.

Secondary principals were asked to lead a technology initiative that included providing resources and develop processes to enhance learning through technology. At that time, there was very little support for technology leadership. The district increased the available technology resources with a one-to-one iPad initiative, adding classroom projection systems, increased the communications and internet capacity, and provided more access through "Skyward" student management systems. The district developed an electronic usage agreement defining policies and practices in conjunction with technology access for faculty, staff, and students. The district increased the graduation rate significantly, 86% at the time of the study, improved state assessment results, and advanced in other criteria measuring educational success and was awarded the Blue Ribbon of Excellence.

At the beginning of this study, the high school was in the sixth year of a one-to-one

device (iPad) technology initiative, and the middle schools were in the third year of the one-to-one initiative. The secondary schools within the district were the first to initiate one-to-one technology as well as accommodating technology throughout the schools. The district was selected for this study because of its large size and student population, established technology plan, technology accessibility, the availability and variety of principals, and accessibility to participants by the researcher. The district had made significant efforts in providing new devices, updating hardware and software, and establishing technology policies for the last six years. The Board of Education integrated technology into the districts vision, mission, and goals as well as establishing long-range technology plans.

Participant Identification and Recruitment

The need for narrowing such a large-scoping topic such as technology was necessary in order to complete the research in a timely manner, especially considering time constraints with a large number of participants. Secondly, in order to identify and evaluate the themes associated with the study, it was deemed appropriate and essential to have more consistency of context and experience. Thirdly, the researcher's access and personal position within the district was a factor in the collection of data for the study. Fourthly, the opportunity to design relatively homogeneous focus-groups allowed for enhanced interactions among the participants, further increasing efficiency during data collection. "The comparative advantage of focus groups as an interview technique lies in their ability to observe interaction on a topic. Group discussions provide direct evidence about similarities and differences in the participants' opinions and experiences as opposed to reaching such conclusions from post hoc analyses of separate statements from each interviewee" (Morgan, 2011, pg. 8).

There were 11 secondary-level principals within the district, six from the high school level and five from the middle schools and alternative school. The process of participant recruitment began with seeking permission from the district office for access to administrators for the study. The superintendent was extremely supportive, as he revealed to the researcher that he believed the information that would be gathered could be valuable to the district and could aid in the improvement of utilizing technology in the schools. The superintendent discussed and encouraged participation in the study with the principals at the July session of the Superintendents Advisory Council (SAC). The principals were informed that the participation was completely voluntary. Upon district approval, the researcher sent an informational/debriefing letter (Appendix A) via e-mail to each participant, detailing the purpose of the study and outlining the process and expectations for the focus groups and types of observations that would be conducted. This letter also provided information concerning the participants' options to leave the study at any time. Each principal was provided the informed consent forms to review and sign (Appendix B) prior to the focus interviews/discussions. All of the secondary principals within the district agreed to participate in the study.

The Application for Approval Form for the study was sent to the Kansas State Committee for Research Involving Human Subjects (IRB). The form included the description of the study as an inquiry into the lived experiences and behaviors of secondary administrative leaders (principals) and the integration of technology into the school. The form included minimizing any risk by maintaining confidentiality and anonymity and through security of audio files and written transcripts. Approval was issued by the IRB prior to the beginning of the study.

The participants had varying backgrounds, educational, and leadership experiences, especially in the area of the integration and maintenance of technology within the school.

Background and Role of Researcher

In qualitative research, the researcher gathers and analyzes the data. The role and background of the researcher is essential to the credibility of the research and vital to the study because these decisions are made both at the conscious level as well as unconsciously. As Flick (2009) contends, the researcher in qualitative research is inherently incapable of remaining neutral while interacting with participants. This was especially true in this case study. In this study, the researcher was a participant and observer (Stake, 1995) in the focus groups. The researcher was a "complete member," as defined by Adler and Adler (1987); the researcher was fully immersed into the context and was a part of the "phenomenon" studied.

The researcher for this study, as a participating secondary principal, was allowed almost unlimited access to context as well as a vast understanding of the culture within the district. The researcher had been a principal within the district for five years, a lead member of the building and district technology committee, a member of the superintendent's district leadership team, technology professional development facilitator, professional learning community leader, district site council member, building budget manager, and a member of the restructuring and transformation committee. As one of the editors of the faculty and student handbook, the researcher was well-versed in the fundamental technology policies, practices, and systems in place within the building and district, allowing more time to focus on intricacies and nuances associated with technology leadership. Additionally, being a member of the secondary-level administration, relationships, rapport, and connections were already in place before the study began. Familiarity with the district allows for an existing positive relationship and openness with the other principals within the study. This led to a high level of understanding beyond that of an outsider to the district. As Bonner (2002) warns us, an insider as researcher can result in

drawbacks or hindrances that must be overcome. As she suggests, the researcher must make every effort to reduce bias and prejudice as well as the perception that the researcher relies on or supports the other participants rather than gathering data.

The researcher was employed, within the district, as a principal in a high school with approximately 2100 students. His educational professional background included nine years as a high school English teacher and five years as a building-level administrator. Additional professional background included coordinator and management positions in a large corporate setting in which there was responsibility for technology and production services including design, marketing, and network administration. The qualitative nature of this study allowed for the researcher to bring personal experiences, training, and perspectives. As a member of the secondary administrative team in the district, the role of researcher, observer, and participant go hand in hand. The researcher recognized and understood that research conducted concerning principals' behaviors was encumbered with personal background and values. Personal experience with technology and leadership influenced the narrative. The researcher, however, was committed to paying close attention to preconceptions and subjectivities allowing the research findings to emerge with as little bias as possible and including the researcher's explanations in concurrence with the interpretations of participants.

Data Collection

The process of data collection took place over thirty-six (36) weeks. The methods used for data collection included: focus group interviews, informal follow-up interviews (individually and in groups), observations, and documents and artifacts gathering. Table 4.1 below displays the data Following, each of the data collection methods are addressed one by one.

Table 4.1 - Inventory of Data

Source of Data	Number of Documents/Pages
1 - 1 hour Focus Group Meeting (High School)	15 transcribed pages
1 – 1 hour Focus Group Meeting (Middle School)	13 transcribed pages
1 - 45 minute Focus Group Meeting (High School)	7 transcribed pages
1 - 45 minute Focus Group Meeting (Middle School)	8 transcribed pages
Researcher Focus Group Field Notes	23 handwritten notes
Digital Posts/Electronic Media/Artifacts	130 source pages
Observation/Reflection Notes (4 sites/11 participants)	75 handwritten pages
Member checks (2 sessions 4pages per member)	44 transcribed pages
Peer debriefing	14 pages
	319 Total Pages

Focus Group Discussions

Focus group interview is used to generate data about a particular topic where the participants' varied experiences and beliefs create a rich, detailed dialogue in a way that an individual interview does not (Morgan, 1998; Willig, 2001). According to Willig (2001), the strength of the focus group, relative to individual interview, rests in its capacity to mobilize participants to comment and respond to other participants' input. In this way, statements are developed more comprehensively, extended, and cultivated…or qualified in ways that generate rich data for the researcher (p. 29).

For the current study, two focus groups were conducted, one for high school principals and the other for middle school principals and associate principals. Several considerations contributed to the current arrangement of two focus group interview groups based on grade level.

The groups were divided, not only by physical facilities and student level, but also the similarity and differences between the roles and expectations of secondary levels within the district. Additionally, the middle schools' and high school's technology initiatives are at varying levels of progress. By interviewing the principals as a focus group, the anticipation is that the participants might feel more comfortable and speaking more openly and that the focus group format would make it comfortable for participants to recall information, experiences, and impact of behaviors. The questions were developed with the focus group dynamic in mind.

All participants received a copy of the interview questions (Appendix C) so that they could request clarification prior to the focus group interview sessions. There were no such requests. Throughout the focus group interviews, the researcher asked probing follow-up questions in order to expand on a discussion thread, theme, or idea. The interviews were digitally recorded and then transcribed by the researcher in order to ensure the accuracy of information included in the study (Silverman & Marvasti, 2008).It is believed that it is advantageous for the researcher to transcribe the responses because the researcher is likely to be more familiar with the terminology than another transcriber (Merriam, 2009). The researcher of this study found that listening to the recordings repetitively in order to transcribe the material allowed for more reflection and a better understanding of the data. Through repeatedly hearing key words associated with ideas like communication and engagement, the researcher not only found similarities in behaviors such as posting via social media, but also found clarification in themes.

Focus-groups were conducted with principals in order to determine (a) the participants' previous levels of experience, (b) an understanding of the expectations for technology standards, (c) the roles of leaders in technology management, supervision, and evaluation, (d) behaviors that have significant impact on technology integration, and (e) perceived barriers to meeting

those expectations.

The following are a few of the questions that were provided before the focus-group discussion in order to allow participants to reflect and consider the topic and their experiences in respect to technology integration:

1. What is your vision concerning the integration of technology into the educational environment?

2. How do you, as a leader, promote your vision and mission in terms of technology and use in school?

3. How is technology integration manifested (clearly shown or observed) by principals and leaders in terms of instruction?

The high-school focus-group interview was conducted in a conference rooms at a high school building; the middle school focus group interview was conducted in a conference room at a middle school building. Both interviews had little or no interruptions throughout. The participants were very open to the questions and, except for a few extraneous conversations or comments, very direct in response to the questions. The researcher, rather than leading the conversations, facilitated the discussions and redirected focus when necessary; however, there was open opportunity for commentary in all focus-group meetings. At the conclusion of the first focus-group sessions, for each of the groups, the researcher proposed a time for the follow-up focus-group discussions. With all participants' agreement, the follow-up session for the high school took place three weeks after the initial interview and all participants were present. The middle school follow-up session was two-weeks after the initial interview, as agreed upon by all of the principals, and all participants were present; however, one principal left early, He was

contacted later for comment on the final discussion points, but had no additional input at that time.

Follow-up Interviews

Individual follow-up questions were less formal than the focus-group structured interviews/discussions and were for clarification as to specific individual answers or comments from the focus group transcripts. Any additional input from the individual follow-up questions was recorded in observation notes. Examples of the follow-up questions are as follows:

1. How do principals, as leaders, differentiate technology as tools within the school?

2. How do you positively reinforce utilizing technology?

3. What particular issues district from the integration of technology and how do you approach them?

4. How do principals "brand" or establish and maintain visibility via technology?

5. How do we get people on board and have them work with technology?

6. How do you evaluate staff in the use of technology?

There were a few clarifying questions posed to the individuals within the study during observations and/or meetings in order to clarify participants' responses during the focus-group.

Observations

Due to the researcher's participant/observer position as a high school principal in the district involved in the study, the observations were conducted at least weekly over the course of a school year (36 weeks), amounting to 215 hours in total. At times, a few observations lasted more than an hour depending on the nature of the activity including professional learning community meetings, parent/teacher conferences, faculty meetings, building leadership team collaborations, in-service opportunities, etc.

A majority of the observations concerning principal behaviors associated with technology integration were at the school level such as observing principals working with professional learning community meetings, participating in technology in-service activities, providing applications for teachers to integrate in the classroom, or participating in walk-through calibrations. However, there were observational data accumulated from district-level leadership activities, including data concerning the discussion of Board of Education technology goals by the Superintendent's Advisory Council, participating in activities focused on social advocacy and student service, faculty meeting and professional learning community discussions, the development of policy digital citizenship in the technology steering committee meetings, and technology policy development in which principals were involved.

Observations were documented in the researcher's field notes and the notes were organized by activity or type, principal roles, and behavior in terms of technology. For example, the researcher recorded observations for an in-service activity related to technology. The notes include the date, activity title, location, participants, principal role (participant, instructor, etc.), body language, individual and small group interactions, technology incorporated, etc. The notes also included the researcher's interpretations as to the principals understanding of topics and any additional comments.

Documents and Artifacts

Documents and artifacts play an important role in the process of collecting data when conducting a case study (Yin, 1984). The researcher obtained relevant documents and artifacts from the participants, district, and school. The documents and artifacts included district and school vision and goal statements, technology policies, technology in-service plans, student

information system data, district technology resources, social media policies, social media cites, on-line posts, etc.

Field Notes

The researcher kept field notes during observations and the focus group interviews. In order to get a more robust picture of the behaviors of principals, the researcher noted environmental conditions, behaviors/actions of the principals and others, body language, etc. The notes provided the researcher an opportunity to describe the observed environment and the opportunity to reflect upon the observations more vividly and accurately. "The researcher looks through their notes to identify common threads or themes and weaves them together to tell a story" (Williams, 2011, p. 70). The field notes, audio recordings, transcripts, and artifacts combine to illustrate the setting, participant experiences, and pertinent data regarding the leadership roles and behaviors impacting the integration of technology in schools.
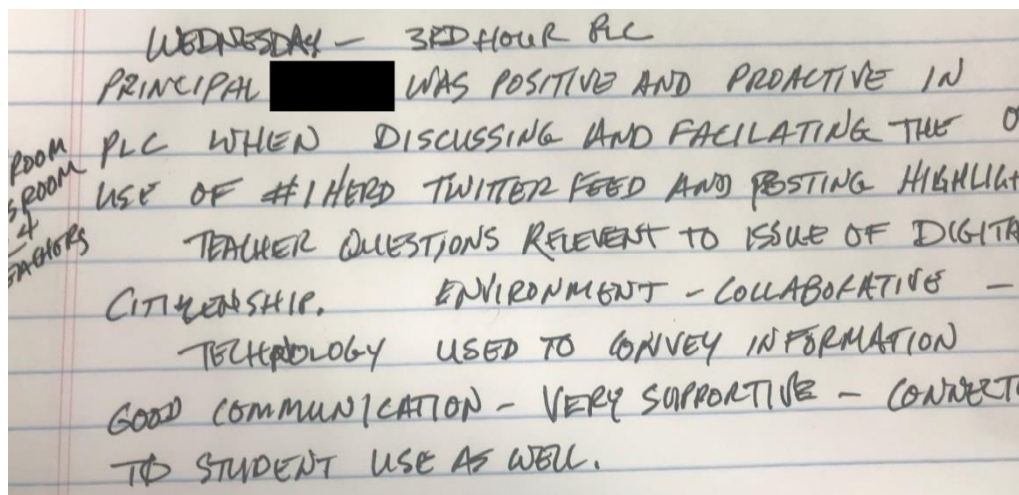
Figure 4 - Field Notes

The researcher kept hand-written and electronic notes (the researcher utilized technology, specifically the iPad, for keeping some of the notes) for observations and focus group interviews as well as follow-up interviews.

Data Analysis Process

Data analysis is a systematic search for meaning, allowing for the identification of patterns and themes, the discovery of relationships, the development explanations, and the generation of theories in order to communicate to others. The researcher used a systematic approach to analyzing the data influenced by Hatch's (2002) steps to interpretive analysis. The researcher began by reading all of the collected as a whole. This included the transcribed focus-group interviews, documents and artifacts (social media posts, technology policies, etc.) acquired from the district, observation and interview field notes, and follow-up interview notes. The next step was to review the research literature and journals related to the data in order to draw connections. The third step was to reread the data and code the data according to the researcher's interpretations. The researcher then wrote a draft summary of the codes and interpretations, followed by sharing that summary with the participants and peer reviewer. Finally, the researcher composed a revised summary identifying themes and excerpts from the data that support interpretations.

