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Superintendents' Beliefs about Barriers That Can Influence Their District Technology Leadership Practices

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SUPERINTENDENTS' BELIEFS ABOUT BARRIERS THAT CAN INFLUENCE THEIR DISTRICT TECHNOLOGY LEADERSHIP PRACTICES

BY

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ABSTRACT

The purpose of this study was to gain an understanding of superintendents' beliefs about technology leadership barriers and about how superintendents actually engage in technology leadership practices. There is currently limited research available on the topic from a district superintendent's perspective. Qualitative data from focus group interviews and written focus group responses from eleven New Jersey superintendents were transcribed and analyzed to uncover common themes, patterns, and trends among the responses. The conceptual framework used in the study stemmed from The Adaptive Leadership Theory (Heifetz, Grashow & Linsky, 2009) in terms of barriers to first-order and second-order changes (Fullan, 2001; Marzano & Waters, 2009) during a school district's technology implementation process. Findings from the study revealed the following common barriers among the participants: (a) lack of sufficient financial and technology resources (first-order change barriers), and (b) resistance by stakeholders to change their traditional and/or dated district cultures and mindsets about integrating technology into 21st century classrooms (second-order change barriers).

The study results also showed superintendents understand their critical technology leadership roles, and they try to remain actively engaged and involved throughout the different phases of technology implementation. Implications for future research include conducting focus group interviews of larger groups of superintendents at the state and national level in order to draw conclusions about common themes and patterns. Additional research might include focus group interviews of boards of education and department of education officials to help us better understand different perspectives about factors that can influence a district's technology implementation process. A third implication for future research involves using a quantitative research design with a survey instrument to collect data for analysis and synthesis.

Policy implications involve including district superintendents in policymaking conversations about setting national and international technology standards superintendents are ultimately accountable for following as part of their performance evaluations. In terms of an implication for practice, superintendents might collaborate with their boards of education, principals, and teachers to develop monthly or quarterly needs assessment mechanisms for data collection, analysis, and evaluation of district technology implementation processes.

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DEDICATION

This dissertation is dedicated to my husband's and my late parents: Gertrude and Jeremiah Pearson, and Norma and Terence Biggs, Sr. The words that come to mind as I write this dedication are from Michael Jackson's song, "Gone Too Soon..." I know how proud of me you would all be if you were still here. That very thought drove me to work hard on my dissertation and coursework even on days when I really wanted to be doing something a little less "mental." You might not have earned your doctorates from a university, but you always insisted I not give up when it came to my education. You also insisted I continue making myself better so I could help others make themselves better. The family understands you had to leave us when you did, but we miss you. Thanks for allowing your "transitions" help your children and grandchildren gain a deeper appreciation for family, fun, and life in general. We, your children, grandchildren, and great-grandchildren, are trying to live out your legacies of commitment to excellence, hard and dedicated work, unwavering faith, and a genuine love of laughing and enjoying life. We love you. Period.

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Chapter I

INTRODUCTION

The Problem

Over the last decade, the United States focused increasing attention on the technology leadership practices of school district superintendents. The federal government provided a compelling argument about technology being an essential ingredient of economic growth and job creation (U.S. Department of Education, 2006). Some researchers believe superintendents are key driving forces behind the technological development of American students. Others argue that technologically developed students are essential if we want to have a technologically advanced America. Houston (2001, p. 429) explained that superintendents are aware they "can change the trajectory of children's lives, alter the behavior of organizations, and expand the possibilities of whole communities." This statement supports the idea that superintendents are considered the primary leaders of transformational and adaptive (Heifetz, Grashow & Linsky, 2009) technological development within school districts.

Gibson (2001, p. 502) said "the number one issue in the effective integration of educational technology into the learning environment is not the preparation of teachers for technology usage but the presence of informed and effective leadership...." The literature also reveals that superintendents are expected to make decisions about technology equipment, software purchases, and 21st century digital infrastructure upgrades when they are not knowledgeable about how the purchases or upgrades can influence classroom learning and impact the district as a whole (Cuban, Kirkpatrick, & Peck, 2001). According to Kleinman (2000, p. 20), school district leaders' support of the technology vision and their active engagement with the technology implementation process supersedes the volume of hardware, software, or infrastructure upgrades that might be involved. The literature reveals that gaps in

technology knowledge along with a lack of engagement in the technology implementation process can present barriers in terms of how superintendents actually engage in technology leadership practices to help improve student outcomes and student achievement.

The Collaborative for Technology Standards for School Administrators (CTSSA, 2001, p.1) constructed six national standards for what P-12 educational leaders "should know and be able to do with technology." A second set of accountability standards, developed in 2002 by the International Society for Technology in Education (ISTE), include information about expectations for what district administrators around the world should know and be able to do technologically to help improve student achievement in their school districts. Valdez (2004) claims district leaders need to "know and utilize instructional technology... (1) to prepare students to function in an information-based, Internet-using society; (2) to make students competent in using tools found in almost all work areas; and (3) to make education more effective and efficient" (para. 48). Yet, Valdez (2004) and others posit that a number of superintendents might be ill prepared to carry out their instructional leadership and district reform responsibilities in the area of technology literacy development. The belief is that there is a gap between superintendents' technology literacy levels and their actual technology practices. which, technology advocates believe, should inherently stem from the NETS.A. and ISTE standards.

This study was conducted to help us understand superintendents' beliefs about barriers that can influence their district technology leadership practices. The research flows from the doctoral dissertation work of Dr. Stephen Thomas Wisniewski (2010). The work is entitled, *Principals' Perceptions of Strategies for Offsetting the Barriers to Technology Integration in Elementary Schools in New Jersey* (2010). Wisniewski (2010) used a quantitative approach in the form of a paper and pencil survey to investigate principals' perceptions about technology

implementation barriers. Dr. Wisniewski borrowed the independent variables from earlier research conducted by Hew and Brush (2007): (a) lack of professional development, (b) access to Technology and, (c) time for mastery. Wisniewski (2010) developed a tool called the *Principal Survey*, which consisted of 25 questions assembled to gather data; and designed eight original survey questions to accompany 17 survey questions borrowed from *The Use, Support, and Effect of Instructional Technology Study* (USEIT, Abrams & Russell, 2004). Dr. Wisniewski sent the survey questions to 765 elementary principals in New Jersey, and 228 (29.8%) of the principals responded to the survey. Collected data included information about the participants' gender, year of birth, district factor group, size of school, and years of service.

In terms of principals' perceptions about barriers to technology implementation, Wisniewski (2010) found that, relative to the level of importance principals placed on technology implementation, 96.1% of the surveyed principals placed technology in the top ten goals for their schools. However, 60.5% of the surveyed principals reported effective technology implementation at the time of the research. Regarding access to technology, less than half of the survey respondents (49.6%) indicated an ability to make technology purchases. Dr. Wisniewski (2010) also found through the research that there was not a statistically significant association ($p \leq .05$ alpha) between technology-based professional development and (a) technology knowledge (.792 level), (b) attitudinal disposition (.898 level), and (c) organizational capacity (.462 level).

By contrast, Wisniewski (2010) discovered there was a statistically significant relationship ($p \leq .05$ alpha) between time for mastery of technology skills and (a) technology knowledge (.029 level), (b) attitudinal disposition (.000 level), and (c) organizational capacity (.010 level). Further, 65.2% of the principals surveyed indicated that they had the ability to create schedules that would allow staff time to master technology skills, however, only 20.1% of

the principals surveyed indicated they had created staff schedules specifically for training in the area of technology skills' development.

In conclusion, Dr. Wisniewski's (2010) research was statistically aligned with the 2004 study done by Abrams and Russell that was entitled, *Principals' Beliefs about Access, Use, Support, and Obstacles to Technology Use in School.* Abrams and Russell (2004) found that 93.4% of the principals they surveyed placed heavy importance on technology implementation, however, only 40.5% of the respondents indicated they were successfully implementing technology in their schools. Of the principals surveyed in the 2004 study, 55.6% indicated they were successful in accessing technology; yet 19.3% of the principals indicated they were able to provide staff with time to master technology skills. The research conducted by Wisniewski (2010) and Abrams and Russell (2004) revealed that principals perceive there to be barriers to their leadership of technology implementation at the building level. However, in comparing the 2010 Wisniewski study to the 2004 Abrams and Russell study, there was a significant growth rate of 20% in terms of successful technology implementation in schools. In the 2004 study, 40.5% of the principals who were surveyed said they had successfully implemented technology initiatives in their schools. In the 2010 study, 60.5% of the principals surveyed said their technology implementation efforts were successful. Further, in the 2004 study, 93.4% of the principals believed technology implementation was a school priority. There was an increase of 2.7% in 2010 to 96.1% of surveyed principals who placed a high level of importance on technology implementation. These comparative data might suggest that despite the existence of potential technology leadership barriers, school leaders believe technology implementation is important, and they engage in efforts to effectively lead technology implementation in schools.

Purpose of the Study

Superintendents are expected to connect school districts with the global community, according to Franceschini, Glass & AASA (2007). Limited research is available regarding superintendents' beliefs about (a) barriers that can influence their technology leadership practices, and (b) how superintendents actually engage in technology leadership practices at the district level (Hew & Brush, 2007). The purpose of this study was to gain a better understanding of superintendents' beliefs about technology leadership barriers and about how superintendents actually engage in technology leadership practices.