Prior to the focus group interviews/discussions, the focus group interview questions were provided to the participants prior to meeting in order to allow the participants to prepare for the discussion. The focus group began with obtaining information about the participant including: name (pseudonyms are used in the study to maintain anonymity), current professional title, number of years in education, number of years in administration, number of years in current position, curricular certification(s), and level of comfort with technology. The demographic information was collected to determine if there were variables that may have an influence on data collected within the study such as the self-reported technology comfort level of the participants. The survey not only saved time for the focus-group discussion, but also allowed the

researcher to gather information that may be neglected otherwise. The research focus group

questions also functioned as a tool for participants to follow discussion and record responses

during the interview period.

After observations, data collection, and transcription, the researcher created a matrix of

evolving themes, categories, and patterns from focus-group transcripts and artifacts (Gall et al.,

2007; Yin, 2009). This matrix was created by reading the transcripts and field notes in their

entirety, then highlighting units of data (phrases, sentences, labels and paragraphs) and assigning

them to categories.

Figure 5 - Focus Group Interview Transcription

The matrix included the areas within conceptual framework (vision, curriculum and instruction, professional learning communities, and social advocacy) and general thematic behavioral codes (i.e. communication). The themes were general in design, allowing for sub-coding more specific to principal actions or behaviors such as social media posts, e-mail, discussions, etc. Thematic coding was incorporated as a product of the matrix, allowing for themes to emerge from the participant responses. This process included repeatedly reviewing transcripts, field notes, and participant notes. A vast majority of the data found in the transcriptions, follow-up communication and observations were found to fit into the four themes (support, communication, modeling, and engagement). The researcher used a variety of "descriptives" within the analysis, as shown below, in order to filter the responses and data in to the themes.

Descriptive Coding

Responses	Descriptive	Theme
"…put a spotlight or accentuate people that are using it"	Promote	Engagement
"…broadcast over social media as well"	Connect	Communication
"…to make connections with outside agencies"	Visibility	Modeling
"Teach them how to use it in in-service."	Guide	Support

The researcher reviewed supporting literature concerning principal leadership for technology integration and case study research in order to identify the connection between themes and patterns that were identified during the data collection (Yin, 2009). After reviewing, the researcher presented the initial findings, informally and individually, to participants for additional response and available feedback. The researcher received specific feedback

concerning the findings from three of the eleven participants. The responses included

perspectives on modeling technology behavior, encouragement as a factor of support for teachers

utilizing technology, overcoming reluctance concerning technology. There was a general

consensus as to the thematic connections. Finally, the researcher reviewed, edited, and

reconstructed the drafts of the analyses with peer and participant feedback (Wiersma & Jurs,

2009). It is important to note that the patterns and themes were revealed and developed during

the process of interpretational analysis and the researcher did not generate the themes or patterns

before the analysis stage of the process so that there was not a bias to interpret data in any

particular way (Gall et al., 2007).

Credibility of Data

Establishing credibility of the data is one of the most important aspects of research.

Lincoln and Guba (1985) contend, within qualitative research, that data must be credible,

transferable, dependable, and confirmable and that can be achieved via close attention of the data

being collected, analyzed, interpreted, and presented. The qualitative research method is

multidimensional, holistic, and continuously shifting. Additionally, qualitative research does not

reveal a single right or wrong answer; rather, qualitative research is made up of observations and

interpretations.

The researcher, in this study, established the data to be credible, transferrable,

dependable, and confirmable through the collection, analysis, interpretation, and presentation of

the data. The researcher used the strategies of triangulation, member checking, and peer

debriefing (Creswell, 2007) to achieve the credibility and dependability (evaluation of the quality

of processes) required for a study.

For each aspect of the study, the researcher reviewed leadership behaviors in conjunction with noted observations during the interview process. When the leadership behavior corresponded to the determined and defined sub-theme, the researcher categorized the behavior in the appropriate, corresponding theme. Often, the role or behavior was associated with more than one category because they correlated with more than one defined theme. Credibility was established in the research through rich detail showing the interpretations of the researcher. The school proved to be successful in integrating technology and the interpretations of the researcher were extracted from documentation of the specific roles and behaviors utilized in initiating, evaluating, and maintaining the integration of educational technology at the secondary level.

Triangulation, Member-Checking, and Peer Debriefing

Triangulation, according to Creswell (2007), is the process of documenting and substantiating evidence from different participants, data types, and/or methods of data collection in descriptions and themes in qualitative research. For this study, the researcher used interviews, observations, and artifacts as a way of confirming the results.

There were measures in place for this study in order to ensure internal validity. The focus group study took place during a relatively short time frame, so events and individuals did not significantly change between the beginning and end of the study. The ease of access and participation as well as minimal follow-up required reduced possibility of participants exiting the study following completion of the focus initial focus-group interview/discussion.

Essentially, peer debriefing is the process requiring another researcher to review the collected data, the findings, and conclusions of the study. Creswell et al. (2007) contend that other researchers add credibility to the study when peer debriefing is utilized. The researcher in the current study enlisted a fellow researcher from the district administration to review the

collected data. The peer reviewer had completed a doctoral program in educational leadership and was familiar with the research process. Additionally, the peer reviewer also had an insight into the study as he had previously held a technology director position. Initially, the peer reviewer coded a 20% sample of the transcript data for the main themes and sub-codes. The reviewer highlighted words, phrases, and sections of the transcript using various colors. After consulting with the reviewer and clarifying the definitions of the themes and codes, the rate of consensus was approximately 90-95%. In reviewing this study, the peer reviewer questioned and challenged assumptions, findings, and conclusions as well as asked questions about methods and interpretations (Lincoln & Guba, 1985). The peer reviewer for the current study challenged coding connections and questioned interpretations of data, which allowed for further reflection on the part of the researcher.

Additionally, member checking was employed in order to allow for the researcher to verify that the behaviors demonstrated in observations and discussed in the focus group interviews were interpreted consistently with the intent of the participants. "Member checking, also known as participant or respondent validation is a technique for exploring the credibility of results. Data or results are returned to participants to check for accuracy and resonance with their experiences" (Birt et. al., 2016, pg. 1802). The transcripts of the focus groups were distributed to each member as an opportunity for providing feedback and clarity as necessary as to the transcription accuracy and whether or not segments matched participant intent. The researcher conferred with the members of the study, member checking, in order to verify and clarify responses and interpretations as well as a peer de-briefer regarding focus group interview/discussion and transcripts (Gay, et al., 2009; Wiersma & Jurs, 2009). Each member was given the opportunity to respond during the member checking process. About half of the

participants either clarified responses and contributed in follow-up conversations with the researcher or rephrased comments as to the transcripts. For example, one participant clarified the use of "communication tools." He specified the software or avenue for communication as e-mail or social media, Twitter, in order model and support appropriate technology use. Another follow-up response or clarification was clarified the encouraging appropriate use as "nothing edgy, profane, rude, or not for kids…"

None of the participants objected to the researcher's interpretation of the behaviors in comments made in focus group interviews.

Transferability

The researcher in this study made explicit connections to the educational, cultural and social contexts that surrounded the collection of data in order to provide transferability of the findings. The researcher provided a detailed account of the principals' experiences during data collection. The description and sources of data helped to construct the setting that surrounds the research study, from the daily lives of participants to the way that their implicit biases may have affected their responses. The researcher revealed the nature of the participants as certified principals (as deemed by the Kansas State Department of Education), secondary administrative leadership position within the district. The findings of this study allow outside researchers and readers to make transferability judgments themselves based on the description presented.

Audit Trail

An audit trail is "…the development and maintenance of an adequate record file, allow[ing] the researcher to ensure that the data collected during the study were credible" (Hanzlicek, 2006, p. 53). Audit trails lead to confirmability and dependability (Erlandson, Harris, Skipper, & Allen 1993). The researcher in the current study maintained a chronological record of

documentary evidence consisting of transcripts, digital interview recordings, research notes, observation notes, reflections, analysis documentation, and consent forms in a secure location.

Chapter Summary

In this chapter, the researcher discussed the overall design of the current study, which was a single-case qualitative case study. Also discussed were the types of data collected and the procedures involved. The researcher described data collection, analysis, and management. Additionally, Chapter Three explained the background and role of the researcher within the study, acknowledging the subjective viewpoint of the researcher. The chapter concluded addressing the credibility, trustworthiness, and validity within the qualitative study.

<center>**Chapter 4 - Analysis and Findings**</center>

Introduction

The premise for this study was that principal behaviors can have an impact on and contribute significantly to technology integration within the secondary schools (Anderson & Dexter, 2005; Byrom & Bingham, 2001; Gibson, 2002; Martin, Gersick, Nudell, & Culp, 2002; Wagner, 2004; Wells, 2007). The case study explored several secondary principals' experiences through discussion and observation as well as a review of documents pertaining to leadership and technology in order to provide insight into the complexities of integrating technology. An intricate method of analysis was employed as it was deemed by the researcher as the most appropriate for the complexities of the subject matter. Research processes utilized and applied in case studies can be regarded as more complex than in other qualitative research methods (Gay et al., 2009; Hatch, 2002; Yin, 2009). Yin (2009) noted that "A case study investigator must have a methodological versatility not necessarily required for using other methods and must follow formal procedures to ensure quality control during the data collection process" (p. 124). As such, the challenge of attaining high-quality data analysis includes examining all the evidence gathered in realistic settings, presenting the data separately from interpretations, and considering alternative explanations and/or interpretations. Clarifying the patterns and themes from focus group interviews, discussions and observations provided significantly more than a shallow understanding of the principals' leadership practices, roles, and behaviors related to the integration of educational technology.

This chapter describes the findings revealed through the qualitative research process. The data collected was analyzed utilizing the researcher's framework categorizing leadership

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behaviors. Providing rich description required identifying and understanding personal biases, speculation, and beliefs as well as professional experiences.

The study was bounded by secondary schools and leaders within one southwestern Kansas school district. Technology integration and principal behaviors was investigated through eleven secondary principals as they revealed their experiences and perspectives concerning technology leadership within their respective schools.

The researcher developed a system of thematic connections from the data in order to organize and better understand the information provided through the focus group discussions, observations, field notes, and related documents. Debriefing with a peer and member-checking was incorporated in order to confirm the assumptions, themes, and patterns from the focus groups and additional data. Creswell (2007) contends that peer debriefing strategies increase a qualitative study's validity as well as notes the importance of reflection and to explicitly communicate assumptions, beliefs, and paradigms while communicating findings. Additionally, Yin (2009) promoted the value of reflection as well as the researcher's responsibility to employ prior knowledge in the analysis and communication of themes, assumptions, and alternative viewpoints. Therefore, personal observations, beliefs, and perceptions were documented in field notes and become apparent in the case study analysis, including the researcher's perspective as a school principal, and the possible impact of inherent factors in the data analysis. While the researcher's personal perspectives will be integrated within the focus group analysis, the data collected from other secondary principals will be the key aspects within the presentation of data.

Overview

Chapter Four includes the following sections in order to provide a clear narrative of the research process and findings: (a) an overview, (b) a description of the participating principals

and their district/school demographic setting, (c) results from focus group questions delineated by framework concepts and themes, and (e) a summary of the chapter.

The conceptual framework for educational and technology leadership as well as case-study methodology shaped the presentation of the findings. Together, these tenets direct that the findings are communicated in a narrative manner. Narrative structure allows for the researcher to afford secondary principals' voice to their beliefs and viewpoints in terms of behaviors in the integration of technology. The thick description is a product of data from multiple sources: focus group discussions/interviews, observations, survey, and field notes (Wiersma & Jurs, 2009). The process of data analysis involved, as per Creswell (2009), continual reflections about the research questions and data from the participant responses, feedback, and discussions. The participants aided in the construction of the narrative through thick description. The fundamental role of the researcher in this study, the relationship to the study and as a participant within the focus groups, leads to a first-person reporting of research results (Wolcott, 2009).

The researcher's experience as participant within the study and secondary principal as well as an educational leader supporting the integration of technology in order to enable all stakeholders to utilize technology has been from the constructivist philosophy. The study was conducted in order to give voice to principals in order identify the behaviors that they believe to have significant impact on the integration of technology in secondary schools. The researcher integrated voices along with additional sources of data to answer the following research question:

How do secondary principals effectively lead the integration of technology in their schools as it relates to educational vision, curriculum and instruction, professional learning communities, and social advocacy?

Setting and Participant Descriptions

As per the researcher's specific selection criteria as discussed in the previous chapter, the district site for this study is quite unique in terms of demographics and technology integration. There are four secondary schools within the district, two middle schools, one high school, and an alternative learning center. There is a virtual academy within the district, but was not included in the study as technology integration was not structurally similar to the brick and mortar schools nor was there an observable leadership structure within the academy. Although the focus of the study was not necessarily concerned with student diversity or achievement, the school demographic data is included.

One of the key factors in the selection of the secondary schools within the district was the extensive availability of technology to administration, faculty, staff, and students. The researcher observed that there was a comprehensive technology infrastructure within the district, especially in the secondary schools. There were quite a large number of documents at the district and building level associated with technology including technology goals, security, policies, and procedures. The district and schools within the study had extensive technology support via the technology department that included personnel at each location (three on staff at the high school and three shared at the middle schools) to assist faculty, staff, parents, and students with technology issues. The high school setting was in the sixth year of a one-to one iPad initiative. The middle school buildings were in their third year of the one-to-one iPad initiative. Additionally, all of the schools associated with the participants in the study had a high ratio of computers/devices (Desktop computers, laptops, and iPads, interactive projection systems, etc.) to the number of individuals within the schools. (These numbers do not include personal devices, which were utilized throughout the secondary level schools).

The following illustrates the general demographic nature of the schools within the study:

Table 1 – Technology Accessibility

School	School Population (Administration, Faculty, Staff, and Students)	Number of Available Computers/Devices	Ratio of Technology to Individuals *(Device:Student)*
A	2310	Laptop Computers – 450 Desktop Computers – 350 iPads – 2250	> 1:1
B	765	Laptop Computers – 90 Desktop Computers – 125 iPads –725	> 1:1
C	425	Laptop Computers – 75 Desktop Computers – 85 iPads –390	> 1:1
D	79	Laptop Computers – 50 Desktop Computers – 30	> 1:1

The eleven participant principals for the study were of varying backgrounds; however, all participants hold current leadership titles and responsibilities at the secondary-level within the district. Participant variables include educational experience, leadership experience, responsibilities, and technology experience.

Table 2 - School Population

School	Student Enrollment (FTE)	Number of Faculty	Number of Principals
A	2100	125	6
B	696	44	2
C	380	23	2
D	72	6	1

The following table includes participant biographical data and the participants' perception (self-reported on a scale from 1-10, 10 being the highest level of comfort) of their level of comfort with technology and leading technology integration:

Table 3 – Principal Background

Grp	Research Participant (Pseudonyms)	Age Range	Years in Education	Years in Admin	Content Certification	Tech. Comfort Level (1-10)
A	Adrian	50-60	26	12	Science/ Physics/ Earth Science	9
A	Bobby	50-60	15	5	English Language Arts	10
A	Chris	30-40	13	4	Elem Educ.	8
A	Dave	30-40	16	3	Phys. Ed.	7
A	Evan	50-60	20	4	Elem. Ed.	4
A	Fred	30-40	12	2	Social Studies	8
B	Gerry	40-50	22	12	Social Studies	8
B	Henry	30-35	11	2	Social Studies	7
B	Ian	40-50	21	12	Social Studies	7
B	Jamie	30-40	10	2	Physical Education	6
B	Pat	50-60	30	15	Social Studies	7

The data is collected and reviewed from two separate groups. The focus groups in the study are Group A (High School Principals) Group B (Middle School and Alternative School Principals). The focus groups are divided by size, student age grouping, and by number of principals available within the district.