Conceptual Framework

The conceptual framework for this study is borrowed from the adaptive leadership theory offered by Heifetz, Grashow and Linsky (2009). Adaptive leadership is "...the relationship among leadership, adaptation, systems, and change...the practice of mobilizing people to tackle tough challenges and thrive..." (Heifetz et al., 2009, pp. 13-14). Heifetz et al. (2009) said there are two main processes essential to adaptive and transformational leadership: (a) diagnosis and (b) action. McCampbell (2001, p. 68) argues "...it is clear that what district administrators do – or don't do – is of great importance in determining whether information technology will yield optimal benefits for students." Houston (2001) claims that the expectation is that district superintendents will provide transformational technology leadership that creates learning cultures and environments enriched by technologically literate and proficient students. However, according to Ausband (2006, p. 16), there are district-level barriers that hinder technology integration, and those barriers can influence the technology leadership practices and behaviors of district superintendents.

Research Questions

The design of this study will use a qualitative research method comprised of focus group interviews of district superintendents to collect data that will answer the following questions:

(1) What are superintendents' beliefs about barriers that can influence their district technology leadership practices?

(2) How do superintendents actually engage in technology leadership practices?

Design and Methods

I used a qualitative methodology to address the research questions in order to collect narrative data for analysis from superintendents during three telephone focus group conversations that consisted of six total participants. A separate group of five participants opted to provide written responses to the focus group question route so the narrative data could also be collected for analysis. I believed the participants would be more willing to share openly and comfortably in a telephone focus group conversation or via written responses to the focus group question route about technology leadership barriers they might have encountered. Also, I believed superintendents would welcome the opportunity to have a forum to speak with their colleagues or write about how they actually engage in technology leadership practices.

According to Krueger and Casey (2000), the focus group question route is a useful tool for collecting narrative data about a topic from small groups of individuals who share a common interest or background. Eleven New Jersey school district superintendents participated in the study, and were assigned to either one of the telephone focus groups, or to the group that opted to provide written responses to the focus group question route. There were two participants in Telephone Group 1; two participants in Telephone Group 2; two participants in

Telephone Group 3, and five participants who opted to participate through a written response format to the focus group question route.

Superintendents who volunteered to participate in one of the three 45-minute telephone focus groups were assigned numbers from 1 to 9 for data analysis coding purposes. Participants who opted to provide written responses to the focus group question route were coded A to G for data analysis purposes. A LiveScribe Smartpen was used to record the telephone focus group discussions and collect data for transcription and analysis. The data from the telephone focus groups and from the written response group were later transcribed for analysis by me. Separate notes were taken by me during the three telephone focus group interviews so those notes, along with the written responses provided by the written response group; could later be transcribed for qualitative analysis to uncover themes and patterns among the participants' responses to the two research questions (Krueger & Casey, 2000) of the study. I was then able to draw conclusions about the research findings that resulted from the telephone focus group interviews and from the written responses to the focus group question route. I then provided a summary of the findings and made recommendations for policy, practice, and future research.

Significance of the Study

There is limited research regarding technology leadership barriers and actual practices from the superintendent's perspective. This study was conducted to help us understand superintendents' beliefs about the technology leadership they provide in districts.

I believe the findings of the study will help (a) add to an existing limited body of literature on the topic of superintendents' beliefs about barriers to their technology leadership; (b) aid leadership training institutions and universities in developing relevant technology

leadership curricula for practicing and aspiring superintendents; (c) assist local, regional, national, and international governing bodies that set technology leadership standards that will be used to evaluate district superintendents' performance; and (d) aid superintendents in identifying potential first-order and second-order change barriers that can influence their district technology leadership; and practical solutions to overcoming those barriers.

Assumptions, Limitations, and Delimitations of the Study

There are assumptions in this study. Resources were not available to observe superintendents' technology leadership practices or interview them in person. Therefore, I conducted three telephone focus group interviews to collect data from the six telephone participants for analysis in the study. I also collected data for analysis from a fourth group comprised of five superintendents who opted to provide written responses to the focus group question route. It was necessary to assume the telephone focus group participants and written response format participants were honest and transparent in their responses to the interview questions. Throughout each telephone focus group interview, I encouraged participants to respond honestly and openly to each of the questions. The written response format group was also encouraged to provide honest and open written responses to the focus group question route.

There are limitations in this study. One limitation is a small sample size that included 11 New Jersey district superintendents. Another limitation is that the years served as a superintendent varied among the participants. Some of the participants were relatively new superintendents while others were mid-career or more veteran superintendents. Thus, it is possible that during the focus group interviews the beliefs of the less veteran superintendents dominated the discussions about 21st century technology. A third limitation of this study is the possibility of researcher bias. I served as a district-level administrator and a building-level

administrator, and I am proficient in the use of diverse information, communications, and technology (ICT) systems. A fourth limitation of this study is that Hurricane Sandy and its aftermath between October to November of 2012, and the November 2012 Nor'Easter; forced New Jersey school districts to shut down for 2 or more weeks. District superintendents needed time to focus on re-establishing their school districts, which might have reduced the number of superintendents who volunteered to participate in the study. This limitation might also have influenced how many superintendents requested participation via written responses versus a 45-minute telephone focus group discussion. A fifth limitation is that data from the telephone interviews and data from the written responses were interpreted and analyzed by me. It is possible that my interpretation of the data altered salient points made during the focus group discussions, or provided in the written responses. A sixth limitation is the absence of superintendents from urban school districts who participated in the study.

Delimitations exist in this study. The telephone focus group interviews were conducted via 45-minute telephone conference calls and one group of participants opted to provide written responses to the focus group question route. Also, the geographic locations of participants were delimited to New Jersey. The telephone focus group interviews were delimited to occur during the month of December 2012. Data collection for the written response format group was also delimited to occur in December 2012. Finally, the telephone focus group interview transcription and analysis were done by the researcher without the use of any speech recognition software.

Definition of Terms

It is important to understand the following terms used in this qualitative study: barriers, beliefs, District Factor Groups (DFGs), expectations, instructional leader, superintendent, technology leadership, technology implementation, technology integration, technology usage, technology literacy, technology-driven, marketplace, and workforce.

Barriers. Influential variables and/or factors that might impede, hinder, or stop a process from occurring in a consistent and systematic way. The variables and/or factors can be of an internal or external nature.

Beliefs. Interpretations framed by a person's level of understanding, abilities, overall capacity, and life experiences.

District Factor Groups (DFGs). District Factor Groups (DFGs) were established by the New Jersey Department of Education in 1975 to compare student performance in demographically similar school districts, and to measure socio-economic status of New Jersey school districts. Districts within the A-B range represent low-performing and low socio-economic school districts, while districts within the J range represent high-performing and affluent districts.

Expectations. Beliefs about what should or is supposed to happen.

Instructional leader. The leader who sets clear vision and goals, allocates resources to instruction, manages the curriculum, monitors strategic instructional plans, and evaluates principals and teachers in an attempt to promote growth in student learning (Flath, 1989; naesp.org, 2009).

Marketplace. Synonym for "workforce" that refers to the business or working environment people opt to enter so they can perform work-related duties in exchange for wages, salaries, and/or benefits.

Superintendent. The certificated and educationally trained chief executive officer and chief school administrator who heads up a school district (NJDOE, 2001).

Technology leadership. The person(s) who fills this role serves as key facilitator(s) and coordinator(s) of district, school, and classroom-level implementation, integration, and usage of technology (Morsund, 1985).

Technology implementation. A tiered process for infusing technology hardware, software, and digital infrastructure into the culture and operations of a school district. The spiraling implementation process involves conducting ongoing needs' assessments, goal setting and action planning, implementation, evaluation of the process, and re-structuring of goals when necessary.

Technology integration. The consistent focus on and inclusion of diverse technology into the daily operations at the district, school, and classroom levels by individuals who are not fearful of trying out new varieties of technology on a consistent, strategic, and systematic basis.

Technology usage. The active and ongoing engagement and use of technology for professional, personal, and/or technical skill development, accessing information, networking, solving problems, critically thinking, communicating, and performing various tasks.

Technology literacy. The capacity to utilize technology as measured by the following ISTE (2007) indicators: (a) creativity and innovation; (b) communication and collaboration; (c) research and information fluency; (d) critical thinking, problem solving and decision making; (e) digital citizenship; and, (f) technology operations and concepts.

Technology-Driven. This refers to the regular dependence on technology and the consistent use of technology in practical ways in learning and/or business environments (Cambridge Dictionaries Online, 2012).

Workforce. Synonym for "marketplace" that refers to the business or working environment people opt to enter so they can perform work-related duties in exchange for wages, salaries, and/or benefits.

Organization of the Study

Chapter I of the study described background information about the problem, the purpose of the study, the conceptual framework for the research, research questions, the significance of

the study, assumptions, limitations and delimitations, and definitions of terms used in the study. Chapter II focuses on relevant literature about possible barriers to district technology leadership. This chapter also unpacks the conceptual framework of the Adaptive Leadership theory around which the current study is framed. Chapter III explains the data collection methods, the selection process used for participants, the telephone focus group interview and written response format group guiding question route, and the research design that was implemented. Chapter IV relates the findings of the telephone focus group interview data and data from the written response format group to reach significant conclusions. Chapter V conveys an analysis of the results, a summary, conclusions, implications for policy and practice, and recommendations for future research.