Group A

Group A consisted of one (1) lead building principal and five (5) associate principals. The high school is physically and academically designed with the Kansas Career Pathway

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System and has four separate academies, each with an associate principal in the lead. The building lead principal supervises the total high school entity.

The average tenure for the high school group was approximately nineteen (17) years in education and six (5) years in administrative leadership positions. The maximum years in education was twenty-five (26) years with twelve (12) years of administrative experience and the minimum was twelve (12) years in education with two (2) years of administrative experience. The Group A principals demonstrated different levels of expertise and comfort in management, supervising, and implementing technology. The average "comfort level" for technology among the group was approximately 7.6 on a scale of 1 to 10.

Group B

Group B consisted of three (3) lead building principals and two (2) associate principals. There are two middle schools and an alternative school. The two middle schools are of differing sizes (see table 2) and the alternative school houses students from 6-12 grade.

The average tenure for the middle school/alternative school group was approximately nineteen (18.8) years in education and six (8.4) years in administrative leadership positions. The maximum years in education was thirty (30) years with twelve (15) years of administrative experience and the minimum was ten (10) years in education with two (2) years of administrative experience. The Group B principals demonstrated different levels of expertise and comfort in management, supervising, and implementing technology. The average "comfort level" for technology among the group was approximately 7.6 on a scale of 1 to 10, which is the same as Group A. The presence and prevalence of technology throughout the district could have an impact on the relatively high comfort level with educational technology.

Participant Profiles

Each of the participants within the district had varying backgrounds as well as environments in which they lead as principals (see Table 3).

Adrian is a building principal at the district's high school. His background includes both science and math teaching certifications. Before becoming a building principal, he was a classroom teacher for approximately eight years, an athletic coach, a cooperative district consultant in curriculum and instruction in Southwest Kansas, and an associate high school principal.

He directly supervises and evaluates twelve teachers, fifteen classified staff members, and five associate principals. He is responsible for two academic departments and coordinates all building and facility use. Adrian attends approximately 80-85% of all secondary activities including athletic and co-curricular competitions, music & theater productions, exhibitions, etc. Evan believes in visibility, support, and connections to the students and the community.

Adrian's comfort level in technology stems from a science and math background. The researcher observed Adrian utilizing a variety of technology-based systems on a daily basis to communicate with administration, faculty, staff, students, and parents. He is very positive about integrating technology throughout the school and district and utilizes social media to communicate school activities and promote student achievement and recognition. He encourages the utilization of technology by faculty and staff as well as other principals throughout the building, "…you provide those resources and you also put the spotlight or accentuate the people who are using [technology] the way you would like to see it used so others can see success…" Adrian was one of the initial members of the district technology team that researched and adopted iPads in the one-to-one program at the high school.

Throughout the study, it was revealed through observation and interviews that Adrian's pedagogy incorporated technology to enhance his focus on service to the community and enhanced academic success for all students. Social advocacy and integrating technology as a means of communication, was a major leadership commitment on the part of Adrian. The researcher noted abundantly behaviors that incorporated technology engagement and support of social advocacy such as multi-media for donations from the faculty and students to community services. His perspective was that the school was one of the largest entities in the city and county and should play an important role to contributing to improving the community. Communication, through the use of social media, was deemed essential to his vision of connecting with the community and instilling the philanthropic ideals of service for not only students, but all members of the school. Over the course of the study, Adrian's advocacy for community service and philanthropy accounted for well over $15,000 of donations and hundreds of community service hours contributed to community, family, and social support groups. A variety of these efforts were directly connected to technology and engagement within the high school.

Bobby had fifteen years of experience in education, ten as a classroom teacher in English language arts and five years as a principal. He had experience as an athletic coach, sponsor, teacher representative, and mentor. His background includes corporate technology management before entering education. Bobby presented his perspective concerning technology within the interviews as well as exemplified the idea that technology should be a transformative factor in education. He expressed that technology afforded the opportunity for learning to be student-centered and engaging. For example, the one-to-one iPad initiative allowed for individual students to have significant autonomy when engaged in the learning environment and gave

students the opportunity to step out of the tradition sit-and-get lessons and investigate and explore subject matter in a variety of internet or application-based activities.

Bobby's comfort level with technology is extremely high and stems from a variety of responsibilities and skills that either focus on or include the use of technology. He believes that technology is essential to preparing students for their future. "It is not about having technology in schools, it is well beyond that, technology is a given and we must promote its use effectively." Practical learning and authentic tasks, in terms of curriculum and instruction were major motivations for Bobby's design and implementation of professional learning.

Bobby led the building technology committee, and later in the technology steering committee at the high school. That committee was formed to not only evaluate the progress of the iPad initiative, but also to determine additional technology needs, professional development, and ways to evaluate teacher and student performance in terms of technology usage in conjunction with curriculum and instruction. He worked closely with certified and classified staff in order to evaluate devices, facilities, and software as well as policies and practices throughout the school and district.

Chris has been an administrator for four years. Before her placement as a principal at the high school level, she was an elementary classroom teacher and an instructional coach for the district. She has been in education for 13 years. Her particular focus has been on assessment and data, particularly utilizing data to determine professional development and enhancing academic rigor.

Chris's relatively high comfort level in technology stems from her experience with assessments and data gathering for the school and district. Chris was instrumental in developing and utilizing the Illuminate system in which administration, faculty, students, and parents have

the opportunity to identify performance levels in areas of reading, math, and science. She, along with a team of teachers and administration, created a database of State test, formative, ACT, Pre-SAT, and locally designed assessment results for each student in order to create an electronic database in order identify needs and support as well as determine interventions, supports, and curricular methods. Chris stated that "…we ultimately love to see our teachers get to the point where they are using technology to provide data when looking at their kids."

Dave has been in education for 16 years, three of those years have been in the capacity of high school principal. His background was in physical education and counseling. He has been an athletic coach. He promotes the use of technology and is very involved in social media and has a relatively high technology comfort level. He expresses a firm desire that technology needs to be relevant to students, "try to tie [technology] back to college and career when they get done here…half of them (students) are looking for jobs, Make [lessons and technology] relevant."

Additionally, Dave revealed through interview responses and through researcher observations that he believed that recognition, as a form of support, was an effective way to bolster the integration of technology. Dave's focus was on enhancing curricular and instructional practices via the use of technology in and out of the classroom. Dave, like Bobby, communicated the need for individualized instruction and the benefits of technology to that end. In addition, Dave believed that increased utilization of technology was a product of recognition and positive support. Dave was repeatedly observed giving praise or credit for successful use of technology and the researcher noted that the interactions maintained a positive attitude toward using technology.

Evan is a very experienced educator with a varied background. Before he entered into elementary education, he was in the performing arts. He has twenty years in education with four

years as a principal at the high school. During the study, Evan was a doctoral candidate in educational leadership and was well versed in educational research and proved to be very helpful, especially in the member checking portion of the process. Within the high school, Evan manages activities, excluding athletics.

Of the participants in the study, Evan has the lowest reported technology comfort level and admits to a lower level of proficiency in technology-based tools; however, he has made efforts to develop his skills and he understands the importance of integrating technology, "I wanted to learn something and I thought that enthusiasm is not had by a lot of people my age…you have to be enthusiastic about learning new technology." Evan had a relatively new found conviction to communication through social media and a desire to enhance his personal learning when it came to technology. His focus, during the period of the study, was to enhance collaboration and communication through technology in professional communities of learning. He mentioned several times that he himself to be a model as a learner as well as a leader.

Fred has twelve years in education and two as a high school principal. He taught at the secondary level in Social Studies for ten years at three different high school venues. He has a relatively high technology comfort level and has been significantly involved in the school's technology, communication, and social media presence. He has embraced technology as a way to "control the narrative and develop the school's brand through technology." Again, the principals, especially Fred, believe that technology has become essential to leading a school.

Fred, as Athletic and Activities Director, implemented a community wide initiative utilizing a technology-based application for faculty, staff, students, and parents to not only monitor activities at the school, but also get rewards for attending and supporting the activities. His vision for the high school and district was to use technology in as many forms as possible to

enhance involvement and engagement. The phone-based application allowed for stakeholders to collect points for supporting the students in the school and redeem them for school-related merchandise as well as participate in activities related to the application (i.e. student in attendance could win prizes at games or events). Fred's belief in developing interest in extra-curricular activities led to increased engagement in social advocacy on the part of the faculty and students.

Gerry is a veteran educator and administrator. For the last twelve of his twenty-two years in education, he has been in administration at the secondary level. He has been a principal at three different secondary buildings within the district. He currently is a principal at one of the middle schools in the district. He has a background in Social Studies. He is an advocate for technology implementation and his focus is on supporting teachers in finding the right tools for their classroom needs. "Teachers should be given the opportunity to utilize the best technology for their classrooms and students. Principals need to advocate for them in that way."

Gerry expressed that his primary vision for technology was to overcome the sense of autonomy that teachers traditionally had about the classroom. Gerry indicated that technology could expand the teachers' ability to break out of the idea that they are alone, locked up in their rooms and the "sage on the stage." He believes this increases the opportunities to learn and improves academic success. Collaboration and technology related-activities would allow more student-centered activities and project based learning into the curriculum. Additionally, technology offers opportunities for teachers to share with one another in professional learning communities, not just meetings, but throughout the day.

Gerry was instrumental in allowing teachers to find the correct tools to use based on teacher preference. The district relied on Microsoft tools and the district administration was

relatively inflexible too change. Gerry, along with Henry, was instrumental in allowing teachers to learn and present different tools such as Google classroom tools to not only their middle school, but throughout the district. Gerry demonstrated his vision for building leadership capacity and providing opportunities through technology in the learning communities.

Henry is a relatively inexperienced middle school principal at one of the two middle schools in the district. He has been in administration for two years of his eleven in education. His background is in Social Studies. He has been an athletic coach and currently assists with middle school activities. He is relatively young and familiar with newer technology. He has an average to high level of comfort with technology in the participation group.

Henry's focus in terms of technology mirrors that of his principal, Gerry, contending that leadership support of technology is very important and should focus on academic success. In addition, he echoes the focus group theme of modeling technology usage and behaviors. "It is important to demonstrate not only knowledge, but also practice when talking about technology." The researcher observed Henry, quite often, working with teachers and demonstrating applications and strategies to use within the classroom during PLC meetings.

Henry also contributed to the discussion concerning digital citizenship and the difficulties with appropriate use. He, like Evan, focused on their attempts to model proper technology usage when communicating via or demonstrating technology. Henry also focused on social advocacy and involving the community into the middle schools. He made every effort to utilize technology such as social media, student information systems, and e-mails to correspond with all stakeholders and publicize the school.

Ian is a middle school principal within the district. He has twenty-one years in education. He has been in administration in multiple districts for the past 12 years. He has been a middle

school assistant principal, a high school principal in another district, and an athletic director/associate principal at the high school level. His background in teaching is in Social Studies and he has been an athletic coach. He is also at an average level of comfort with technology. His focus is that of utilizing technology for communication. "Technology is and can be very beneficial in communicating with all stakeholders in an effective and efficient way."

The researcher also observed Ian in district-level collaboration and in-service opportunities. Ian presented much of the data for his middle school. He promoted the use of a wide variety of data collecting technology including "walkthrough" statistics. The data came from classroom observations/walkthroughs and included information concerning the SAMR model when determining technology use throughout the school. Ian promoted the effective use of technology in the classroom ad Ian utilized technology to communicate levels of use to other principals, engaging them in using data to generate professional development and in-service activities for leadership and teachers. Ian's vision for technology was expressed as a means for continual improvement.

Jamie is the youngest of the participants and has the least experience in administration. She is currently serving as a principal at the middle school level. She has been involved in coaching at the middle and high school level. She had a slightly lower than average self-reported comfort level compared to the participant group. Her input in the focus group interviews/discussions revealed a desire to provide support to teachers and communicate via technology. "We (principals) need to provide support and encouragement to teachers when it comes to technology."

Additionally, Jamie was responsible for communicating to the faculty, staff, community, much like her counterpart at the high school level, Fred. Jamie promoted social advocacy and

community involvement. She provided communication via technology and engaged in technology-driven events such as Drive for Your School, a partnership with a local auto sales group, in which community members could sign-up on-line with Ford motor company and attend a test drive session at the middle school. Proceeds went to the student funds account for the school. All marketing and advertising was done through social media, e-mail, and the internet.

Jamie was engaged in technology throughout the school. Over the course of the study, Jamie increased comfort level with technology and became very adept at communicating through technology. She, like others, was observed providing support and praise to others when technology was used effectively.

Pat is a secondary-level principal. He has the most experience in terms of age and time in the profession with thirty years in education and fifteen in administration. He has been a discipline dean, an associate principal, and lead principal in two of the buildings within the district. His comfort level reflects, as he admits, and lack of "keeping up" with educational technology. The Alternative Education Center does not have the same technology initiatives as the rest of the secondary schools within the district. "We utilize technology when possible and should use more of it, but the educational environment is different than other buildings due to the student clientele."

Pat's previous experience in the military and security influenced his perception of security and classroom management of technology usage. Pat discussed security protocols within administrative in-services often. He communicated concerns from teachers regarding access issues to the technology department frequently.

Additionally, the researcher observed Pat, on numerous occasions, working with teachers to monitor technology usage and set policies for use within the classroom. He noted that

sometimes technology can be a distraction to students; however, he also pointed out that distraction has always been an issue with students, with or without technology. The researcher observed Pat, on numerous occasions, providing strategies and recommendations for classroom management based on engagement to reduce distraction. "It is important to provide engaging activities within the classroom utilizing technology so that there is less opportunity or desire to be distracted or use devices inappropriately."

Findings: Concepts, Themes, and Connections

"Leadership is probably the single most important factor affecting the successful integration of technology into schools" (Byrom & Bingham, 2001, p. 4). The analysis of principal's data, from both focus groups and observations, yielded several themes related to the behaviors in the integration of technology in the schools. The four major thematic concepts were connected to (1) leadership support, (2) modeling, (3) communication, and (4) engagement in conjunction with leadership behaviors. It was found by the researcher that successful and effective technology integration was the product of leaders who demonstrated behaviors that supported the initiatives or implementation of technology such as maintenance, care, and encouragement. Additionally, successful principals provided behaviors that coincided with the theme of communication such as clear articulation, correspondence, and instruction. Effective and constructive principals exhibit behaviors that coincide with the theme of modeling such as demonstrating, exhibiting, and exemplifying the integration of technology in the school. Finally, the researcher found that successful integration of technology includes principal behaviors such as involvement, participation, attention, and awareness associated with the theme of principal engagement. The themes were developed by disaggregating the data by common terminology and descriptions of behaviors or roles. Successful and effective behaviors for each theme were

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found in the responses or demonstrated in the observations. Although there were possibly additional themes that could have been derived from the data, the researcher decided to focus on the four themes that were not only consistently referred to by both focus group participants as well as noted in observations, but also had evidence, as perceived by the participants, within the responses to have an impact on the integration of technology in the school setting. Further examination of these four major themes yielded and identified various behaviors connected to the conceptual framework. The responses to the questions that guided the focus group interviews/discussions as well as observed behaviors showed complex interrelationships between the themes, thus revealing various connections between themes and intersections between behaviors and themes. Focus group/interview responses and observed behaviors revealing the successful integrations of technology and related to each of the research questions are provided in this section. The research questions were formed from the conceptual framework and incorporated leadership vision, curriculum and instruction, learning communities, and social advocacy. Utilizing coding techniques, the focus group transcripts and observation field notes were thematically aggregated for significant categorical analysis.