Chapter II

LITERATURE REVIEW

Introduction

This chapter is a review of literature that is framed by the adaptive leadership theory (Heifetz et al., 2009) relative to technology leadership barriers and how superintendents actually engage in technology leadership practices. The chapter is presented in four sections: (a) background of the research, (b) review of literature related to the superintendent's role in developing technologically literate students, (c) discussion about first-order change and second-order change barriers that can influence a superintendent's district technology leadership, and (d) review of the adaptive leadership theory for organizational change. There was considerable research available pertaining to the superintendent's role in district technology implementation with an emphasis on potential barriers to effective technology leadership. It was important to include the research in the literature review in order to better understand possible barriers to technology implementation. Research about infusing the adaptive leadership first-order and second-order change process to help overcome technology leadership barriers was also included in an effort to provide superintendents with practical solutions for improving their actual technology leadership practices as transformational and adaptive leaders. It was also important to include literature about the national and international technology standards superintendents are expected to follow and practice during technology implementation. A review of the literature revealed there was no available research on the topic of technology leadership barriers or about how superintendents actually engage in technology leadership practices from a practicing superintendent's perspective.

Background of the Study

Superintendent is defined as a certificated and educationally trained chief executive officer and chief school administrator who heads up a school district (NJDOE, 2001). According to Schoen (2006), the American educational system created the role of superintendent during the mid-1800s so individuals could assume responsibility for providing leadership of the daily operations of school districts in big cities. As the number of public schools increased across the nation during the 20th century, the number of district superintendents also increased (Callahan, 1966; Schoen, 2006). Technological and cultural advancements of the 20th century were manifested by increased advancements during the 21st century. Some argue this led to a rise in technology leadership expectations and responsibilities for American superintendents.

Bebel, Russell and O'Dwyer (2004) claimed that technology decision-making at the superintendent's level can drive technology integration into the classroom and increase technology usage by students. Some researchers suggest that superintendents are expected to provide transformational technology leadership in school districts in order to help students develop technology literacy skills needed in the 21st century global marketplace. However, there are claims that superintendents might in fact lack technology skills essential for effectively leading districts in this area (Houston, 2001; Valdez, 2004).

The No Child Left Behind (NCLB) Act of 2001 introduced Adequate Yearly Progress (AYP) mandates that linked instructional leadership, including technology leadership, to student achievement and student performance. This led to a paradigm shift in technology leadership expectations for district superintendents. Technology performance and achievement benchmarks and deadlines were set, with the federal government instructing states to "ensure technology will be fully integrated into the curricula and instruction of the schools" (Fletcher, 2003, p.56). This evolution in technology leadership expectations surprised some district superintendents who at

the time did not possess technological and technical knowledge and skills needed to provide effective technology leadership required for getting students ready for college and careers (Anderson & Dexter, 2000; Johnson & Bartleson, 2001; Jukes & McCain, 2001).

"When school leaders enable technology integration through vision and expertise, schools can achieve the promise of instructional technology, which can lead to greater student achievement and students being better prepared for the technological society" (Persaud, 2006, para. 1). The Collaborative for Technology Standards for School Administrators (CTSSA) were originally developed and published in November of 2001. The National Educational Technology Standards for Administrators (NETS.A) were refreshed and released at a 2009 conference in Washington, D.C. and were cited as being "...the standards for evaluating the skills and knowledge school administrators and leaders need to support digital age learning, implement technology, and transform the education landscape" (iste.org, 2012, para. 3). Funding was made available by NASA under the advisement of the U.S. Department of Education, the Millken Exchange on Education Technology and Apple Computer. In order to better understand technology leadership standards superintendents and other district leaders are required to follow, it is essential to first identify these national and international technology standards.

ISTE NETS.A (2012) established benchmarked technology standards to aid superintendents in their understanding of: (a) what they already know and have mastered relative to technology; (b) what they need to know about technology; (c) how effective they are in using technology; (d) how their technology skill sets match the skill sets of the students and teachers they lead, and (e) how prepared and equipped they are to provide effective technology leadership.

The NETS.A provide benchmarks to hold district leaders responsible and accountable for providing transformational and systemic technology leadership that targets increased student achievement as the primary goal. Technology resources are made available to district leaders by The International Society for Technology Education (ISTE) to aid educational leaders in getting trained on the five technology standards. NETS.A's five-pronged standards link baseline targets for effective technology leadership: (a) Visionary Leadership; (b) Digital Age Learning Culture; (c) Excellence in Professional Practice; (d) Systemic Improvement, and (e) Digital Citizenship (iste.org, 2012).

Visionary Leadership

The role of superintendents as instructional leaders is to inspire other district stakeholders to create a systemic shared vision for transformational technology implementation. This involves the consistent engagement with and communication about the integration and implementation processes. Superintendents should also form collaborative strategic plans for developing student technology literacy since they are the key technology vision-setting leaders in districts. Moreover, superintendents are now required to posture themselves as student learning advocates at the local, state, and national levels to garner resources to help support technology implementation that can impact technology integration and usage in their districts (iste.org, 2012).

Digital Age Learning Culture

The expectation is that instructional leaders will provide enriched and transformed district learning cultures, embedded with technology-driven innovation, creativity, consistent technology usage, and, learning resources for diverse learners (iste.org, 2012).

Excellence in Professional Practice

Instructional leaders must consistently promote technology-based professional learning communities to help improve instructional practices at the classroom level. It is necessary for district leaders to allocate time and resources needed for professional development. Also, leaders should facilitate and participate in technology-driven learning communities and study groups, use digital tools to model effective communication and collaboration, stay current on educational research about new technologies, and be well versed regarding technology implementation benchmarks (iste.org, 2012).

Systemic Improvement

The call is for instructional leaders to lead adaptive and transformational technology changes that are driven by purpose, collaboration, and data. District leaders are expected to recruit, hire, and retain technologically literate and proficient staffs that effectively use technology resources and tools to advance the operational and academic vision and mission of the district. This requires superintendents to forge strategic partnerships with internal and external collaborators to assist with different parts of the systemic change (iste.org, 2012).

Digital Citizenship

Instructional leaders are responsible for providing equal access to digital resources and learning tools to all students. District leaders must heighten student and staff awareness about global, social, legal, and ethical implications relative to the use of rapidly evolving technology, communications, and information systems. The expectations is instructional leaders will model culturally aware and accepting social practices when using technology in order to develop and maintain shared district-wide understandings about global and multi-cultural issues (iste.org, 2012).

Paben (2002) claimed district superintendents need to know how technology implementation and integration will support their district visions to improve student achievement and teacher efficacy. "Time is a precious commodity for any school administrator" (Brooks-Young, 2011, para. 3), therefore, it is essential for instructional leaders to understand straightaway how "technology intersects with pedagogy" (Paben, 2002, p. 24). District leaders require an awareness of what different technologies can and cannot do to enhance student learning for diverse populations (Paben, 2002). With that said, there is an expectation American superintendents will provide district technology leadership that will help develop student technology literacy skills.

The Superintendent as Technology Literacy Developer

The literature shows technology and information literacy have become the "new basic skills" for 21st century student learners (November, 2010). This belief expands on the notion that today's student must be provided with the kind of technology leadership that helps them gain knowledge about how to operate technology hardware, computers and mobile devices; but also how to use technology to think critically, acquire and access information, communicate globally, and independently solve problems (November, 2010, pp. 31-32). In the literature, research about a potential correlation between technology usage and student learning and student achievement has been inconclusive. Huppert, Lazarowitz and Yaakobi (1993) claimed students were able to be more actively involved in the learning process and progress at their own pace due to technology usage in classrooms. Some research shows effective technology leadership can increase educational productivity (Byrom & Bingham, 2001; Clements & Sarama, 2003; Mann, Shakeshaft, Becker & Kottkamp, 1999; Valdez, McNabb, Foertsch, Anderson, Hawkes & Rassck, 1999; Wenglinsky, 1998). However, to date there has

been no empirical data to show a direct correlation between the consistent use of technology and improved student technology literacy development and/or student learning (Richtel, 2011).

The White House (2011) reported educational technology has the potential to "substantially improve outcomes for K-12 students" (para. 1). An estimated $2.9 billion is now devoted to K-12 eLearning software and products alone. The global expenditure for educational technology is reportedly almost $9.4 billion. The 2006 Digest of Education Statistics (DES) cited an increase in American public school Internet access from 35 percent in 1994 to 100 percent in 2003. The DES also reported the average number of educational technology devices per school increased from 72 in 1995 to 136 in 2003 (Connolly, 2008; Digest of Education Statistics, 2006).

Further, more rigorous national and international technology standards and expectations prevail, and Silicon Valley and Wall Street companies such as the Bill and Melinda Gates Foundation and Mark Zuckerberg's "Facebook," provide technology grants, funding, and resources to eligible districts and superintendents. This might suggest that despite a lack of empirical research regarding technology implementation and its potential impact on student learning, there continues to be huge investments in educational technology purchases and technology implementation by powerful organizations with the presence and capacity to move forward technology initiatives in school districts by financial means. "The nation is continuing to pour money into educational technology programs...technology is faster, cheaper, easier, and smaller...in the hands of many kids..." (November, 2010, p.1). With this, district superintendents must now remain actively engaged during the processes of technology access, implementation, integration, and literacy development so they can hold principals and teachers accountable at the building level (Lim & Khine, 2006).

According to Donovan (1999), technology leadership when done right can also lead to whole-school improvement. Houston (2001) conveyed that district superintendents are considered instructional leaders, and there is an expectation they will know of and follow 21st century technology leadership standards and guidelines established to assist them in leading first-order and second-order changes (Fullan, 2001; Marzano & Waters, 2009) during the technology implementation process.

Dr. Ruben R. Puentedura (2006), the superintendents from the Maine Public School System, and the Maine Department of Education partnered on a project called the Maine Learning Technologies Initiative (MLTI). The project included research, deployment, and monitoring of a one-to-one laptop initiative for all of Maine's middle school students and their teachers. Dr. Puentedura's (2006) goal was to ensure that the laptops were used by teachers to transform teaching and learning practices. The Maine Department of Education indicated that the technology learning initiative was "designed to...prepare students for a future economy that will rely heavily on technology and innovation" (Task Force on Maine's Learning Technology Endowment, 2001, p. 6).