Principal Leadership Support

The first theme; effective principals provide technology support to teachers, students, and parents; was developed from behaviors observed by the researcher or revealed in focus group discussions such as maintenance, care, and encouragement. The behaviors connect with supporting the aspects of vision, curriculum and instruction, professional learning communities, and social advocacy. The analysis revealed that leadership support was the most prominent and prevalent theme in effectively integrating and implementing technology in the school. Principal behaviors associated with the theme of support were noted by each participant and was

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significantly discussed throughout both focus groups. The term support was defined broadly in terms of behaviors of the secondary principal; however, the focus of the discussion was not on providing physical technology resources or information technology specialist support. These issues were mentioned, but not a significant factor in leadership roles or behavior within the district. Although there was agreement across both focus groups that district administrators and information technology directors are the ultimate decision makers regarding the adoption of educational technologies, it is apparent that most of the innovative technology ideas originate at the school level through particular innovative teachers or school principals; therefor, principal support is a key factor in integrating technology throughout the school. The school district was chosen for the study due to the prevalence of technology throughout the district as mentioned in Chapter Three as well as being a successful school district. Principal support was interpreted in a variety of ways as illustrated in the proceeding analysis in which the research question responses and observations focused on leadership support. For example, participants discussed professional development and in-service opportunities as formal support and enthusiasm and encouragement as informal technology support.

Principal Leadership Communication

The second theme; successful principals communicate with all stakeholders concerning technology integration; was developed from observed and discussed behaviors such as articulation, connection, correspondence, and instruction. These behaviors coincide with the aspects of vision, curriculum and instruction, professional learning communities, and social advocacy. Leadership communication was revealed by the participants to be a significant leadership behavior influencing the effective integration and implementation of technology throughout the schools within the study. Communication is essential in all aspects of leadership;

however, both groups concurred that connecting, collaborating, and cooperating were key behaviors that have an impact on the integration of technology into the classroom and the school. Communication by leaders was exhibited in observations in a variety of ways including email, social media, student information systems, and face-to-face communication. Leadership communication is a key factor in not only transmitting information, but also fostering effective relationships and encouraging trust which in turn impacts the implementation process. The principals in both focus groups contended that communication via technology and about technology allowed for cultivation of innovation, building open connections, increased collaborative learning, celebrating success, and enhanced trust and understanding when it comes to educational technology.

One of the opportunities for principals was that of Professional Learning Networks (PLNs). A PLN is a tool that utilizes communication technology, specifically social media, to collect, communicate, collaborate, and create with peers and colleagues anywhere at any time. Principals in the study developed their own personalized "network" of fellow educators and resources that are designed to enhance principal and leadership practice. Principals utilized social media such as Twitter to connect with other principals and educational leaders as well as consultants to discuss technology integration, policies and practice, supervision, evaluation,

The observed behaviors and documents (e-mails, media posts, etc.) correlated with the focus group responses. Additionally, principals utilized technology, such as the district "walk-through" tool, to communicate observed classroom behaviors as well as classroom technology integration. Henry communicated that, "Technology affords us another way of communicating with each other, teachers, students, parents, and the community. It is essential that we, as principals and leaders, take advantage of all avenues to connect."

Principal Leadership Modeling

The third theme; effective principals model technology to teachers, students, and other stakeholders; emerged from observed and discussed behaviors such as demonstrating, exhibiting, illustrating, and leading by example. These behaviors are included in educational vision, curriculum and instruction, professional learning communities, and social advocacy. The analysis revealed that leadership modeling was a significant theme that emerged during the focus groups' discussions and was clearly visible in observations throughout the schools. Modeling incorporates not only the individual use of technology, but also developing technical fluency and creating a technology-rich pedagogy in order to demonstrate desired practice. It was evident that the principals believed that they must enhance their own technology knowledge and skills in order to promote the effective use throughout the school. Technology, in terms of communication, is unique as it is both the content of communication and the method of communicating. The researcher observed substantial communication via technology through the use of the student information system (Skyward), Microsoft Office email and collaboration tools, Google calendars and application software, text messaging, Remind101, and social media posts (Twitter, Facebook, etc.). Additionally, the content of the communication was observed as relating to technology as well. The principals in the study were observed effectively modeling technology tools, strategies, data systems, hardware usage, and related practices during faculty meetings, professional learning community meetings, in-service, and professional development opportunities. Teachers increase their understanding and confidence for successful use of technology when they have a chance to observe and discuss its examples and consequences (Ertmer, 2005). Principals can provide those opportunities for teachers, students, and parents to experience technology through their actions and behaviors. Bobby expressed, "Well, we

[principals] are in the educational field, so our goal is really to educate people in the effective and appropriate use of technology…we can show them how to do that…"

Principal Leadership Engagement

The final theme; successful principals are engaged in technology integration and implementation; emerged from observed and discussed behaviors such as involvement, participation, attention, concern, and awareness. These behaviors are included in educational vision, curriculum and instruction, professional learning communities, and social advocacy. The analysis revealed that leadership engagement was an important theme that emerged. Principals, as educational and technology leaders, must have the capacity to identify issues and opportunities, participate and facilitate in processes, and organize and assemble people to develop effective practices in order to promote student achievement. All focus group participants agreed that the integration of technology would undoubtedly improve student learning and that principals should be engaged in that process. Leadership and principal engagement can create a more positive school culture. As a measure of their commitment and leadership style, effectively engaged principals were more likely to be directly involved in initiating, planning, and implementing substantive activities (Auerbach, 2009).

The aspects of engagement as a thematic category were agreed upon by participants as leadership involvement, visibility, participation, concern, awareness, and attention to the practices that include the use of technology throughout the school and district. The process of observing engagement was slightly more difficult due to the nature of the concept; however, the researcher noted behaviors that associated with participation, involvement, and attentiveness as representative of engagement. Leadership engagement is not only interactions with teachers and students concerning educational technology, but also involves engagement with parents,

community, and other stakeholders in a variety of venues such as social media, communication applications, assistive technology, etc. There was significant observational data collected by the researcher in terms of the social media and communications presence by the principals throughout the schools. The communication ranged from "branding," marketing and identifying the school in the community; informing stakeholders of events, celebrating academic and activity successes, promoting community involvement, requesting information, and advocating for social concerns.

This study identified these areas of leadership behaviors as being the impetus for successful technology integration. The following sections describe the relationship between the conceptual framework and behaviors associated with positive and the identified effective leadership behaviors.

Subsequent Research Questions

The following research questions were developed through the comparative evaluation of leadership and technology standards and delineated the focus group/interview discussions. The questions were generated based on the overarching research question and the conceptual framework for the study which included leadership vision, curriculum and instruction, learning communities, and social advocacy. The analysis explored the four prevalent themes and the relationship to those four leadership topics. The field notes, observations, and artifacts were used to reinforce responses from the focus group discussions. The focus group response data was organized into the four prevalent themes; however, various responses were not limited to only one particular theme and allowed for overlapping concepts.

Research Question One

Research question one asked, *"How do successful leaders promote the educational vision in terms of technology within the classroom and school?"* While the groups' discussions focused on identifying the vision for technology integration and the significance of and planning for that vision, the discussion provided additional insight and multiple examples of the potential of leadership within the district's secondary schools. Each of the participants commented on their personal vision for technology as well as collaborating on the vision for the school and district. All eleven participants, encompassing both groups, agreed that their roles as principals are vital in facilitating the use of technology within their schools.

Although there was not a written or documented technology vision for the four individual schools involved in the study, the participants shared a perceived responsibility or commitment to not only integrate technology, but as Participant D expressed "…utilize [technology] throughout the school and district for more than substitution, but to change and redefine the way things are done in the school and classroom." Positive leaders can inspire effective technology integration for teachers, students, and the community through their vision. That is accomplished by articulation, guidance, demonstration, and involvement.

Table 4 - Themes from Data Related to Framework - Question One

Framework Area	Theme	Example(s) from focus group transcripts
Vision and Leadership for Technology Integration	**Leadership Support -** Effective principals provide technology support to teachers, students, parents, and community members in conjunction with goals, mission, and vision.	"I think our vision for technology should coincide with our district vision of preparing students for college and career." (Gerry)

	Leadership Communication – Successful principals communicate with all stakeholders concerning technology integration. Vision guides collaborating and communicating about and with technology.	"We have a relative vision of what we want each classroom to have and to be so what I have to do is to be the visionary and communicate that" (Jamie).
	Leadership Modeling - Effective principals model and demonstrate technology to teachers, students, and other stakeholders in concurrence with vision for implementation and maintenance of technology.	"I have to lead by example and work toward the vision of technology, including it whenever I can…it might be in a faculty meeting or PLC. (Pat).
	Leadership Engagement – Successful principals are engaged in technology integration and implementation aligning with goals and expectations..	"Sometimes it is important to get out of the way and let them do it, but that doesn't mean not be involved. Be visible and interested in the goals." (Gerry)

Vision and Leadership Support

The framework for the study included principal vision as an area for effective leadership. According to DuFour et al. (2005), *vision* is a belief that "provides a sense of direction and a basis for assessing both the current reality of the school and potential strategies, programs, and procedures to improve upon that reality" (p. 24). Principals within the study, from both focus groups, expressed the lack of and the need for a formal school vision for educational technology; however, several of the principals from both groups expressed their personal vision for technology. Adrian stated that, "…my vision would be that it's [technology is] used as one of many instructional assessment tools throughout the process, from the anticipatory set, building background, all the way through to assessment. And that technology, I think, should be used as a way to differentiate not only the learning process but also the product." This lack of a district technology vision was support through an investigation of district documentation. The Board of

Education had established a technology plan; however, there was little in the way of a formal shared district vision in terms of applying the integration of technology within the school. However, the principals representing the four secondary schools within the district expressed similar ideals in terms of supporting the vision of technology implementation to improve student achievement and experience. Hord (1997) identified the vision as an unwavering commitment to student learning that is articulated in the staff's work. A common theme or pattern mentioned in conjunction with supporting a technology vision referenced the district goal of "college and career readiness." This was mentioned in the focus groups multiple times when discussing vision and supporting the work of the teachers. Additionally, when observed in professional learning community meetings and district leadership committees, the principals were consistent with promoting a vision aligning technology to college and career readiness standards and transforming educational practice.

Additionally, participants also expressed teacher and student expectations within the vision for technology. As Evan expressed, "It's, now that we have it in place, infrastructure or whatever, that they start to use it in a transformative way like to solve problems, well not just substitution or regurgitating information." Other terms were common in the responses for vision including student achievement, communication, student-centered, rigor, safety, and high expectations.

Vision and Leadership Communication

"Visionary leadership requires school administrators to promote and lead the development and implementation of a shared vision for comprehensive technology integration" (ISTE, 2009). The focus group participants agreed that the roles of the principal included communicating the vision and goals concerning the use of technology in the school and district.

"…you also put the spotlight or accentuate the people that are using it the way that you would like to see it used so others can see success stories and eventually move that direction" (Participant A). The principal's ability to effectively communicate the vision has a significant impact upon the integration of technology. Chris suggested "…continued collaboration and communication with each other helps them [teachers and students] grow and learn from each other."

Murphy et al. (2006) define vision for learning as leadership in developing, articulating, implementing, and stewarding vision. Effective and positive communication of the vision extends beyond the identification of desired outcomes, but also incorporates the evaluation and progress toward the vision. Adrian added, "How do we assess are we taking it at a substitution level or are we really moving it up to getting the most out of that challenge-base instruction. I think that is, I think, the hardest piece. That that something we really still need to work on." The researcher observed principals in the study and noted that they spend a considerable amount of time and effort utilizing technology for communication as well as communicating about technology within the school. "Creating, defining and communicating the vision for organizational transformation is a tricky process and requires considerable time and resources to get right" (Gleeson, 2017). An effective vision for change is only as good as how, when, and how often it is communicated. A majority of the principals reported that they facilitated the development and communication of a vision for technology integration in some way. The researcher observed the communication of principals' technology vision, the goals, objectives, and expectations, in faculty meetings, professional learning community meetings, and in-service opportunities as well as individually with teachers, students, and parents.

Observed behaviors and artifacts reinforced the theme of communication in conjunction with vision. Several principals utilized social media to communicate their vision in terms of goals for the use of technology within the school. Almost all of the principals manage part of the schools social media presence and, through outlets such as Facebook and Twitter, communicate vision through expectations as well as examples of activities and experiences in the classrooms and throughout the school. The communication of not only district vision, but also the informal vision for technology was communicated in the PLC meetings in each school.

Vision and Leadership Modeling

Principals, as mentors, are role models. That begins with the development of the vision for technology integration. "You really need to develop good faith among the faculty by modeling behaviors that are in line with the vision" (Participant E). If the actions of the principal do not demonstrate an effort to achieve the vision, integration will not be successful. Bobby reinforced the idea that principals should be encouraging and supportive, "We must be enthusiastic and be visibly working towards the goals of effective technology use." Consistent behavior is essential to effectively integrate technology. That has to start at the top and in the school; the principal must be able to demonstrate the dedication to the vision. Current research identifies expectations of school administrators' responsibilities to include being a role model of appropriate practices (ISTE, 2007). The principal must lead the efforts to increase knowledge, and apply technology skills in order to be a "technology role model" for all stakeholders. Evan commented that, "I had to put myself out there and learn how to do this, it's not that hard, you know I just model [learning technology] and encourage that…"

The researcher noted, while observing practices, that principals modeled the vision in a variety of ways beyond communicating the vision for integrating technology. There were

observed uses of technology (Google apps, social media posts, student information tools, academic strategies, etc.) modeled by principals throughout professional development and in-service opportunities that mirrored expectations for teachers were prevalent in the four schools.

Vision and Leadership Engagement

The participants within the study, across both focus groups, agreed that to get teachers engaged in the vision, principals first be engaged; however, some of the participants noted their lack of engagement at times with presenting technology vision or a lack of understanding as to how to exhibit engagement in the vision of technology integration. Participants contended that schools that are highly engaged in change and improvement have one thing in common: they have highly engaged leadership. They also have a strong base of teachers who feel a sense of pride and belonging to their school and in their role. Principals should encourage change by providing direction, participating in, supplying feedback, and acknowledging successes in the integration of technology. There were few observable or outwardly visible examples of engagement with the vision in terms of leadership other than presenting, communicating, and encouraging expectations in line with the general educational vision of the district. Participants did note that celebrating and/or acknowledging successes in the process of working towards the vision were effective in engaging faculty, staff, and students. These celebrations and acknowledgements were observed in a variety of ways such as principals' social media recognition, e-mail, and Remind101 communications recognizing efforts of those within the school. Dave advocated that, "[The vision] creates a dialogue for using the technology and engaging with the teachers."

Research Question Two

Research question two inquired "*How is technology integration effectively*

manifested by principals and leaders in terms of curriculum and instruction?

The focus groups' discussion concerning curriculum and instruction centered on the principals' efforts to encourage integrating technology into the classroom in order to promote better learning. Additionally, it was mentioned by multiple participants that technology is only a tool for that process and should be treated as such. Each of the participants commented on their roles and behaviors for effectively and positively integrating technology into curriculum and instruction. All eleven participants, encompassing both groups, agreed that their roles as instructional leaders are essential in facilitating and supporting the constructive integration of technology within their schools. As one participant noted, technology itself is becoming a significant part of the curriculum. Jamie explained that, "A majority of what we are now calling 'the curriculum' is the program resources we purchased, which now entails e-books and online guides and internet links, etc." The principals in the study, as instructional leaders, understood the importance of technology associated with modern instructional practice.