Maine was the first state in the nation to roll out such a massive one-to-one technology learning and teaching initiative, representing huge first-order and second-order changes (Fullan, 2001) in its school districts. Several years before the MLTI, Dr. Puentedura developed the SAMR Model (2001) to assist business executives in their understanding of the influence their technology leadership can have during technology implementation within corporations. Puentedura trained Maine superintendents and principals in the SAMR Model prior to the state's middle school one-to-one laptop learning initiative deployment, and throughout the implementation and integration process.

The rationale of the SAMR Model is that basic, low-level "automating" (Zuboff, 1988) incremental technology changes (first-order change) occur beneath the SAMR "line" (see Figure 1). More customized, high-level "informating" (Zuboff, 1988) technology implementation transformations (second-order and adaptive change) take place above the SAMR "line" and had the potential to become part of the Maine's statewide middle school technology-driven learning culture and norms.

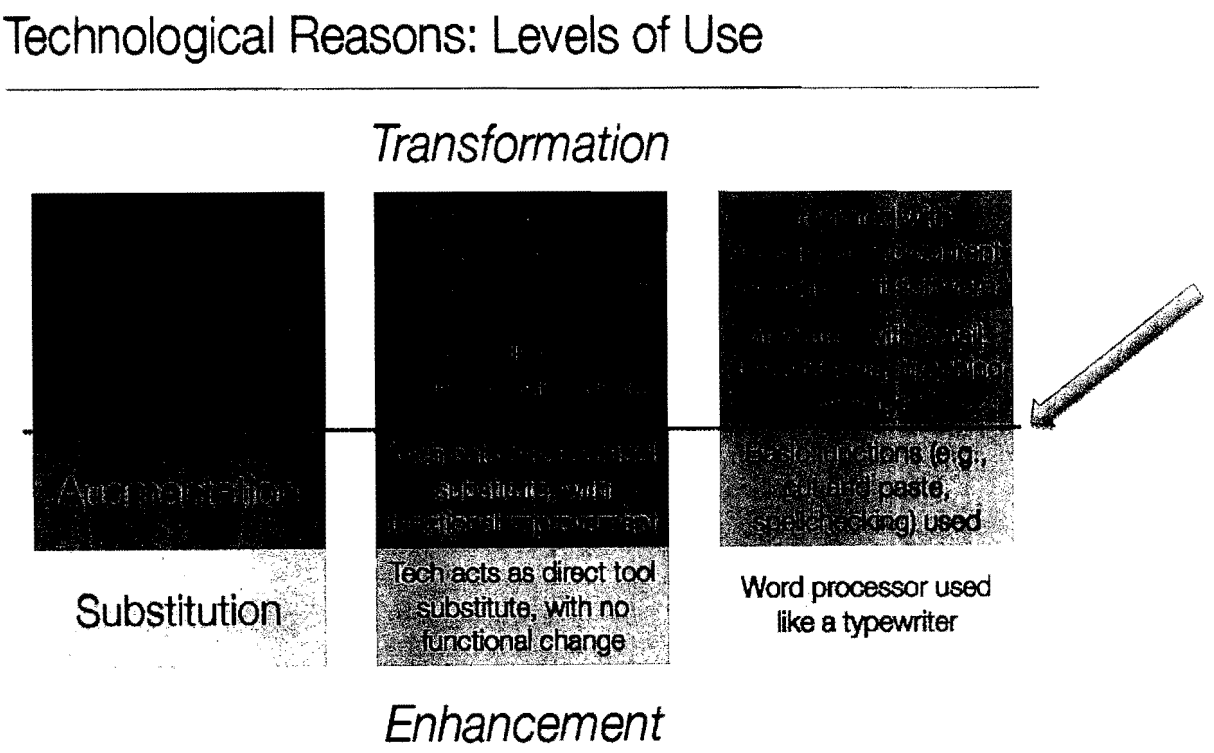

Figure 1 SAMR Model© by Dr. Ruben R. Puentedura, 2001. Reprinted with permission.

According to the Maine Department of Education (2006), the middle school technology implementation and integration process was so successful that in 2009 the one-to-one laptop learning initiative expanded to their high schools. The Maine DOE leased 100,000 mobile learning devices for deployment to students, and announced additional educational technology

expansion when it ordered 64,000 MacBooks for every seventh through twelfth grade student and teacher. Reportedly, by 2010 100 percent of the middle schools actively participated in the one-to-one laptop learning initiative; and 55 percent of the high schools participated (Maine Learning Technology Initiative, 2010).

The MLTI Project proved middle and high school teachers and principals with the professional development and 21st century technology tools they needed for standards-based teaching and learning. Qualitative data collected from Maine's teachers indicated improved student achievement, and helped decision-makers at the district level continually evaluate the success of the one-to-one laptop learning initiative's classroom-level implementation and integration (see Figure 2).

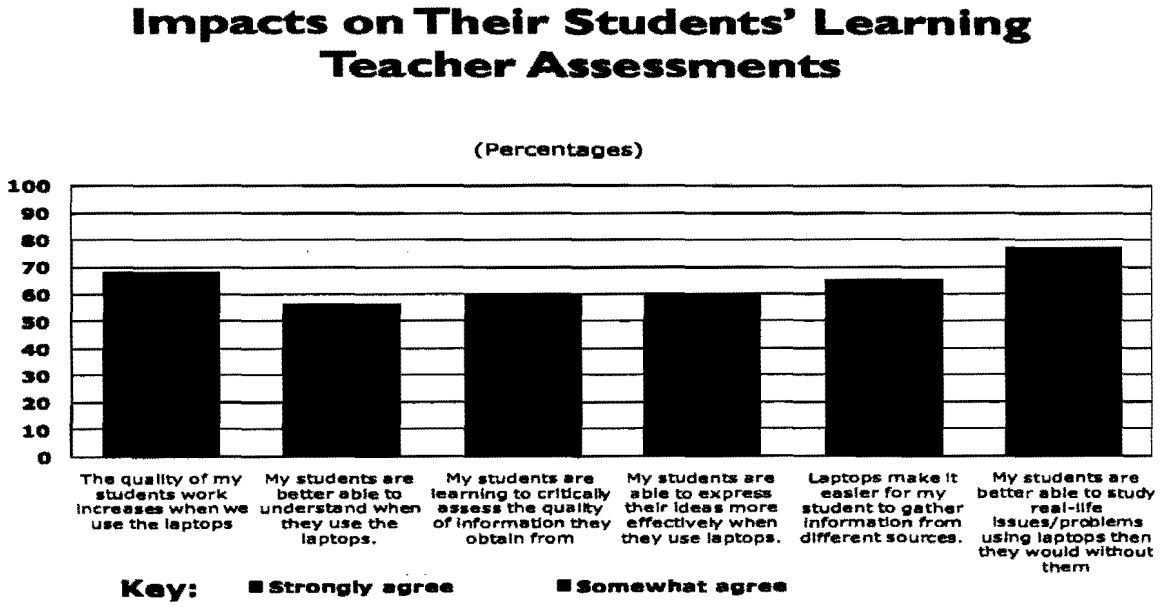

Figure 2 Maine Learning Technology Initiative – Center for Education Policy, Applied Research and Evaluation©. Reprinted with permission.

Maine's district superintendents served as actively engaged instructional leaders and provided support and resources to principals and staff to help them implement the technology plan at the building level. Similarly, the Maine Department of Education was behind the technology learning initiative from its inception and continued supporting superintendents at the district level. The ongoing engagement and support provided by superintendents and by the MDOE helped usher in second-order transformational changes (Fullan, 2001; Marzano & Waters, 2009) to attitudes and beliefs in terms of technology-driven leadership, teaching, and learning in Maine's public schools.

Barriers to the Superintendent's District Technology Leadership

Barriers can influence the transformational change process. In order to understand potential barriers to a superintendent's district technology leadership practices, we will first review research about technology implementation barriers at the classroom and school building level. A review of 48 empirical studies dating between 1995 and 2006 was conducted by Hew and Brush (2007, p. 227), and revealed 123 barriers to technology implementation and integration that technology leaders in K-12 settings might encounter. Hew and Brush (2007) grouped the barriers into six categories and listed them in order of relative frequency: (a) resources (b) knowledge and skills (c) institutional factors (d) attitudes and beliefs (e) assessment, and (f) subject culture.

Hew and Brush (2007, pp. 231-232) named the six barrier categories into subsets, and uncovered possible direct relationships between technology integration and (a) teachers' attitudes and beliefs toward using technology, (b) teachers' knowledge and skills, (c) the organization or institution, and (d) access to technology-related and/or economic resources. Changing teachers' attitudes and beliefs, and teachers' knowledge and skills require second-order change efforts because the areas are reflective of engrained cultural norms. There can be resistance to this level

of transformational change (Fullan, 2001; Marzano & Waters, 2009). Factors outside of a teacher's scope of authority and control, such as access and institutional aspects; require first-order change efforts (Fullan, 2001; Marzano & Waters, 2009).

Hew and Brush's analysis (2007) showed a possible indirect association between technology integration and (a) course subject culture, and (b) assessment. The analysis (2007) suggests that in addition to technology leaders playing key roles in technology implementation and integration, actions taken or not taken by technology leaders at the classroom and building level can influence a student's technological literacy capacity. According to Kennedy (2012), new technologies give students access to core subject information, thus expanding students' opportunities to become technologically literate.

> "Education is the only business still debating the usefulness of technology. Schools remain unchanged, for the most part, despite numerous reforms and increased investments in computers and networks" (Former U.S. Secretary of Education Dr. Rod Paige, 2004, "National Education Technology Plan," Ed.gov).

First-Order and Second-Order Change Barriers Faced by Superintendents

Research implies superintendents leading district technology implementation are more likely to face barriers of a second-order nature (Argyris & Schön, 1974; Hew & Brush, 2007; Heifetz et al., 2009; Marzano & Waters, 2009). Hew and Brush (2007) discovered attitudes, beliefs, and knowledge about technology were factors that influenced technology implementation in school districts. These areas require systemic second-order change efforts on the part of district superintendents. According to Ertmer et al. (2002):

> Many of our administrators are novice technology users and have gained little experience or training in the knowledge and skills needed to be effective leaders. Even though administrators understand the importance of implementing and supporting technology use...the development of technology leadership skills

seems to be left to chance. [original emphasis] (p. 4)

A strong leader's support is needed to help other players overcome fear during the implementation process (Carter, 2000; Fuller, 2000; Hudanich, 2002). A review of the literature reveals technology implementation and integration will not work in school communities where district leaders do not support the process. The National Center for Technology Planning (2001) reported that school boards of education sometimes sign off on district technology spending before ensuring that superintendents fully understand the first-order change (infrastructure and hardware) and second-order change (shifts in mindsets, practices, and district cultures) implications the technology implementation and integration can have on an entire school system.

November (2010, p. 62) wrote about the need for technology implementation and integration leaders to make a "massive shift of control from the organization to the customer...from the organization (the school or district) to the client (the learner and the learner's family)" (para. 1). The second-order paradigm shift, according to November (2010, p. 62), causes the need for technology leaders who establish vision and make decisions, to confront "real fear...in people's hesitancy about the changing roles necessitated by the meaningful use of...technology" (para. 1). In order to achieve this, superintendents must create diversified district technology platforms that empower students and staff to access technology in ways that will lead to successful technological competitiveness in our knowledge-based 21st century global economy (Dede & Gordon, 2000, p. 171). The need for this level of second-order technological change (Fullan, 2001) led by superintendents might not come without its share of challenges and barriers.

Marc Prensky (2001) coined the terms "Digital Natives" and "Digital Immigrants" to describe a significant digital disconnection between the rapid technology literacy development of

students versus the incremental technology literacy development and usage by many adults. While students are considered "native speakers" (Prensky (2001) of technology and of the language of the Internet, adults are believed to lag noticeably behind Pre-K to college-aged students in the use and application of technology. Prensky (2001) described this as "Digital Native" status for Pre-K to college-aged students, and "Digital Immigrant" status for adults.

This gap between adults and students in digital proficiency, knowledge, and usage can represent barriers that influence what superintendents know and are able to do relative to their district technology leadership. According to Prensky (2001, p. 2), "As Digital Immigrants learn – like all immigrants, some better than others – to adapt to their environment, they always retain, to some degree, their 'accent,' that is, their foot in the past...older folks were 'socialized' differently than their kids, and are now in the process of learning a new language." The past alluded to by Prensky (2001) is one absent of technology-driven systems for accessing information; innovating and creating ideas; collaborating; socializing; networking; communicating globally; thinking critically; researching, and solving problems. Second-order change efforts undergone by superintendents would require them to break away from the past and learn new approaches to understand and implement technology in school districts.

The superintendent's own level of technology proficiency and beliefs about technology implementation can influence how effectively he or she overcomes first-order and second-order technology leadership barriers. Bartleson and Johnson (2001) suggest that even after hired to fill the role of district leader some superintendents do not acquire or demonstrate technology literacy skills or acumen essential for providing effective technology leadership within districts. Superintendents must "identify their own technological skills and address their needs with training" (Braswell & Childress, 2001, pp. 473-474).

John Hattie (2012, pp. 156-158) might say superintendents need to be "learning leaders" who do not allow their "...good ideas...fail due to low levels of degree of implementation, fidelity, or dosage" (p. 156). Hattie (2012) goes further by supporting Michael Barber's (2008) theory of "deliverology" in which leaders accomplish successful delivery of implementation by following four steps: (1) Develop a foundation for delivery – a) Define an aspiration, which includes setting measurable goals; b) Review the current state of delivery, which involves conducting a needs assessment; c) Build the delivery unit, which fosters the idea of building the capacity of a group of implementation vanguards who will help push forward the implementation initiative, and d) Establish a guiding coalition that can remove barriers to change, influence and support the unit's work at crucial moments, and provide counsel and advice; which involves developing a coalition of diverse stakeholders who will assist with the change effort. (2) Understand the delivery challenge – a) Evaluate past and present performance, which involves bridging past practices with current target goals; and b) Understand drivers of performance and relevant systems activities, which includes helping stakeholders understand the impact of variables that can drive student learning. (3) Plan for delivery – a) Determine your reform strategy, which involves developing a collaborative and fluid strategic plan for implementation; b) Set targets and trajectories, which includes setting realistic and measurable success targets for different groups affected by the implementation, and c) Produce delivery plans, which entails developing plans that are works in progress. (4) *Drive delivery* – a) Establish routines to drive and monitor performance, which includes clearly defining roles and responsibilities; b) Solve problems early and rigorously, when involves dealing with issues as soon as they occur, and c) Sustain and continually build momentum, which includes persisting through implementation and not getting side-tracked by barriers. Hattie (2012) offers a fifth step to Barber's (2008) model: (5) Develop, identify, and esteem success, which involves

establishing a "culture of improvement" that allows for the early identification of successes and failures so either can be immediately addressed.

Senge (1990) might agree with Hattie's (2012) theory about "learning leaders". Senge (1990) claimed that organizations learn to an extent largely influenced by how and how much leaders learn. Senge (1990) wrote, "Organizations learn only through individuals who learn. Individual learning does not guarantee organizational learning. But without it no organizational learning occurs" (p. 139). This notion suggests that a superintendent's embrace of a technology implementation initiative is not necessarily a guarantee that all other stakeholders within a district community will immediately or ever embrace the technology implementation initiative. That might be true particularly if stakeholders do not have the "mental model" (Senge, 1990) to welcome changes within an organization. Yet, it seems that if superintendents want technology implementation initiatives to take root and move forward successfully, they must lead the process of systems' learning (Senge, 1990) so that sustainable systemic changes (Heifetz et. al, 2009) can occur. Senge (1990) also offered the notion that organizations are "grounded systemically as part of a 'holographic' reality where...Each represents the whole image from a different point of view" (p. 212). Senge (1990) argued that vision evolves organically throughout a system as the vision becomes less individual and more collective. This suggests there is a critical role superintendents play in moving forward technology implementation initiatives in a way that the initiatives or innovations diffuse or spread, and are sustained throughout the system (Rogers, 1962).

Argyris and Schön (1974) claimed people use mental maps to determine how to act in different situations. Fullan's (2008, p. 1) argument that "a piece of technology...only as good as the mind-set using it" gives credence to Argyris and Schön's (1974) claim, which some researchers believe is the foundation of the Adaptive Leadership Theory (Heifetz et. al, 2009)

regarding the first-order and second-order change processes (Fullan, 2001; Marzano & Waters, 2009).

According to Argyris and Schön (1974), mental maps are the blueprints people have in mind to guide their actions during the change process. They suggested that there are two theories of action involved in the change process. The first theory of action is described as "theories-in-use" (Argyris & Schön, 1974) in which actual behaviors or actions are observed. The second theory of action is called "espoused theory" (Argyris & Schön, 1974) which refers to actions individuals say they engage in, and they want others to believe they engage in. When we consider Senge's (1990) theory about how organizations learn relative to Argyris and Schön's (1974) Theories of Action, incremental first-order changes might reflect what people espouse they believe and do during technology implementation; whereas, sustainable second-order changes might include actual practices, behaviors, and mindsets that mirror "buy-in" of a superintendent's district technology implementation efforts.

As suggested by Argyris and Schön (1978, p. 16), people within organizations construct their "own representation or image of the theory-in-use of the whole." This argument might support the claim that organizational changes, whether of a first-order or second-order nature, are incrementally impacted by the mental maps (Argyris & Schön, 1974) people apply to the change process. In other words, wherever people are in their thinking about a technology implementation shift is likely to be reflected in the actions they demonstrate during the implementation. Some mindsets might present barriers to superintendents trying to lead second-order technology implementation change efforts if stakeholders demonstrate resistance to any changes that might need to be made. As superintendents lead technology implementation in their districts, they are wise to acknowledge how their own mental constructs, learning levels, actions, and behaviors can influence the behaviors, actions, and mindsets of other district stakeholders

who the superintendents want to support implementation. Superintendents might also keep in mind that school districts are structured to be learning organizations, however, they are comprised of stakeholders with not only differences in mindset, but also with varying levels of proficiency, capacity, and adaptability to change.

Karl Weick (1982) posited that educational organizations are not like many other organizations (i.e., businesses or coporations), so superintendents should not manage districts as if they were. Weick (1982) suggests schools are "loosely coupled" by technical practices and procedures (first-order, technical components) that are in place to guide and regiment professionals who work autonomously and in isolation; void of collaborative decision making. This loosely-coupled nature of school districts can potentially influence a superintendent's technology implementation efforts when they attempt to usher in second-order changes that impact mindset shifts. Individuals who have traditionally worked autonomously might not readily see how the implementation might help improve the system as a whole, and they might resist the change efforts. Weick (1982) might say that superintendents who lead technology implementation initiatives stand the risk of being ineffective if they attempt to treat school districts as "tightly coupled systems" where everyone acts upon an initiative the same way, at the same time, and from the same vantage point; similar to what one might see in a factory assembly line or departmentalized business (Taylor, 1911). Thus, superintendents might need to accept the reality that school districts are loosely coupled as they attempt to overcome technology leadership barriers during implementation.