Individually, the participants revealed examples of utilizing technology in different areas of curriculum and instruction. Adrian suggested that leaders can influence experimentation with technology, "I think sometimes its trial and error, you [principals] are going to try something and you put yourself out on that limb and see if this works. And I think the teachers see administration putting themselves out on a limb to try something so they're maybe going to try to use things."

There were several observed behaviors in conjunction with technology and instructional integration. Principals were observed in PLC and faculty meetings providing technology tools and strategies, demonstrating software, and utilizing communication

tools. A majority of the principals in the study were observed as being comfortable presenting technology in various ways to the faculty, staff, students, and parents. Even the few self-reportedly less technologically savvy principals were observed providing more technology instruction in various ways to stakeholders than they revealed throughout the focus group discussions. Additionally, they were very capable in assisting in curricular strategies that could include various technologies within the classroom and school.

Table 5 - Themes from Data Related to Framework - Question Two

Framework Area	Theme	Example(s) from focus group transcripts
Leading Curriculum & Instruction through Technology	**Leadership Support -** Effective principals provide technology support for generating curriculum and providing for instructional practice to teachers, students.	"Another way is clearing the obstacles and barriers, getting those out-of-the-way to make it easier for teachers to do something." (Jamie).
	Leadership Communication – Successful principals communicate instructional strategies and curriculum maps with teachers and students integrating appropriate and effective technology.	"I had conversations with the teachers about what's going on in their classroom and what they're doing curriculum-wise based on their social media posts" (Ian).
	Leadership Modeling - Effective principals model instructional technology applications, software, and devices to teachers, students, and other stakeholders.	"Teach them to use it and that's what I did with our building site council when we met. We took time and I showed them Twitter (Adrian).
	Leadership Engagement – Successful principals are engaged and involved in the development of curricular and instructional practices that integrate technology in the school and classroom.	"…encourage those around me to teach me. You know once they show me a couple of times, I will go teach somebody" (Fred).

Curriculum & Instruction and Leadership Support

During the focus-group interview, Gerry asserted that, "Principals are the key leaders of curriculum and instruction within their buildings. This includes technology and principal knowledge of the curricular program, expectations, standards, and alignment." The focus group discussions included a variety of instances in which principals supported the curricular and instructional needs of the teachers and the students. For example, "Teachers are utilizing 'Kahoot.' You know, it has caught on in that direction to where now we have students creating 'Kahoots' to quiz each other" (Participant A). The participants agreed that they needed to

support technology efforts; however, technology is only a tool and must be appropriately applied in order to be effective.

Technology, integrated into the school, can help to expand and realize the curriculum and enhance instructional practice. The principal, as instructional leader, should define the parameters of the curriculum and the relationship of technology to the curriculum. As Bobby put it, "We shouldn't encourage technology for the sake of technology. We (principals) should support the use of the right tool for the job. You wouldn't use a hammer to fix window glass." This concept was also observed in the instance of promoting the Google Classroom software into the district. Several classroom teachers were exploring the Google platform as opposed to the existing Microsoft Office suite. The Google software was recognized being more adaptable and easier to use and so the principals brought the request to the district administration in order to provide the best technology for the situation. Several principals expressed the understanding that curriculum and instruction can benefit from the use of appropriate technology. As suggested by Dave, "Ultimately, there are educational projects designed to meet curricular goals and objectives of student achievement that can be achieved through technology."

The researcher also observed four of the principals in the study supporting the technological needs of special populations within the school. Technology was an integral part of the self-contained special education curriculum and daily routine. Principals are the lead educational advocates for the students during the IEP meetings and were consulted as to the needs of the students in terms of technology. The principals observed during the study provided more than the technology hardware or software for the teachers and students. On one particular occasion, the principal spent hours researching and testing the appropriate application so that students with limited communication and physical ability could "have a voice." There were

several cost effective applications that were evaluated and the principal considered the student, teacher, and parental needs as well as cost-effective applications. The application was utilized to enhance learning and accessibility.

Curriculum & Instruction and Leadership Communication

According to the ISTE (2009), administrative practices can advance schools through the use of information and communication technologies. This was made evident in the focus group discussion in terms of communicating the curricular and instructional programs with the secondary schools. The principals have made efforts to communicate more effectively about the academic programs through the use of technology. Bobby pointed out that, "We have done a lot of work this year on remapping are curriculum and embedding activities and links into the document…more of a living document." One of the observed communication tools in terms of curriculum and instruction is that of the "walkthrough" tool. This allows principals to monitor classroom instructional practices including content, technology, and cognitive levels of activities and lessons. On average, the principals at the secondary level enter in over three hundred (200) walkthroughs in the high school setting and over one hundred and fifty (100) per month. This served many purposes in terms of integrating technology. Principals visibly model the use of technology in the school as they used the iPad for the walkthroughs and the tool provided communication of data to the teacher (commentary is included within the walkthrough directed to teacher) including their use of technology within the classroom and the level at which they are using technology (SAMR Model of technology integration).

Several participants pointed out that communicating technology as part of curriculum and instruction may eventually not be necessary as technology will become inherent to all school processes and accepted as such, but that communication remains important at this point. Gerry

"If done right, technology will become invisible in the classroom, as it will be the standard tool for constructing and learning content and communicating what the student has learned (Participant G). "Eventually you'd like the word [technology] to disappear altogether so it's not a separate thing. It's just part of the way we do things. It's a tool" (Participant D).

Curriculum & Instruction and Leadership Modeling

Throughout the discussion/interviews, the most prevalent response to integrating technology effectively in the school was that principals should model the processes and practices to deliver instruction. Jamie stressed that, "We [principals] need to be using technology ourselves, I mean, in ways that translate to the classroom." The participants noted that technology is utilized in a variety of ways. Pat mentioned that, "We use technology for typical office applications, organizing information, teacher evaluations, analyzing data for data-driven decision making."

Sometimes, according to several participants, modeling processes allows for the alleviation of fear. When something is modeled and the process does not go as expected, not only is their learning taking place based on errors in the process, but it allows for an understanding that it is acceptable to experiment with technology. Evan recommended, "…going out on a limb and doing something, like we talk about innovation, but eliminating the fear or any consequences of not doing something well." Modeling practice allows for the ability to fail forward and learn while removing hesitancy. One of the circumstances witnessed during the study was that of utilizing technology to "flip" a meeting. The principal prepared material for the teachers to explore before the faculty meeting. Due to issues with compatibility and access the teachers were unable to prepare for the meeting. After trial and error, the principal constructively modeled

adaptive behavior and demonstrated how to access and overcome issues during the meeting, extending learning and modeling concerning taking risks with technology.

Technology can allow teachers and students a more adaptable avenue for curriculum and instructional practice. Jamie stated, "I think using tech can make our curriculum more flexible, more adaptable, and by using tech, I mean to house it on an editable format so that you're able to be a little more nimble with it." And Henry added, "I model my own comfort with utilizing technology tools. I ask the teachers and students for assistance when I have a technology question and encourage teachers and students who are comfortable with technology to help those who are less comfortable with technology."

Curriculum & Instruction and Leadership Engagement

The participants in the study agreed that principals must have knowledge and understanding when integrating and engaging in technology, but additionally require modern and timely knowledge and skills in the fundamental areas of curriculum, instruction and assessment. In order to engage teachers and students in the area of curriculum and instruction, principals must be themselves engaged in the use of technology. "Leadership behaviors such as inspiring, motivating, and providing assistance are effective when encouraging teachers to incorporate technology in their classrooms (Piper and Hardesty, 2005, p. 1839).

The focus groups had several examples of instructional practice, led by principals, demonstrating leadership engagement in promoting curriculum and instructional practice. Adrian commented, "I have seen each of you (associate principals) do this…doing your pre-work for PLC digitally, trainings like ALICE (Crisis) training…[you] are modeling these things." The researcher observed a number of situation in which the principals use technology to engage with students, parents, and teachers in terms of curriculum and instruction. One example was in

conjunction with parent/teacher conferences. The principals not only provided data resources such as SRI reading scores, math assessment, State assessment results, curriculum mapping, and content and language objectives through the Skyward student information system, but also guided parents and students through the system so they could access information on their own, enhancing the conference experience. Rather than supervising the conferences, the principal productively engaged in the opportunity through technology.

Research Question Three

Research question three asked, "*How do lead and maintain communities of learning in terms of technology integration?"*

The focus groups' discussion concentrated on in-service training and professional development for technology integration as part of professional learning communities. PLCs are an established program within the secondary schools within the district. The participants in the study revealed that effective principals are not only the instructional leaders for the school, but also the leaders of the professional learning communities. One common theme concerning technology and successful implementation is that the leaders integrate members of the faculty and staff into the process. Both focus groups agreed that it is essential to provide meaningful, engaging, and timely opportunities for faculty and staff to develop their knowledge and skills with technology. Dave added, "We had that technology committee. It really helped building in-services and they collaborated and they would get with teachers and teach teachers." The technology committee was a group consisting of teachers from each curricular area of varying levels of technology proficiency as well as three principals from the secondary schools that would collaborate on initiatives, discuss policies, develop in-service, and resource needs for the implementation of technology throughout the schools.

Additionally, participants discussed the Superintendents Advisory Council (SAC), which

serves as a community of learning for principals. There were several examples of professional

learning in the area of technology that were provided through that opportunity. Adrian pointed

out, "I think you all were at the last SAC meeting and our personnel folks trying to use that story

book app …they tried to model for us." The researcher observed, on a number of occasions,

principals utilizing technology to enhance professional learning communities throughout the

district.

The principals concurred that communities of learning are avenues to support and engage

teachers and students in not only learning about technology, devices, software, and applications,

but also work together to develop new ways to utilize technology in the classroom and

throughout the school.

Table 6 - Themes from Data Related to Framework - Question Three

Framework Area	Theme	Example(s) from focus group transcripts
Professional Communities of Learning and Technology Leadership	**Leadership Support -** Effective principals provide opportunities for building educational capacity by delivering technology support and affording time and experiences with technology to teachers, students, parents, and community members.	"I have had lots of positive feedback from the e-walkthrough, like from teachers, but what are we going to do like PD wise now based on this information that we're gathering" (Dave).
	Leadership Communication – Successful principals collaborate and communicate with educational professionals in order to bolster confidence and self-efficacy when incorporating technology.	"We have a relative vision of what we want each classroom to have and to be so what I have to do is to be the visionary and communicate that" (Ian).
	Leadership Modeling - Effective principals model technology within professional learning communities in order to identify, support, and	"I have to lead by example and work toward the vision of technology; including it whenever I can…it might be in a faculty meeting or PLC" (Pat).

	maintain best practices with technology..	
	Leadership Engagement – Successful principals are involved and engrossed in the integration of technology via learning communities. They engage in professional communities of learning as a medium for building teacher and student capacity by implementing technology throughout the school.	"We [principals] need to be practiced and prepared to integrate teaching technology in a PLC setting" (Gerry).

Learning Communities and Leadership Support

Murphy et al., (2006) expressed the idea that learning-centered leaders support professional development through a community of professional learning. Both focus groups discussed the system of Professional Learning Communities that exist throughout the district and in their buildings and the support that exists within the system. PLCs have provided significant opportunities to work with technology in a variety of ways. The principals mentioned personalized learning opportunities and creating a culture of continuous improvement for teachers through PLCs. Pat added, "I understand that teachers are at varying levels of expertise when it comes to technology. Professional development should be differentiated for teachers just as we differentiate for students." Successful principals know when to include teacher input in order to provide learning opportunities in technology. The participants noted that technology in-service and professional development stemmed from the needs of the teachers. Principals, as the leaders of the professional learning communities have enthusiastically supported technology use within the community of teachers. Adrian revealed that, "We work together to design, implement, and participate in professional development for instructional staff to systemically

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integrate technology for student learning." This has extended into district-wide efforts to support technology.

The researcher also noted through observations that professional learning communities are not merely a meeting time; they are a continuum of support, especially when incorporating technology. Each member of the faculty and staff need support in different ways and at different times. In one circumstance, a teacher needed support from the principal, in the gradebook system, with noting missing assignments as opposed to assignments that were not submitted by students. The information led to learning for all of the faculty and staff.

Learning Communities and Leadership Communication

Ideal workplace conditions include communication and collaboration networks among teachers, professional development opportunities, and school principals that practice effective technology use in the classroom (Becker , 2000). One of the significant outcomes of principals utilizing technology is that of feedback. Communicating expectations as well as outcomes was considered a crucial aspect of leadership. Dave contended that, "…the other piece of technology that I see us showing teachers, that were using technology just this year more than anything, is the walk-through piece. You are coming through with your device and you're so you're doing these things online and modeling that piece for them." The focus groups discussed the impact of having data to provide to professional development and Professional Learning Communities (PLCs).

Technology allows for the creation of "…networks within communities and new participatory forms of communication and collaboration for both learners and educators" (Kop et al., 2011, p. 89). The principals in the study demonstrated that professional communities of learning are opportunities for effective principals/leaders to initiate innovative communication

and enhance learning. The researcher observed and noted that principals facilitated a number of professional learning community (PLC) meetings as well as coordinated technology initiatives through professional development and in-service opportunities. In most of those circumstances, if not all, the faculty and staff collaborated in order to promote strategies and activities incorporating technology. Principals must also understand that communication is also listening to others in terms of practice. Pat declared that, "It is important to involve teachers and kids and families in order to determine what we can use technology for."

Learning Communities and Leadership Modeling

The focus group principals discussed modeling technology within the professional communities of learning as a process of creating a positive learning environment for teachers in which they could be innovative. Several participants suggested that modeling should start simple in order to establish practice. Adrian commented that, "You don't necessarily put the hammer down…you model that you're doing it so that you can show them simple ways, provide the professional development, accentuate that you'd like to see it done." The principal must model a learner-centered approach rather than an authority-centered approach to issues and concerns in order to promote learning and acceptance (Murphy et al., 2006). The principals in the study promoted technology within the learning community in order to create a positive learning climate. Simkins (2006) emphasized the need for principals to initiate and nurture a receptive and responsive climate for technology and innovation in their schools through actively modeling technology for all stakeholders.

In order to lead by example, a successful principal should create opportunities by interacting and modeling strategies with technology. "For example from two or three years ago was 'Goosechase.' We were shown that in-service and the next thing you know in our in services

every teacher is running around the building trying to do a 'Goosechase' in several different Academies" (Adrian).

As previously mentioned, modeling should incorporate trial and error to allow for a reduction in anxiety or fear. The participants in the study suggested that the more teachers experiment with and feel comfortable with technology, the more pervasive it becomes. Bobby commented that, "I see you on Twitter. I see more teachers really using technology as their professional learning network. [Teachers] are doing a fantastic job." During the research study, the participants were observed developing their own professional learning network (PLN), which included identifying online resources for leadership, curriculum, classroom management, lesson and activities, etc. All of the principals within the study, with encouragement from the district office, shared a variety of technology resources via the Internet, Twitter, Facebook, etc. Effective and successful technology leaders extend their own experience and knowledge through technology.

Learning Communities and Leadership Engagement

All of the study participants, from both focus groups, perceived professional learning communities were some of the best opportunities to encourage and engage teachers in integrating technology in their classrooms and schools. Effective principals, as observed by the researcher within the study during PLC meetings and activities, provide encouragement and interact with teachers, students, and parents through technology. Principals should encourage teachers in their efforts to align technology with curriculum; learning communities are an opportunity for that engagement. Principals agree that engaging in the professional learning communities, especially with technology, bolsters teacher instruction. Fred acknowledged that, "PLCs are a really good avenue for

principals and teachers to work together. We have been trying to increase personal learning networks and the internet, social media, like Twitter, allow us to enhance our professional learning together."

Evaluation essentially means providing feedback and data. Principals engaged in the integration of technology must evaluate those within the process. Professional learning communities are avenues for effective principals to present data and provide feedback. It is essential for technology leaders to monitor and evaluate the use and effects of integrating technology into the school. Effective evaluation should provide feedback in order to determine the student outcomes of technology integration. "Without systematic evaluation of efforts based on hard data, it is impossible to determine if a lasting change has occurred" (Zepeda, 2008).

Research Question Four

Research question four asked "*How is social advocacy positively promoted by leaders in conjunction with integrating technology?*" Social advocacy and digital citizenship provided the most varied and numerous responses between the two groups. At the high school level (Group A), the participants expressed that there were efforts to provide community advocacy. Fred illustrated the point by saying, "Yeah I think it was far as the social advocacy part of think we know we use our existing structures whether it's the basketball team doing some work with kids or the Student Council do some work with [the food pantry]. You know the food pantry trying to use our social media existing social media platforms for student council of things to kind of shined a light on those organizations and put that information out." The middle school principals (Group B) provided little if any discussion or input on the aspect social advocacy and technology, rather their focus for the question was on digital citizenship. Digital citizenship was a

significant source of discussion for both focus groups.

Table 7 - Themes from Data Related to Framework - Question Four

Framework Area	Theme	Example(s) from focus group transcripts
Social Advocacy & Digital Citizenship and Technology Leadership	**Leadership Support -** Effective principals provide appropriate instruction and supports to teachers, students, parents, and community members in order to better understand effective and proper use of technology in the educational and social environments.	"[Technology] allows us, back to the social advocacy part, we can support and influence our community based on what we're doing in the school" (Gerry).
	Leadership Communication – Successful principals communicate and collaborate with all stakeholders concerning technology integration and social advocacy. Suitable and proper habits using technology are articulated and discussed in order to promote appropriate use by all involved.	"[Technology] helps the community see what's going on, what's going on in those classes. It lets them see what's…happening in our gymnasium or in our auditorium, so it helps us … be an open door to the community" (Fred).
	Leadership Modeling - Effective principals model the appropriate use and practice of technology to teachers, students, and other stakeholders. Successful technology leaders demonstrate the application of technology such as social media to increase community involvement and advocate for the school and community.	"We were able to see how many people are engaged in our pages and, you know, so I can kind of see how were doing that way, or how we are improving" (Pat).
	Leadership Engagement – Successful principals are actively engaged in utilizing and monitoring technology to promote the school and district, provide guidance and supervision for appropriate usage, and increasing stakeholder involvement.	"I am able to monitor what's going on. The band is at Disney World. How do I know where they are and what they're doing? It's because the teacher posted that they're 1 mile or one hour out of Jackson Mississippi" (Evan).

Social Advocacy and Leadership Support

Learning-centered leaders encourage stakeholder involvement and emphasize issues such as diversity, ethics, and the social environmental context (Murphy et al., 2006). The focus group discussions and observed behaviors generated two avenues of support in terms of social advocacy. The first pathway was that of promoting the school to the community and increasing stakeholder participation in the school. There were significant examples of leadership support at the high school level and at the middle schools (less in the alternative school) in terms of technology and community interaction, specifically Internet and social media platforms, to connect the school, teachers, and students. The second area in which the participants noted significant impact was that of digital citizenship. Principals noted the importance of supporting appropriate use of technology for both teachers and students. The discussions included the negative impact of technology and student behavior. "…the misuse of the technology…makes [teachers] not even want to use the technology anymore because they are so frustrated" (Dave). Principals can "overcome" negative attitudes toward technology use through support and providing expectations and consequences for inappropriate use. Another aspect of social advocacy in terms of leadership support is that of external socio-political trends and the impact they may have on the school. Effective principals anticipate and act proactively. This applies to technology in a variety of ways including both advocating for reform and community and social support as well as providing policies in order to promote digital citizenship.

Social Advocacy and Leadership Communication

One of the key aspects discussed by the participants concerning social advocacy was that of communication via technology. One of the areas of positive technology communication was "branding' the school. Effective principals must present and publicize the school in positive and

productive ways through media. Fred praised the principals, "I think we do a good job as much as we can though on the social advocacy trying to make connections with outside agencies, different organizations, whether it's through student council or through our athletics programs." The researcher observed and reviewed numerous examples of principals utilizing various social media outlets (Twitter, Facebook, Instagram, Snapchat, etc.), e-mail and text messaging, as well as student information system (Skyward) in order to create a highly visible and positive electronic presence to stakeholders. One example of this was the assistant principals'/athletic and activity directors' (Fred, Jamie, and Evan) use of the "Week-at-a-Glance" postings. Each week, these posts provided information concerning upcoming athletic and activity events at their schools in order to promote involvement from the community. These types of communication tools encouraged parent and community involvement in fundraising, informational events, etc. The researcher noted the positive impact of these technology strategies and tools used by principals to advocate for their students and schools.

Another aspect of communication discussed by participants was to inform stakeholders of issues concerning digital citizenship. Digital Citizenship refers to leaders being models and support for understanding social, ethical and legal concerns related to digital culture (ISTE, 2009). Communicating concerns allows for the development of policies and procedures for improving the use of technology throughout the school and the community. When discussing with the groups, the common thread for digital citizenship came down to instilling an understanding of "right and wrong," which is no different than any other issue in the educational system; whether sampling material from a book in the library, utilizing a white-board, or writing in a journal, students are expected to act in appropriate ways. Bobby noted that, "We need to have specific policies and to communicate those policies early and often to the students." The

researcher observed principals' behaviors when leading efforts to promote digital citizenship. In conjunction with counselors, the principals prepared lessons for teachers to present to students concerning the importance of appropriate technology use. The principals led in-service and professional development opportunities to instruct teachers and students in the use of technology. The principals were also involved with the information/technology departments' development and review of the Appropriate Use Policy (AUP) for students and parents.

Social Advocacy and Leadership Modeling

All of the participants, in both focus groups, discussed and agreed that to model appropriate use of technology and demonstrate social advocacy with a variety of technology-based technology was very effective for teachers, students, and parents. Adrian expressed his position on social advocacy, "I mean we do a good job of telling her story really good job of telling our story and we'll hashtag the heck out of everything." Incorporating technology, more specifically social media, has become a focus for schools to promote social advocacy in a variety of ways. Participants described institutional branding, community relations, community resource promotions, philanthropic support, etc. as ways for principals to utilize technology to model social advocacy. These efforts were observed in interactions with teachers during PLC and with students at events and with student site councils and leadership teams.

It is also essential to model professional and appropriate use of technology, digital citizenship, in and out of school. Several participants noted that their digital presence was not only important to communicating and promoting the school, but also aided in modeling appropriate use of technology to stakeholders. Bobby added that principals, "…be a role model when you are post on Twitter or Facebook." Principals, as instructional leaders and role models, should demonstrate proper and suitable technology use including, but not limited to, texting e-

mailing, and social networking, accessing information. The participants in the study were observed utilizing technology in conjunction with established use protocols. Ian added that, "Nowadays, there's a greater need to understand the ethical implications of using technology." Additionally, as there are consequences and implications for other behaviors within the school, the principals in the study established policies and practices for all technology users within or affiliated with the school environment. Pat pointed out that, "As principals, we value education, experience, and propriety in terms of expected behavior…technology is no different."

Social Advocacy and Leadership Engagement

It is often believed that school/community relationships are based on the school's ability to influence parents and community stakeholders participate in the schools, which is only part of the formula for successful advocacy. It is important for principals to foster social advocacy in which the school participates in the community. Technology is a significant tool for that endeavor. Chris explained that, "It was Mr. [Dwight] Carter that came in and said if you're not telling your story someone else is. And he helped us develop the [school social media feed] and I think that is a fantastic example of using technology to promote what we do." Communication with stakeholders through technology allowed for more influence and impact. It was observed that engaged principals encourage, and participate in, this process.

Additionally, leadership engagement includes being aware of the workings of the school and integrating technology allows for broader awareness. As Adrian explained, "…this same communication we get on social media to let us know what is going on in classes or let us know what's going on with athletics or activities programs and make us more effective supervisors."

Digital citizenship and appropriate use of technology drives leadership engagement by establishing and maintaining policies and practices for everyone who incorporates technology.

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Principals must be engaged in establishing and enforcing policies relevant to equal, acceptable, and safe use of technology.

Summary

The purpose of Chapter Four is to describe the district and school information, individual characteristics of the ten principals selected for the focus-group case study, the general characteristics of the two focus groups, and the findings from the research questions and focus group responses.

Each principal had his/her own leadership strengths, experiences, and insight. The groups are purposefully distinctive, which revealed significant roles and behaviors impacting technology implementation as well as allowed for the development of themes consistent between both groups.

Additionally, Chapter Four delineated the data from the focus group study by organizing it into the framework concepts as well as thematic patterns in order to determine believed by the participants as having significant impact in their schools or district. The patterns found within the study included principal behaviors including support, communication, modeling, and engagement. Those patterns emerged from the concepts within the framework: vision, curriculum and instruction, learning communities, and social advocacy.

Chapter Five will provide the researcher's conclusions based on the data gathered for this study.

Chapter 5 - Conclusions

Introduction

The purpose of the qualitative case study was to explore how secondary-level principals perceive their behaviors to have meaningful impact and successfully influence the integration of technology into the school and classroom. Data from this study supports the literature indicating leadership engagement, support, communication, and modeling have a significant impact upon the use of any technology that may enhance the teaching and learning process. This research study's findings also support the significance associated with the role of positive leadership in the process of integrating technology into the classroom. The research literature revealed sufficient evidence serving as motivators for leadership to support and act seriously about technology integration activities (Herbold, 2010). More specifically, this study identifies successful principal behaviors that support, engage, and provide guidance for technology integration, implementation, and evaluation.

The eleven principal participants in this study were purposely selected because they represent secondary-level leadership in the same district, operated technology-rich schools, and were willing to participate in the study. The focus-group interviews and observations allowed the researcher the opportunity to provide insight as to effective and impactful behaviors when implementing technology in schools. The researcher found that the secondary principals have established a positive and successful culture with respect to introducing and integrating technology into the buildings and classrooms. This study supports the contention that principals who support and engage in technology and inherent infrastructure make better, more informed decisions about integrating technology into the classroom and providing effective curriculum, instruction, and professional development (Langran, 2010).

The study examined the connection between the conceptual leadership framework and principal behaviors believed to impact technology integration based on the responses from the participants and observations by the researcher. Chapter Four contained the findings of the single qualitative case study. The findings included the four major themes emerging from the principals: support for technology, communication, modeling technology, and leadership engagement. This study addressed the following question:

> *How do secondary principals effectively lead the integration of technology in their schools as it relates to educational vision, curriculum and instruction, professional learning communities, and social advocacy?*

In chapter five, the themes identified from principal responses and researcher observations are discussed in terms of the literature review. The chapter also includes recommendations and suggestions for further study.

As existing research maintains that principals play an important role in integrating technology, understanding principals behaviors are also essential to impacting the integration of technology in schools (Kopcha, T.J., 2012, Ottenbreit-Leftwich, et.al., 2010; Kaplan, Owings & Nunnery, 2005). Secondary-principals' attitudes, opinions, and ideas as well as behaviors can positively influence technology integration and use in the school and classroom (Anderson & Dexter, 2005; Byrom & Bingham, 2001; Gibson, 2002; Martin, Gersick, Nudell, & Culp, 2002; Wagner, 2004; Wells, 2007). This study sought to go further in the exploration of principal behaviors that contribute or influence technology integration.

The conceptual framework utilized by the researcher provided an avenue for viewing the participating principal's individual and collective experiences and perspectives in conjunction with vision, curriculum and instruction, communities of professional learning, and social

advocacy when integrating technology in the schools. The elements of learning-centered leadership, a foundational part of this study's framework, were anchored in the pursuit of positive school transformation.

Four themes emerged that addressed the fundamental research question for the study. In addition to a discussion of each research question, this chapter provides a connection to previous research and literature, presents the significance of the study, the implications for practice, and recommendations for future studies. This study enhances and reinforces previous and existing research as to the efficacy of leadership on the effective integration of technology in schools.

Successfully integrating technology into the school and classroom is continually transforming and dynamic process, highly influenced by research results and technology. The requirement for integrating technology into educational settings has become a predominant theme as innovative educational technological applications continue to emerge. Principals must successfully lead the integration of technology in order to improve teaching practices and to keep pace with technological changes influencing student preparation. Principals participating in the study adhered to the belief that by attempting to utilize the technology tools provided by the district as well as any other technology applications, the educational environment would improve and student success would increase. In many instances, principals mentioned and were observed changing their leadership behaviors due to the integration of technology into the school and classroom.

Discussion of Research Question One

How do successful leaders promote the educational vision in terms of technology within the classroom and school?

This study found that, as the literature and leadership frameworks suggest, is it essential for leaders to establish and support a vision concerning technology implementation. The research findings of this study show that leaders must create and model a strong sense of vision in order to encourage faculty members to integrate technology into the school and classroom. The principals of this study stated repeatedly that creating and sustaining a clear vision or map of the goals and expectations for the school was a significant factor in successfully integrating technology into the classroom. The behaviors associated with supporting vision included: establishing, maintaining, caring, and encouraging the vision for technology. This study affirmed that leadership vision in technology integration effectively impacts the educational environment and promotes student success (Brooks-Young, 2009). The secondary principals in the study were given the task of establishing a vision for technology within their school as per the Board of Education's long-term plan. The principals acknowledged that their vision guided them to the effective implementation and incorporation of technology throughout the school. The data from this study confirms that the establishment and support of a vision by principals is the foundation for developing a technology-rich educational environment in their school. This reinforces the contention in the literature that principals are ultimately responsible for establishing a learning environment that effectively integrates technology, ensuring student success (Gupton, 2010).

Secondly, this study found that effective principals articulated, collaborated, and instructed not only stakeholders as to the vision and goals for integrating technology but also each other. Communication, especially of intent and purpose, was essential to establishing and maintaining a vision for technology. These findings affirm that principals are responsible for ensuring that the vision for integrating technology focuses on academic improvement and student achievement (Hallinger, 2005). Successful principals communicate and collaborate with all

stakeholders in order to motivate as well as to ensure a commitment to the vision. The literature

review indicated that principals held significant responsibility for the establishing the culture

surrounding introduction and implementation of technology. Principals within this study

confirmed their understanding that they are accountable for establishing a clear understanding of

the vision and communicating to all involved how integrating technology serves to improve

student achievement. The Board of Education within the district in the study established a goal

promoting the vision of integrating technology in schools. The Superintendents Advisory

Council, which included the principals participating in this study, understood that they were to

establish and maintain a technology vision at the secondary level. Additionally, the principals

were found to be responsible for connecting the vision for technology to the educational vision

of the district as a whole.