"People need to be part of sensible projects. Their action becomes richer, more confident, and more satisfying when it is linked with important underlying themes, values, and movements..." (Weick, 1982, p. 675). Mike Miles of Focal Point (2012) refers to this as allowing stakeholders time and opportunities to engage in actions and activities that help them

"make sense of change" within and to the system. The literature seems to suggest that as superintendents learn how to effectively navigate within "learning organizations" (Senge, 1990) in a way that fosters new learning and new thinking for themselves and for others, the superintendents might be able to better overcome technology implementation barriers so their actual technology leadership practices are not stymied by change resistors.

Superintendents as Leaders of Adaptive Change

Humans were created millions of years ago with the capacity to acquire and use information, knowledge, skills, and resources to adapt to environmental and systemic changes. Some changes are of a first-order (Fullan, 2001) nature and include modifications to existing infrastructures, existing mindsets, existing information, and existing cultures and norms. Second-order changes (Fullan, 2001) are of a deeper and more adaptive level and necessitate paradigm shifts in mindsets, structures, knowledge, beliefs, values, and cultural norms. The discussion in this section stems from research done by Heifetz et al. (2009), Marzano and Waters (2009), and Fullan (2001). According to Heifetz et al. (2009, p. 14), "Adaptive leadership is the practice of mobilizing people to tackle tough challenges and thrive."

District superintendents attempting to mobilize diverse stakeholders during the technology implementation process need to know how and when to lead first-order changes, and how and when to lead second-order changes (see Table 1). During the complex change process, superintendents also need to remain aware of where they fall on the adaptive change spectrum so they are effectively able to guide others to experience continual progress and growth. They need to be "learning leaders" (Hattie, 2012). Superintendents also need to consistently challenge themselves to make necessary and constant shifts during the change process.

Table 1.

Characteristics of First-Order Change and Second-Order Change

First-Order Change	Second-Order Change
▪ Is perceived as an extension of the past	▪ Is perceived as a break with the past
▪ Fits within existing paradigms	▪ Lies outside existing paradigms
▪ Is consistent with prevailing values and norms	▪ Conflicts with prevailing values and norms
▪ Can be implemented with existing knowledge	▪ Requires the acquisition of new knowledge and skills
▪ Requires resources currently available to those responsible for implementing the innovations	▪ Requires resources currently not available to those responsible for implementing the innovations
▪ May be accepted because of common agreement that the innovation is necessary	▪ May be resisted because only those who have a broad perspective of the school see the innovation as necessary

Marzano & Waters, 2009, p. 105 ©. Reprinted by permission of McREL.

Heifetz et al. (2009) offers analogies and strategies that help clarify different phases of the adaptive leadership process:

Adaptive Leadership is Specifically About Change That Enables the Capacity to Thrive

Superintendents as adaptive leaders have to ask themselves and others pointed and strategic second-order change questions about values, purpose, and processes in order to help usher people through major change efforts. Leading and guiding ongoing collegial and honest conversations about shifts and about barriers to shifts can help create environments that welcome open and positive dialogue about realistic goal setting.

Successful Adaptive Changes Build on the Past Rather Than Jettison It

Superintendents as adaptive leaders must build bridges between existing ways of doing things and thinking (first-order change) and new required ways of thinking and doing things (second-order change). The district leader must anchor useful and relevant traditions into the action plans for new improvements.

Organizational Adaptation Occurs Through Experimentation

The superintendent who leads a district through adaptive change must acknowledge there can be no absolutes when it comes to how the process might morph over time. The leader will need courage and resilience to experiment with different plans of action, and must be willing to adapt to internal and external factors that require changes in plans at any given moment. Heifetz et al. (2009) suggested that leaders be prepared to live in a state of disequilibrium where the game rules for implementation are constantly subject to revision.

Adaptation Relies on Diversity

Superintendents who lead adaptive change must model and encourage the acceptance of globally diverse methods, values, opinions, and plans.

New Adaptations Significantly Displace, Reregulate, and Rearrange Some Old DNA

Leading adaptive change requires superintendents to accept, and aid others in accepting, the fact that there will be some wins and some losses relative to needed paradigm shifts. The leader must also know how and when to intervene to reverse negative patterns, trends, or practices that might develop if there is resistance to the changes.

Adaptation Takes Time

"Rome wasn't built in a day" must be the prevailing mantra of superintendents leading adaptive change in school districts. Leaders have to recognize that different stakeholders are not all on the same level or at the same place in terms of their development. Plans or processes used with one group of individuals might have to differ from those used with other groups. While setting timelines and benchmarks demonstrates responsible instructional leadership, the adaptive leader must be pliable enough to flex timelines and benchmarks to accommodate the needs of diverse stakeholders.

Distinguishing Technical Problems and Adaptive Challenges

Superintendents as adaptive leaders must be able to distinguish between first-order change technical problems and their solutions (Taylor, 1911), and second-order adaptive challenges and their solutions. The challenge for superintendents is that there is not always a fine line between the two and sometimes they overlap (see Table 2). Therefore, superintendents leading adaptive change must remain actively engaged in the change process so they are constantly positioned to make anthropological observations, evaluations, and decisions based on real-time data about the people being affected by the change process.

Table 2.

Distinguishing technical problems and adaptive challenges

Kind of challenge	Problem definition	Solution	Locus of work
Technical	Clear	Clear	Authority
Technical and Adaptive	Clear	Requires learning	Authority and stakeholders
Adaptive	Requires learning	Requires learning	Stakeholders

Distinguishing Leadership from Authority

The superintendent as adaptive leader is less concerned about authoritative expertise and more concerned about providing necessary levels of instructional leadership that can transform

school districts and improve student learning. Superintendents are also wise to identify and acknowledge other district stakeholders who possess authoritative expertise in an area, and work toward forming collaborative coalitions (Rubin, 2009) with those individuals to ensure fidelity of implementation during the process.

Summary

The federal government and wealthy technology industry donors allocate billions of dollars toward digital infrastructure upgrades for new technology installations and educational technology purchases (first-order changes), yet some researchers argue district instructional leaders do not invest enough time, knowledge, or expertise (second-order, adaptive changes) to develop and carry out "detailed plans for (1) how technology will support curricular goals, (2) how teachers would be trained to integrate technology, or (3) how technology tools would be maintained and upgraded" (Keane, Gersick, Kim, & Honey, 2003, p. 15). Brooks-Young (2011, p.3) claimed that our nation's schools still fall short of producing technologically literate students. According to Houston (2001), district superintendents are the ones who are supposed to provide technology leadership that can transform school districts into environments ripe for consistent technology literacy development.

Superintendents might face first-order change and second-order change barriers that can interrupt well laid out intentions and plans for leading adaptive and sustainable technology initiatives. First-order changes tend to be of a technical nature and the keen adaptive leader should work toward bridging the gap between existing approaches and new approaches. Second-order changes have to do with attitudes, beliefs, values, and cultural norms; and can present bigger challenges to the superintendent who is expected to lead adaptive technology implementation in a district.

Based on the adaptive leadership theory offered by Heifetz et al. (2009), superintendents who want to effectively lead second-order technology implementation changes should: (a) deliberately orchestrate ongoing collaborative conversations about the implementation process; (b) avoid relying on absolutes during the process and foster an environment of experimentation; (c) encourage the acceptance of diverse technology platforms, proficiency levels, values and opinions about technology; (d) stick with implementation plans that work and toss plans that peter out, and (e) recognize the association between technical problems and solutions and adaptive challenges and solutions, but be able to distinguish between the two. The gap in research, and the purpose of this study was to gain a better understanding of superintendents' beliefs about technology leadership barriers and about how superintendents actually engage in technology leadership practices. There is already research on the topic of technology leadership barriers and on the actual technology leadership practices of superintendents from the perspective of non-superintendents.

Since superintendents are the primary leaders of adaptive first-order and second-order changes relative to technology literacy development in school districts, it is important for us to understand their beliefs and perspectives about barriers that can influence the effectiveness of their district technology leadership. It is also essential that we gain a better understanding, from the superintendent's vantage point, about how superintendents actually engage in technology leadership practices.

Chapter III

METHODOLOGY

Introduction

The purpose of this study was to gain a better understanding of superintendents' beliefs about technology leadership barriers and about how superintendents actually engage in technology leadership practices. Chapter III includes the following: information about the participants, research procedure and methods used for data collection, interview questions, data analysis, and a summary.

Participants

The participants in this study included 11 P-12 superintendents from New Jersey public school districts for the 2012-2013 school year. The participants were from school districts representing different District Factor Group (DFG) categorization, as described by the school district funding formula generated by the State of New Jersey for stratified socio-economic status (SES) in local communities across New Jersey. In addition, the participants were from suburban, rural, and suburban-rural school districts. The participants were reasonably reflective of the general superintendent population in New Jersey State, and included: (a) 0 Latino, (b) 1 African-American, (c) 10 Caucasian, (d) 0 Native American and, (e) 0 Asian or Pacific superintendents (see Table 3). In addition, the participants reported using some form of information, communications, or technology (ICT) systems to perform their district-level leadership duties and responsibilities.

Table 3.