This study supports the assertion that principals who integrate and engage in instructional

technology and model technology increase technology capacity in the school (Kozloski, 2006;

Miller, 2008). The study revealed, through observations and interviews, those principals who

model technology usage believed they were more aware and involved in the process of

developing and maintaining the vision for integrating technology. For example, when the

principals attended the administrative in-service, one of the activities was to incorporate

"Goosechase," an application intended to enhance student centered investigative activities. The

vision for the principals was to integrate technology so that students were actively engaged at

higher cognitive levels. The principals transferred the experience into professional learning

opportunities for faculty and staff. The principals utilized the technology application in order to

fulfil that vision. Additionally, this study revealed that principal modeling of technology

expectations reinforced the vision with teachers, students, and stakeholders.

Extensive integration of technology into the learning environment emerges when principals are actively engaged in the process. The principals in this study were observed to be enthusiastically involved in the use of technology in a variety of ways and with a variety of groups. This study affirms that principals are the primary figure in the development of vision for the school and must be actively engaged in the instructional process (Sergiovanni, 1985). This study extended that engagement into being involved in and aware of technology processes in promoting the vision. This study aligned with the conclusion that it is critical for principals as technology leaders to recognize and demonstrate that integration of technology is about more than just technology, but that it requires leading stakeholders in implementing a pedagogy that enhances learning strategies leading to student success (Kozloski, 2006). During the focus group interviews, the principals discussed the SAMR model (Substitution, Augmentation, Modification, and Redefinition) as a way to identify practices within the classroom utilizing technology at different cognitive levels. The principals believed that the vision of effective integration coincided with their perceptions of effective usage of a variety of technology to successfully include technology appropriately at various cognitive levels for student learning. The principals were observed recognizing and promoting student investigative techniques and project-based learning opportunities utilizing technology such as Webquests, iPad-based inquiry applications such as Edmodo, Goosechase programming, etc.

Several of the participants in the study provided evidence through discussion or observation of support and engagement in terms of the vision, more specifically the understanding that technology ideally should be incorporated as an instructional tool throughout the educational process and that technology should be differentiated in application. Participants discussed the utilization of eBackpack, Notability, and other applications and that the vision of

technology implementation should be to incorporate these tools seamlessly into the classroom.

Given the significance within the literature about vision and technology integration and the

references within the focus groups as well as observations within the study, it can be assumed

that effective leaders incorporate vision into the culture of the school (Murphy, et al., 2006;

Louis & Miles, 1990).

In order to cultivate a positive environment conducive to successfully integrating

technology into the school, principals must create and maintain a culture that promotes and

reinforces the vision for positive educational outcomes and student achievement. (Gupton, 2010).

This study upheld that secondary principal's involvement in and systematic encouragement of

the educational vision is important to effectively integrating technology. Principals utilized

technology to review specific data, collected in the Illuminate database software, from Math,

English, and Science assessments particularly in order to evaluate progress in terms of the vision.

Principals utilized the illuminate assessment database in the process of reviewing the effects of

integrating technology into the teaching process and communicating outcomes in conjunction

with their vision and expectations.

Discussion of Research Question Two

How is technology integration effectively manifested by principals and leaders in

terms of curriculum and instruction?

This study found that is it essential for principals to be instructional leaders and connect

curriculum and instruction to the integration of technology and vice versa. The specific principal

behaviors found in this study to coincide with supporting effective curriculum and instruction

leadership aligned with planning, managing, maintaining, and providing instructional

opportunities and strategies. This study affirmed that principals must maintain a current and

relevant understanding of technology strategies and utilize them throughout the curriculum (McLeod, 2008). The data from this study confirms that the establishment and support of curricular and instructional practices by principals is essential developing a technology-rich and successful classroom environment in their school. Effective principals support and encourage teachers to integrate technology into their classrooms to promote better learning. During the course of the study, principals allocated funds to provide technology software and hardware when possible to support integration in the classroom. One such product was adding Apple TVs to every classroom and providing training on utilizing the hardware and Apple classroom applications. This reinforces the contention in previous research that principals must support twenty-first century globalization issues, innovative curricular tools, and impending technology-based strategies (Prenky, 2001).

This study also found that successful principals articulated and instructed teachers and students as to the available technology associated with instruction and curriculum. Successful principals communicate and collaborate with teachers in order to advance instructional capabilities and opportunities. Principals within this study confirmed that they are accountable for understanding and communicating students' instructional needs to teachers and staff. During the course of the study, the principals were involved in a process to change the mathematics curriculum to incorporate new strategies corresponding to "common core" frameworks. Many of the principals within the study were tasked to investigate various programs and technology to implement in the schools. The Engage New York program, later called Agile Minds, was a technology rich option that was included in middle and high school, up to Geometry. The principals worked with teachers to integrate the programming and applications and supplemental technology into the math classrooms. The principals revealed that the collaboration began with

hesitancy and evolved into a hybrid utilization of the programming and positive outcomes for students. This is aligned with research that contends that principals must monitor classroom implementation of technology and provide appropriate feedback to teachers in order to ensure effective application of technology based instruction (McLeod, 2008).

This study upholds that effective instructional leadership practices in curriculum and instruction is linked to student achievement (Gupton 2010). This study revealed that principals who model technology in conjunction with instructional methodology were more effective in influencing technology use in the classroom. Additionally, this study revealed that principals who model technology reinforced the effectiveness of instruction via technology reinforced the vision with teachers and students as well as increased the levels of confidence for success when using technology within instruction (Ertmer, 2005). Principals should encourage and collaborate with teachers in their efforts to align technology with curriculum and instruction. As supported by this study, teachers may benefit from leaders and peers who are currently using technology to manage or teach other subjects (Sadik, 2008; Wright & Wilson, 2007). The principals in this study exemplified technology usage in a variety of ways such as coordinating curricular professional development, providing feedback through classroom observations, using data such as collected in Illuminate, and working with departments to identify curricular deficiencies, resulting in positive outcomes in terms of curricular and instructional practice.

The principal's leadership capacity can be increased through engagement in curriculum and instruction. This study affirmed previous research that principals are expected to be active and engaged participants in technology and school reform and be expected to direct instructional changes (Brooks-Young, 2009). One of the areas of concern, somewhat in this study as well as previous literature, is that leaders often have deficits in their knowledge; however, principals

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must be engaged in professional development to further their own understanding of instructional

methodologies that incorporate instructional technology. This study extends the contention that

principal must be engaged in the curricular process to actively integrate and transform

technology processes in the classroom (Gupton, 2010). The study contends that the process of

technology integration and principal engagement play a crucial role in helping plan and create

successful curriculum. As discussed in the findings, principals throughout this study were

engaged in integrating technology into the academic practices of the faculty, staff, and students.

In order to influence curriculum and instruction, effective principals transform

instructional practice by supporting the utilization of technology (Brooks-Young, 2009). This

study extends the premise that the principal's involvement in curriculum and instruction is

essential to effectively integrating technology in order to promote student achievement. Research

has demonstrated, and this study reinforces, that that administrative leadership support influences

the integration of technology in the classroom (Herbold, 2010). This study reaffirms that

activities and accomplishments in the classroom of teachers who utilize technology are the result

of the combined efforts of principals and teachers (Herbold, 2010). The success of technology

integrations as well as the overall success of the schools within the study is representative of the

principal leadership in terms of supporting, communicating, modeling, and engaging in

technology.

Discussion of Research Question Three

**How do principals lead and maintain communities of learning in terms of
technology integration?**

This study found, as suggested in the literature, that it is essential for leaders to support

technology within the professional learning communities within the school. As previous research

and leadership frameworks contend, this study affirms the idea that principals must establish and maintain a plan to provide continual learning within the school (Murphy et al., 2006). Effective leaders promote the formation of a learning organization and support organizational structures that promote shared responsibility for student learning. Through their actions, learning-centered leaders also communicate the importance of community-building in terms of integrating technology into the school. They construct and support shared direction, cooperative work, and mutual accountability (Murphy et al., 2006). This study extends the necessity of continual learning to technology for teachers and principals as well. The professional learning community structure within the study was a primary source for observation and data within this study. The principals were actively engaged in the learning communities and this offered the researcher plentiful opportunities to observe the interactions between principals and teachers when coordinating technology. PLC meetings afforded numerous opportunities to observe and record behaviors aligning with support, communication, modeling, and engagement such as utilizing Apple TV and Apple classroom to both distribute information, model processes, and monitor progress using the technology. The principals within the study demonstrated and reinforced the opportunities afforded by technology as part of continual development within the school.

This study found that effective principals support communication, collaboration, in-service, and professional development through the professional learning communities. Successful technology leaders provide technology instruction via PLCs based on best practice and principals of established learning theory. There is a correlation between teachers' inclination to integrate technology in the classroom and training (Berryhill & Durrington, 2009). This study found that productive leaders provide regular feedback and constructive support from principals and leaders are essential in creating effective professional development programs. Leaders, as

illustrated by this study, must provide in-service and professional development modeling for faculty and staff in order to implement technology successfully.

The communication and collaboration practice is consistent with literature and research concerning leadership professional learning communities as well as transformational and distributed leadership. Successful principals dedicated to sustained school improvement, develop capacity in others (Schlechty, 2009). In this study, the principals' active participation in learning communities also allowed for faculty and staff to lead in technology, such as presenting new applications, activities, etc. This was accomplished by modeling technology practice.

Professional learning communities can be effective avenues for modeling effective technology integration. Research from Educational Technology and Faculty Development showed many teachers tend to either innovate or adopt the methods used by their colleagues (Ebert-May et al., 2005). Faculty members work with support staff if integration of technology in the classroom requires special skills. Effective principals and leaders provide modeling for teachers, allowing them to adopt modeled technology methods in their educational practice. The findings show that principals would like to see systematic ways of creating and maintaining faculty development programs for technology integrations in the classroom. Elbert-May, Derting, Hodder, and Momsen (2011), found that if teachers are left alone to develop and implement active-learning teaching strategies, they are likely to fail in this process. Leadership support facilitating a community practice may help teachers with similar goals (Elbert-May et al., 2011). This study provided the researcher with detailed behaviors and descriptions of leadership behaviors such as modeling and demonstrating new applications, strategies, and various tools as well as communicating processes and expectations, supporting teacher learning needs, and engaging with faculty, staff, and students in integrating technology. This study

reinforced and clarified leadership behaviors in terms of technology that are key elements to classroom success.

This study affirmed that principals must be leaders who are engaged within the professional learning communities and the findings within this study revealed principal views of the process of technology integration. Principals should not only envision and manage technology integration, but also must communicate expectations, model technology use, and be actively engaged in the process of integrating and maintaining technology in the school.

Discussion of Research Question Four

How is social advocacy positively promoted by leaders in conjunction with integrating technology?

The final dimension of learning-centered leadership and the last area in this study's conceptual framework is social advocacy. This study affirms previous research and literature that effective leaders understand contextual trends and developments and their potential impacts to the school and community. Successful principals promote the school to the community and support stakeholder participation in the school through the use of technology in a variety of ways. Supporting technology as one avenue for communicating and collaborating with the community as a whole was a significant aspect of the study. For example, throughout the study, principals utilized Skyward student information systems in a variety of ways to communicate and engage with student, parents, and community members. The robust software goes beyond gradebook applications and provides emergency alerts, newsletters, and portals for parents to access calendars, activities, and events. This affirms previous research that effective leaders, in this case through technology, are skilled at developing relationships with parents and community members in the religious, business, and political sectors (Murphy, et al., 2006). Additionally, this

study found that digital citizenship was included in the scope of social advocacy. Effective leaders proactively supported appropriate use of technology and empowering stakeholders (Green, 2009). This study identified specific technology-related behaviors that supported social advocacy including effective dissemination of information via social and other technology-based media such as Facebook, Twitter, e-mail, and Skyward student information system. Additionally, the principals worked with the high school television and radio broadcasting technology in order to disseminate information both inside the school and to the community.

This study revealed that communication and modeling were key factors in the in effective and proactive integration of technology in terms of social advocacy and digital citizenship. This study reaffirms that in order to achieve positive and successful outcomes for the entire school community; successful leaders model ethical behavior, advocate for reform, and connect learning and technology to society (Gupton, 2010). Engaging in and modeling technology use in the social context was found by the researcher in this study to be a significant aspect of integrating technology in the school environment. The data illustrated that a successful system must consider the social impact of technology and be proactive in order to both utilize it appropriately as well as promote positive opportunities for social change. This study found that the principals in both the middle schools and high school believed that technology was the most efficient and effective way to communicate with the community. Principals revealed that they found that "old-fashioned" parent-teacher conferences and "open-houses" were not effective and technology provided the avenue to communicate and engage students, parents, and other stakeholders. For example, the "Week at a Glance," provided each week by the principals at all levels via social media platforms, were timely and effective in informing stakeholders about athletic events, fundraisers, performances, advocacy meetings, etc. Additionally, community businesses

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sponsored the postings. The principals in the study worked directly with local health services, law enforcement, social services to identify areas of concern, such as social-emotional issues, and provide community support that extended beyond the schools via technology such as web-based videos, informational sites, emergency hotlines, etc. One example of technology integration was the use of a technology-based evaluation tool called Social, Academic, and Emotional Behavior Risk Screener) SAEBRs in order to determine emotional needs for students. The principals in the study also designed and modeled emergency protocols for issues within the school such as lockdowns, evacuations, natural disasters, and other crises including technology communications systems, ALICE crisis procedures and providing social media messaging.

Effective principals engage in influencing by participating and engaging with the community. Positive and effective educational technology integration relies on sharing methods, practices, and services provided by academic leaders (Ebert-May et al., 2005). This study affirmed previous literature and research findings that principals can help teachers, students, and stakeholders to grasp social advocacy introducing various positive technologies that are supportive and respectful, involve stakeholders in community services, and appropriately extend learning beyond the classroom. The field of educational technology significantly exemplifies the social roots of technology. As expressed in the findings, technology is an avenue for providing social connection and guidance. This study identified numerous behaviors associated with supporting, engaging, communicating, and modeling appropriate and effective social advocacy.

Research Conclusions

Focus group discussions included responses related to principals' perceptions of professional development and accompanying needs in terms of networking and expert availability, time, and encouragement. Furthermore, principals were observed providing

technology support in a variety of ways. Principals expressed their ideas, opinions, and perceptions about development initiatives that are currently taking place within the district. The theme of leadership support further included principals' perceptions of effective support behaviors.

Findings of this study show similarities to Langran (2010). Langran concluded that principals and other educational professionals in leadership roles have the capacity to become change agents who promote effective technology integration practices. Langran further stated that there was a positive correlation between frequency, variety, and innovative uses of technology with the ability of quality technology support. Researchers agree that leadership support may influence the integration of technology in the classroom (Herbold, 2010). This study more specifically identifies the behaviors of principals that influence successful implementation and use of technology in the school and classroom.

In order to support, communicate, engage, and model technology integration, implementation and maintenance, principals require preparation and resources. Professional Learning Networks (PLNs), as mentioned by the principals in the study, are a method of expanding technology knowledge, developing policy and practice, and connecting with a larger community of leadership.

Principals providing professional development for teachers may also take advantage of technology approaches, such as social media, as they can aid in faculty members' understanding of the connections and relationships between the subject they teach and other subjects. The research findings of the study called for the implementation of new strategies in order for the principal to improve effective professional development and curriculum and instructional practice. Additionally, the research findings of this study show that principals recognize their

responsibility in making sure that teachers find encouragement, excitement, and even recognition when they integrate technology into the classroom. Successful and effective principals expressed a commitment to enhancing existing educational technology training and opportunities within the district as a way to enhance practice.

Barriers to Integration of Technology

Of the eleven principal participants in the study, all eleven referenced that the most common perceived challenge encountered when trying to integrate technology into their school is providing differentiated technology instruction to teachers. Research has shown that integrating educational technologies into the curriculum is a challenge to the knowledge of many faculty members (Ladbrook, 2009). The findings of this study revealed that principals are often challenged by the large amount of technology brought to school. The research findings of the study are consistent with Ladbrook's (2009) ideas about integration of technology being challenging; however, the researcher in this study found through the focus group discussions and through observations that principal support and engagement can promote effective implementation of technology. Additionally, successful principals lead and facilitate professional learning communities and, in turn, can provide differentiated technology professional development.

Furthermore, social media and digital citizenship issues have become barriers to the integration of technology. Principals, teachers, parents, and the community must deal with a significantly more difficult issue in terms of the connection between private and educational environments. The findings of the study showed that such things as social media and digital citizenship and teachers' individual ideas about how technology should be integrated into the classroom are also challenging factors, which affect the integration process. This study

concluded that effective behaviors including proactive communication, engagement, and modeling on the part of principal leaders could alleviate negative issues with digital citizenship.

Implications of the Study

The analysis of effective leadership behaviors involved in the educational process could lead principals to engage in effective technology integration. The results of this study may provide guidance with secondary principals as they effectively establish vision, develop curriculum and instructional practice, provide guidance and lead communities of professional learning, and coordinate social advocacy through technology (Berrihill & Durrington, 2009; Skiba, 2010; Onyia & Onyia, 2011). The following implications emerged from the analysis of the study. The first implication was generated from the theme of leadership support, which emerged from the principals' data set. This coincides with studies concerning effective leadership practices. Effective leadership must move beyond task-oriented behaviors in order to support and assist individuals through trust, consideration, and valuing contributions (Norris, 2010). In this study, the principals displayed the importance of being engaged in practices associated with technology use. For example, walkthrough observations and constructive feedback concerning technology, such as cognitive level of technology integration through the SAMR model, allowed for principals to constructively communicate and support teachers and students in the classroom. Principals are encouraged to provide systemic support for technology including enhanced training in technology integration. Additionally, successful principals, as seen in this study, provided expertise and support to assist teachers as they try to integrate technology and increased teachers' interest in the use of technology in the classroom. Observed practices included the modeling by the principals of new iPad applications, such as Kahoot,

during PLC meetings and in-service opportunities that allowed teachers the opportunity to experience the technology before implementing it into the classroom.

Secondly, the principals in this study valued professional learning opportunities and developed networking strategies such as personal professional networks (PLNs) via social media. Several of the principals in the study networked with other leaders, across the country and internationally, in order to investigate curriculum and instruction, determine best practices, or collaborate with peers. They went on to provide educational "chats" for leaders and teachers in order to engage and share in technology innovations. These strategies also assisted teachers as they can offer support to each other and take advantage of more experienced teachers in the use of technology in education (Gupton, 2010).

Thirdly, effective principals must provide time for both principals and teachers to participate in training and professional development offerings in order to overcome barriers to effective technology integration in the school and classroom. During the course of this study, there were numerous opportunities (approximately 60 hours) during in-service days and teacher work days in which principals and teachers were engaged and involved in workshops, hands-on seminars, and online-learning sessions in order to explore applications and software, experiment with various applications and examine how others have integrated technology into the school. The participants revealed that facilitating workshops and giving teachers time to experiment and try new technology increased comfort and trust, which lead to the principals seeing more utilization in the classroom.

The second implication of this study is related to the theme of leadership engagement. Engagement refers to the concept of principals getting actively involved in the process of technology integration in the classroom and throughout the school. Principals must be concerned

with more than purchasing or providing technology, but additionally providing guidance during the integration. In conjunction with the SAMR model, Principals must move from substitution to redefinition of technology implementation. Principal leaders must rethink and redefine how they communicate, organize, and interact with stakeholders by incorporating technology in interactive and engaging ways. Technology allows for innovative ways to augment and redefine learning. School principals must be digital leaders in their communities. Podcasts, Twitter feeds, live chats, and social media conferences are all available to share instructional practices and positive aspects of a school's culture. Leveraging the power of technology such as social media is important as it can enhance learning and create relationships between the school and community.

Leaders may be more effective and be more inspiring to teachers if they define and show a clear vision about how, when, and what to accomplish through integrating technology in the classroom. Principals that create an enthusiastic and positive culture surrounding technology through personally engaging with technology can have more influence in terms of the effective and successful use of educational technology in the school. For example, one of the high school principals took a little time, after an IEP meeting, to help with a student with auditory disabilities and find a solution using the iPad for text-to-speech applications. After finding a no-cost solution for simple daily tasks via a free text-to-speech application, the special education department utilized the application at multiple levels. The students, family, and teachers were very positive and encouraged about the use of technology.

The third implication for principals involved the theme of leadership modeling. This also stems from the recommendation for enhanced professional development and training for principals. Leaders of organizations have the potential to inspire individuals through modeling

beliefs and behaviors (Ginsberg & Bernstein, 2011). Principals who model technology integration can more readily influence and inspire teacher participation and success. During this study, several of the principals utilized walkthrough technology to give immediate feedback on classroom observations. The principals utilized the iPad to record and e-mail comments, concerns, suggestions, or accolades during their observations. These were not evaluative experiences. The principals both modeled the use of the iPad and increased the efficiency and timeliness of the observation process. In order to fully integrate technology in education, teachers and principals are urged to understand and exemplify the relationship that exists between technology and successful student outcomes. Another aspect of modeling would be for principals to find and provide ideas that help with the integration of the Internet, social media, and related technologies to promote collaborative work among students and teachers. During the study the principals focused on establishing Personal Learning Networks (PLNs) and sharing those resources with teachers and students in order to create a vast network of educational sources for increased learning at all levels. Additionally, one principal utilized social media prolifically, over 780 posts, to acknowledge students for their positive referrals, academic successes such as principals' honor roll, and athletic and activity accomplishments. Finally, leaders are encouraged to embolden teachers to model ideas and expectations that incorporate technology. Through modeling technology, the principals provided confidence to try new things and use technology in novel ways in ad out of the classroom. Teachers regularly used Kahoot and Goosechase as well as Notability and Google Classroom applications after these tools were modeled by the principals.

The final implication is to promote effective leadership communication when it comes to technology integration. It is essential to communicate the expectations and vision and emphasize

the importance of technology to promote student-centered classroom environments. The findings

of this study are similar to those of other studies concerning general leadership attributes. This

study reveals that those attributes or behaviors are also associated with the successful integration

of technology within the secondary school. Principals must demonstrate effective

communication skills in order to share their vision in a way that bolsters all stakeholders'

commitment for student achievement (Green, 2009). To improve motivation toward technology

integration in the classroom among teachers, leaders may need to examine and understand the

most critical barriers in terms of using technology in the classrooms and collaborate in order to

overcome those barriers. In this study, principals utilized data from a variety of technology-based

sources, such as walkthrough data, formative assessments, and observations. They determined

that providing leadership for technology, from iPad applications to technology-based

investigation strategies, allows for better results in the classroom. Having a clear vision,

providing expectations, and understanding practices as well as implementing effective

professional development opportunities should be part of a systematic, organizational approach

to integrating technology in the school and classroom.

Suggestions for Further Studies

Additional research in the area of leadership and technology integration may prove

beneficial. Educational technology integration is a widely researched topic. The focus of most

research studies has been primarily the procedural and instructional aspects of the technology

integration process; however; very few studies have concentrated on the leadership component of

effective adoption of technology. Further research concerning the leadership components of

technology adoption and use may aid in improving technology integration initiatives. The

observations during this study revealed areas specific to technology initiatives including one-to-

one technology, data tools such as "walkthrough" tools and effectiveness of data derived from relatively brief classroom observations, and policy concerns with regulating (applying firewalls or restrictive software) connectivity and access.

It is also a recommendation that additional, similar qualitative studies be conducted involving additional groups of educators/leaders, including elementary principals or other district office administrators. Research, perhaps quantitative research, measuring the effects of various leadership roles and specific behaviors on student outcomes/success could be useful in determining effect of particular leadership roles and behaviors when integrating educational technology by teachers in the classroom. An additional recommendation is that data from this and/or other qualitative studies be used to help develop and validate a qualitative (or perhaps quantitative) mechanism to measure philosophy of technology assumptions or leader self-efficacy for use in future research.

The concept of change is significant in this study. Further studies associated with educational change as it is influenced by technology and leadership. As Fullan (2007, 2009) suggests, leadership influences change as a force for school improvement. Future research should focus on the impact on technology, leadership, and positive change.

In this case study, principals exhibit successful behaviors that have meaningful impact on the integration of a variety of technology. The question, perhaps, that may need to be explored is, what the outcomes would be if principals, in a similarly technology-rich environment, that do not support, communicate, engage in, nor model technology?

Summary and Conclusion

The purpose of this single case, qualitative, focus-group research was to better understand the leadership behaviors perceived by secondary principals to have meaningful impact on the

integration of technology in the school environment. This study found that the principals in the study believed that providing leadership support for technology increases effective use of technology in the classroom. The researcher also found that when principals communicate effectively about technology, teachers are more positive about integrating technology into the classroom and school. Furthermore, when principals model technology, it establishes a positive and trusting environment for technology use. Finally, the study found that principal engagement in the processes and practice s associated with technology leads to more effective technology integration and implementation.

The study provided significant evidence via observations and focus-group interviews that principals in a positive and effective school district provide a variety of supports, establish and maintain avenues of collaboration and communication, model effective practices and behaviors, and outcomes, and engage themselves in technology and with all stakeholders in order to integrate technology in beneficial ways throughout the school and district. The basis for this study's theoretical framework was influenced by an integration of Learning-Centered Leadership, ISLLC leadership standards, and ISTE technology standards for principals and focused on integrating technology into the classroom in order to promote and initiate changes in the way principals view the teaching and learning process. The four areas within the framework (vision, curriculum and instruction, communities of learning, and social advocacy) allowed principals the opportunity to concentrate attention and discussion on behaviors they identified as having impact on the system. As suggested by Langran (2010), the study assumes that effective technology integration may call for changes in the way academic leaders view technology and perform.

The findings included four themes that reflected the principals' perceptions, ideas, and opinions about their current leadership behavior as well as observed performance and behaviors in technology integration initiatives at the secondary level. The focus group questions evolved from the conceptual ideas of vision, curriculum and instruction, communities of learning, and social advocacy. The themes or behavioral categories emerged from the principals' focus group discussions/interviews and observations. The recommendations based on the findings of the study include that developing and communicating as sense of vision, supporting instructional technology, modeling technology behavior, and communicating with and engaging faculty, staff, students, and community will result in positive educational outcomes and, ultimately, improved student achievement. In terms of leadership effectiveness, this study confirms that principals that support, communicate, model, and engage in technology integration provide a positive vision and improve instruction and learning for students, professional learning for faculty and staff, and increase avenues for social advocacy.

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Appendix A - Informed Consent Form

PROJECT TITLE: Identifying Leadership roles impacting the integration of technology in the secondary classroom.

Approval Date of Project: Expiration Date of Project:

PRINCIPAL INVESTIGATOR: CO-INVESTIGATOR(S): Dr. Robert Hachiya/Charles Kipp

CONTACT AND PHONE FOR ANY PROBLEMS/QUESTIONS: 785-341-2236

IRB CHAIR CONTACT/PHONE INFORMATION:

   • Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall,
   Kansas State University, Manhattan, KS 66506, (785) 532-3224.

SPONSOR OF PROJECT: Dr. Robert Hachiya

Purpose of the Research: Doctoral Dissertation – Charles Kipp

Procedures or methods to be used: Interviews

Alternative Procedures or treatments, if any, that might be advantageous to subject: None

Length of Study: One Group Interview 60 minutes/ follow-up interview 30 minutes

Risks anticipated: No known risks

Benefits Anticipated: This study will seek an understanding of what and how leadership behaviors impact the integration of technology into the school. The study seeks to contribute to the ongoing discourse about the role of principals in educational technology.

Extent of Confidentiality: Subjects will be anonymous and confidentiality will be secured. Individual results will not be shared.

Is compensation or medical treatment available if injury occurs: None

Parent Approval for Minors: N/A

TERMS OF PARTICIPATION: I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

(Remember that it is a requirement for the P.I. to maintain a signed and dated copy of the same consent form signed and kept by the participant.

Participant Name: Charles Kipp

Participant Signature:

Appendix B - Participant Debriefing Letter

My name is Charles Kipp and I am conducting research on the roles and behaviors of educational leaders that affect the integration of technology in secondary schools. If you are receiving this e-mail you have been contacted by Charles Kipp and possibly considering, participation in a focus group concerning your professional experiences as an educational leader. This study focuses in particular on identifying leadership roles that have a significant impact on the integration of technology in the secondary classroom. The research is investigating professional experiences (roles and behaviors) and the impact that leaders have in conjunction with educational technology integration and implementation.

The participation will be in the form of approximately sixty (60) to ninety (90) minute, focus-group discussions, and possibly a final contact to confirm that the researcher is proceeding with the process and that all procedures for confidentiality are being followed. It is asked that the participant please give oral consent, initially at the time of the interviews, for purposes of record keeping, as well as return the consent forms signed either by mail or fax. The researcher will be recording and transcribing all interviews. All recordings will be stored safely under lock and key till they are transcribed and a transcription of the interviews will be provided to the participants for review, clarifications, additions, etc. At the conclusion of the research, all recordings will be destroyed. The completed dissertation will be shared with the participants. All participants will receive a pdf of the finished dissertation and final, closing contact will be made face-to-face or via e-mail or phone.

Thank you for participating and I will be contacting you for more information about times for the focus group sessions. I am very excited to begin research that will help in understanding leadership roles and behaviors that affect the integration of technology in education.
Sincerely,
Charles Kipp

PS. It is also noted in the consent form and procedure that a participant may withdraw from the study at any time without penalty.

Appendix C - Initial Interview/Focus Group Discussion Questions

Research Questions for Focus Groups:

Overarching question:

> *What are the roles and/or behaviors that administrative leaders believe to have meaningful impact on the integration of educational technology?*

Questions:

Please keep in mind that all related experiences, behaviors, and/or roles are to be considered, whether they have a positive or negative impact on the integration of technology. The term meaningful will be subjectively defined for the study as having perceived importance, specific purpose, or observable effect on the educational process or practice.

1. What is your vision concerning the integration of technology into the educational environment?
2. How do you, as a leader, promote your vision and mission in terms of technology and use in school?
3. How is technology integration manifested (clearly shown or observed) by principals and leaders in terms of instruction?
4. What roles and behaviors do you have that have a significant impact on technology within the school curriculum?
5. How have you influenced assessment programming through the integration of technology in the school(s)?
6. As a leader, how do you establish communities of learning in terms of integrating technology into the school(s)?
7. What roles or behaviors have a significant impact on technology integration in terms of resource acquisition?
8. How do you effectively support the professional culture of the school(s) in terms of technology integration?
9. How do you demonstrate social advocacy in conjunction with integrating technology?
10. What meaningful evaluation or supervisory mechanisms are in place and/or required for integrating technology?
11. What barriers, concerns, or issues do you perceive when integrating technology into the educational environment and how do you react to, respond to, and/or overcome them?
12. Are there any additional areas concerning technology leadership that you perceive a meaningful effect with this study?

Additionally, I would appreciate any written notes to the responses you might generate as part of your reflection on these topics. I will incorporate them, as artifacts, in the study with the same anonymity as the transcripts of the interviews.