Background characteristics of superintendent participants

N = 11
(Blank spaces = 0)

Category and Level	Written Response Group	Telephone Group 1	Telephone Group 2	Telephone Group 3
Gender				
Male	3	1	2	
Female	2	1		2
Race or Ethnicity				
Latino				
African-American		1		
Caucasian	5	1	2	2
Asian or Pacific				
Native American				
Years as Superintendent				
Under 5 Years	3	1	1	1
6-10 Years	1			
11-15 Years		1	1	1
16-20 Years				
21 Years or More				
Age Range				
22-30				
31-40				
41-50	3			2
Over 50	1	2	1	
District Factor Group				
A-B	1			
C-D	1		1	
E-F-G	3			
H				
I		2		2
J			1	
Suburban	4	1	2	1
Urban				
Rural	1	1		1

Background Characteristics of Participants

The first set of three questions in the focus group question route was to collect information about the background characteristics of the participants. A detailed background information sheet was also included to ask questions about (a) gender, (b) race or ethnicity, (c) years of service as a New Jersey District Superintendent, (d) Age, (e) District Factor Group (DFG) of the superintendent's district, and (f) urban, suburban, or rural district classification.

The background data were analyzed to determine patterns and trends among the study participants.

Gender.

There was an almost even balance of male and female study participants, with six male and five female superintendents. Three participants in the written response group were male and two were female. There was one male participant and one female participant in telephone group 1, two males in telephone group 2, and two females in telephone group 3.

Race or ethnicity.

The race and ethnicity breakdown of participants was generally reflective of the superintendent population throughout New Jersey. Ten (10) of the volunteer participants were Caucasian and one (1) volunteer participant was African-American. There were no Latino, Asian or Pacific, or Native American participants in this study.

Years of service as a New Jersey District Superintendent.

The majority of participants were relatively new superintendents with less than 5 years' experience in the job. Six participants indicated they had served for less than 5 years as a district superintendent, one superintendent indicated serving between 6 to 10 years in the role, and three superintendents indicated 11 to 15 years of service as a superintendent.

Age.

Most of the superintendents in the study reported being middle aged to retirement age. There were no participants who reported ages within the 22 to 30 year old or 31 to 40 year old categories. Five participants reported 41 to 50 years old as their age classification, and four participants reported over 50 as their age range.

District Factor Groups (DFGs).

The majority of participants were from middle-income to affluent school districts. One of the study participants reported an A-B district factor group classification. Two study participants identified their districts as C-D districts, three participants identified their districts as E-F-G districts, no participants identified their districts as H districts, four participants identified their district factor grouping as I, and one participant identified J as the district factor group categorization.

Urban, suburban, or rural district.

There were no superintendents from urban school districts who volunteered to participate in this study. Eight of the participants were from suburban districts, and three of the superintendents were from rural or suburban-rural districts.

Research Procedure and Methods Used for Data Collection

I used a qualitative approach to collect data for analysis regarding superintendents' beliefs about barriers that can influence their district technology leadership and regarding how superintendents actually engage in technology leadership practices. I collected narrative data for analysis in addressing the research questions during three telephone focus group conversations that consisted of six total participants. A separate group of five participants opted to provide written responses to the focus group question route so the narrative data could also be collected for analysis in addressing the research questions. According to Krueger and Casey (2000), the focus group question route is a useful tool for collecting narrative data about a topic from small groups of individuals who share a common interest or background. Patton (2002) and Allen et al. (2004) explained that it is important to ensure reliability by conducting multiple focus group sessions to allow for a cross section of beliefs of the participants.

Eleven (11) New Jersey school district superintendents participated in the study and were assigned to either one of the three telephone focus groups, or to the group that opted to provide written responses to the focus group question route. There were two participants in telephone group 1; two participants in telephone group 2; two participants in telephone group 3, and five participants who opted to participate through a written response format to the focus group question route. Superintendents who volunteered to participate in one of the three 45-minute telephone focus groups were assigned numbers from 1 to 9 for data analysis coding purposes. Participants who opted to provide written responses to the focus group question route were coded A to G for data analysis purposes. A LiveScribe Smartpen was used to record the telephone focus group discussions and collect data for transcription and analysis.

The data from the telephone focus groups and from the written response group were later transcribed for analysis by me. I took separate notes during the three telephone focus group interviews, so those notes along with the written responses provided by the written response group could later be transcribed for qualitative analysis to uncover themes and patterns among the participants' responses to the two research questions of the study(Krueger & Casey, 2000). I was then able to draw conclusions about the research findings that resulted from the telephone focus group interviews and from the written responses to the focus group question route. I was also then able to provide a summary of the findings and make recommendations for policy, practice, and future research.

Krueger and Casey (2000) claimed that the advantages to conducting telephone focus group interviews to collect qualitative data and the advantages to collecting written responses to a focus group question route are: (a) cost effectiveness: there are no travel, lodging, or overhead costs included when conducting telephone and/or Internet-based focus groups; (b) promotion of self-disclosure: participants tend to feel comfortable sharing information and participating in

group discussions with people they have something in common with; (c) instant feedback about a topic: participants provide useful qualitative data by sharing a range of opinions in response to the moderator's question prompts, and (d) an enjoyable experience: despite the necessary structured and focused nature of focus group discussions, participants can willingly share input within a small-group, safe, and non-threatening environment.

The study was conducted in New Jersey. I sent email requests to all New Jersey superintendents explaining the study and requesting 15 volunteers to participate in the research (see Appendix A). I obtained work email addresses for the superintendents from the New Jersey Department of Education's (NJDOE) public access website. At the time of the research, there were approximately 600 superintendents listed on the NJDOE website. The participants were not offered or given any monetary or other tangible incentives. I informed all participants that they would be part of a research study about a topic of limited research from a superintendent's perspective. The participants were asked to complete a brief background information form (see Table 3) and sign an Informed Consent Agreement (see Appendix B). The participants were also asked to mail the completed consent forms to me at a Seton Hall University postal address provided in the consent form.

The participants were told the study was designed to provide superintendents with an opportunity to discuss and share their beliefs about barriers to their district technology leadership. Participants were also told they would be able to talk about their actual technology leadership practices. The telephone focus group interviews were scheduled to occur on December 8, 2012 via 45-minute telephone conference calls. Superintendents who volunteered to be telephone participants were assigned numbers from 1 to 9 ahead of time. The written response format group was assigned letters from A to G, and the group was asked to email written responses to the focus group question route to me by December 10, 2012. A LiveScribe

Smartpen was used to record the telephone discussions and collect data for transcription and analysis. I attempted at all times to make the telephone focus group experiences easy, comfortable, and appealing to the participants, as suggested by Krueger and Casey (2000).

Focus Group Guiding Question Route

I developed a focus group guiding question route to help collect data to answer the research questions (Krueger & Casey, 2000). The guiding questions were asked over a 45-minute time period during the telephone interviews, and they were provided in written format to the group that opted to provide written responses to the focus group question route. The question route was emailed to the telephone participants prior to the telephone focus group discussions. The question route was also emailed to the written response group. I attempted to use clear and unambiguous terminology (Merriam, 2009, pp. 95-102) in the questions in order to keep the telephone discussions flowing and avoid the need for lengthy and time-consuming clarifications (see Table 4). The question route called for responses that ranged from general (factual) information to specific (reflective) information (Krueger & Casey, 2000, p. 43). Dr. Anthony Colella, Dr. Barbara Strobert, Dr. Donald Leake, Dr. Kenneth R. Hamilton, and Dr. Lauren Schoen were asked to review and critique the focus group guiding question route and the background information sheet. Dr. Alan November and Ms. Julia Leong, both experts in the field of technology, were also solicited to provide feedback on the focus group guiding question route before the telephone discussions took place. I edited the study instruments based on editorial recommendations offered by the panel of experts.

Table 4.

Focus group guiding question route

Question #	Question
1	***Background Characteristics***
1a	How long have you been a district superintendent in New Jersey?
1b	What is the District Factor Group (DFG) of your school district?
1c	Is your current district suburban, urban, or rural?
2	***Adaptive Leadership***
2a	As a superintendent, what are the first things you did to lead the technology implementation process?
2b	As a superintendent, what are the second things you did to lead the technology implementation process?
2c	What systems or structures have you successfully changed in your district?
3	***Technology Leadership***
3a	What barriers do you believe exist that can influence your technology leadership?
3b	What do you actually do to lead technology implementation and integration in your school district?
3c	What information do you, your teachers, your principals, or your students need to help improve technology implementation in your district?
4	***General***
4a	How do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices?
4b	What recommendations would you give to other aspiring or practicing superintendents about how to provide effective technology leadership in a school district?
4c	If you were advising your Board of Education, Principals, and Teachers about how they could assist your efforts to provide effective technology leadership, what would you say to them?

Analysis

I used a LiveScribe Smartpen to record the three telephone discussions and collect data that were later transcribed into written format. Also, I took separate notes during the telephone focus group interviews, and the notes from the discussions of the six telephone participants were later transcribed for analysis. A separate group of five participants opted to provide written responses to the focus group question route so their narrative data could also be collected for analysis. An analysis was used that is appropriate for qualitative research design telephone and written format focus group data. Statistics are not usually reported in qualitative studies (Pyrczak & Bruce, 2007), so the current study includes qualitative data from transcripts of the telephone focus group interviews. The study also includes qualitative data from the written response format group. The data analysis was organized to illustrate major patterns, trends, themes, and outlier responses that emerged from the content of the telephone discussions and from the written responses (Pyrczak & Bruce, 2007).

The data were analyzed and independently coded by (a) guiding question domain and (b) participant characteristics' domain (i.e., demographic data from Table 3) in order to clearly represent the data (Pyrczak & Bruce, 2007). Analyses were conducted in four stages, one stage for each of the three telephone focus group discussions, and one for the written response group's written responses to the focus group guiding question route. It was anticipated the analysis of the telephone focus group interview and written response format data would show patterns in terms of beliefs superintendents have about technology leadership barriers and actual technology leadership practices. It was also expected common trends regarding first-order and second-order changes would be part of the responses from the participants.

Summary

The purpose of this study was to gain a better understanding of superintendents' beliefs about technology leadership barriers and about how superintendents actually engage in technology leadership practices. Chapter III included information about the participants, the research procedure and methods used for data collection, the focus group guiding question route, data analysis, and a summary. Chapter IV will present the data collected, and a discussion about the research findings.

Chapter IV

PRESENTATION OF RESEARCH FINDINGS

Background

The purpose of this study was to gain a better understanding of superintendents' beliefs about technology leadership barriers and about how superintendents actually engage in technology leadership practices. I hope the information gleaned from this study can be of value to superintendents across the country who are responsible for providing technology leadership in their school districts. Qualitative research methodology was used to gain insight about the findings that are presented in this chapter. A qualitative approach was essential to help understand barriers to technology leadership from a superintendent's perspective. Superintendents were able to openly share their beliefs about technology leadership during telephone focus group discussions with other superintendents, and via written responses to the focus group guiding question route.

When this study was conducted, there were almost 600 New Jersey superintendents included on the NJDOE website email listing of superintendents. All listed superintendents were invited to participate in this research, and I requested 15 volunteer participants. The initial number of respondents included 29 superintendents who volunteered to participate in a telephone focus group interview discussion; 4 superintendents who volunteered to serve as alternates; and, 3 superintendents who volunteered to respond via written responses. As a follow-up to the initial participant response, the focus group guiding question route, background information sheet, and Informed Consent Agreement were emailed to the 36 respondents. Fifteen (15) superintendents from the initial pool of 36 respondents re-confirmed an agreement to participate in the study.

Eleven (11) public school district superintendents from P-12 public school districts actually participated in the study through either a telephone focus group or through a written response format. The total number of participants included two superintendents in Telephone Group 1; two superintendents in Telephone Group 2; two superintendents in Telephone Group 3, and five superintendents in the Written Response Format Group (Group 4).

A structured 45-minute telephone focus group guiding question route consisting of 12 questions was used on Saturday, December 8, 2012 to guide the telephone discussions. The same focus group guiding question route was used with the group that opted to provide written responses to the guiding question route. The telephone interviews were recorded via LiveScribe Smartpen and the researcher also took hand-written notes during each of the interviews. I started and ended each telephone session with the following pre-scripted opening and closing (see Appendix C):

> *Opening:* Thanks for participating in my dissertation study. For about 45 minutes we will engage in a focus group conversation to help us better understand superintendents' beliefs about barriers that can influence their technology leadership practices. Today's discussion will also help us understand what superintendents actually do to lead technology implementation in their districts. As a reminder, I will ask three background questions and nine open-ended questions. After the data are analyzed, a summary of the findings will be sent to all of the participants involved in this research. Please feel welcome to respond freely and informally to all of the questions. Now, let's begin.

Closing: As we conclude today's conversation, please know you are welcome to email me any additional comments or statements you might want included in the discussion by December 11, 2012. It's been a pleasure working with you. Enjoy the holidays.

In an effort to discover patterns, trends, and common themes, I transcribed the data collected from the telephone focus group interviews after all of the interviews were conducted. Data from the written response format group were also analyzed for recurring patterns, trends, and common themes. The first set of three questions in the focus group guiding question route collected data about the background characteristics of the participants. The participants were asked: (a) How long have you been a district superintendent in New Jersey? (b) What is the District Factor Group (DFG) of your school district? (c) Is your current district suburban, urban, or rural?

The following research questions were addressed in this study:

1. What are superintendents' beliefs about barriers that can influence their district technology leadership practices?
2. How do superintendents actually engage in technology leadership practices?

Presentation of Research Findings

Adaptive Leadership

The second set of three questions was asked to gather data about the adaptive leadership practices employed by superintendents during their technology leadership. The participants were asked about the first and second things they did to lead the technology implementation process, and about systems or structures they had successfully changed in their school districts.

First things done.

The participants were asked about first-order changes (Fullan, 2001; Heifetz et. al, 2009; Marzano & Waters, 2009) they made during technology implementation. Eight out of the 11 superintendents indicated they first conducted needs assessments prior to technology implementation. Superintendent 4 said,

> When I came into the position, we had just started our two-year technology plan, and we conducted a needs assessment. And, we actually had a group or cadre of individuals including administrators, teachers, and community members to develop that survey; and then helped us to create the actual plan. That included looking at purchases, looking at teachers' level of understanding of how to use the technology instructionally; and then using assessments throughout to see if technology had a positive impact on day-to-day instruction.

Four of the participants said that as a first order of business they either developed or continued their predecessor's development of a district technology plan. Four superintendents either formed or met with an existing technology support team or committee to begin making technology implementation decisions. Two of the participants said that infrastructure upgrades were done first; while one participant indicated a district technology professional development model was among the first things done during the implementation process.

Second things done.

Next, the superintendents were asked about second-order changes (Fullan, 2001; Heifetz et. al, 2009; Marzano & Waters, 2009) they made during technology implementation. Five superintendents said the second thing they did was to enhance their district professional development models for technology implementation. One superintendent indicated that aligning the implementation model with technology standards was the second thing done. Three

superintendents focused on changing the existing district culture and district mindset about technology implementation, while three participants began securing financial resources to help sustain their technology plans. "The first thing I did," said Superintendent 1, "was to put my head down and wonder what in God's name I had gotten myself into" (LAUGHTER in the group). "But, on a more serious note, the second thing was to set about some initiatives to try to change the traditional culture that existed, and to some degree; still exists in pockets in the district." One superintendent participated in consistent articulation and communication about technology implementation with the receiving high school and with the other sending P-8 schools in the district. One of the superintendents made improvements to a strategic district technology support model. Two superintendents delved into research about successful technology implementation models around the nation to get ideas about what worked and what did not work. One participant led the process of infrastructure upgrades throughout the district. Three superintendents engaged with district technology teams to re-evaluate existing district technology plans to make sure the plans were current and relevant. Two superintendents conducted needs assessments as a second order of business during the implementation process.

Systems or structures changed.

The superintendents were questioned about systemic changes and organizational learning (Senge, 1990) efforts they led in their districts. Three of the study participants said they were successful in shifting district cultures and traditional mindsets to a focus on student learning. One participant enhanced access to and availability of online learning tools for student and teacher usage. One superintendent successfully developed a data warehouse to serve as a central data hub and bridge for the district's multiple data systems. One of the participants developed a new technology plan, while three participants upgraded technology equipment throughout the district. One superintendent was successful in creating a new internal response tracking system

to help the technology support team monitor and analyze requests for technology assistance and troubleshooting. One of the participants increased technology-infused professional development offerings for administrators and teachers, while one participant improved the district's instructional monitoring and evaluation system. Three superintendents improved the district's communications and public relations' models, while three superintendents successfully led infrastructure upgrades throughout their districts.

Technology Leadership

The third set of three questions was to glean information from the superintendents about (a) their beliefs regarding barriers that can influence their technology leadership, (b) what superintendents actually do to lead technology implementation and integration in their school districts, and (c) information superintendents and other district stakeholders might need to help improve district technology implementation.

Barriers to technology leadership.

In terms of Barber's (2008) theory about "deliverology" during the implementation process, the participants were asked about barriers they believed influenced their technology leadership practices. Traditional district mindsets about teaching and learning and a lack of adequate financial resources were identified by the study participants as the biggest barriers that can influence their technology leadership practices. Six of the participants said changing old mindsets about best instructional practices can be one of the largest barriers to effective implementation. Superintendent 8 explained, "The only way to make something happen after you've surveyed and gotten your info and make a decision as a leader is to move forward with it. Because people will get on the train. It's just how many of those people are gonna get on the train kicking and fighting." There were six superintendents who indicated not having sufficient and sustained funding to fully implement a district technology plan can also get in the way of

successful implementation. Three participants said their teaching and administrative staffs lack a good understanding about the capacity of technology usage to help improve student achievement; and three superintendents said district and school calendars and schedules do not allow enough time for mastery of technology usage. One superintendent indicated district-wide online security procedures and policies present barriers to implementation, while one participant identified rapidly changing technology as a barrier that some districts cannot financially keep up with. Another participant said a barrier to technology implementation is not being able to fully staff a technology department by including a Director of Technology or Technology Supervisor on the staff roster.

Actual technology leadership practices.

Relative to Argyris and Schön's (1974) "Theories-in-use" argument, the superintendents were asked about their actual technology leadership practices. Five superintendents said they regularly collaborate with other district stakeholders to execute their district technology plans. Three superintendents indicated they make focused decisions about implementation, particularly when a district technology committee is at an impasse regarding how to move forward with the district's technology plan. Four of the participants said they try to be model technology users so their staffs get used to seeing them using different technologies for communication and professional development. Three superintendents said they make sure they are the face of the district regarding technology implementation by being the first person to publicly present new ideas about the district technology plan or the deployment of new devices. For instance, Superintendent 5 indicated, "I'm a user. I definitely demonstrate use when I can so that it's sort of public. So they see that...so they see it. And, when I discuss technology plans or new initiatives, I'm the face of the district so that people know...." There was one superintendent for each of the following areas identified as actual technology leadership

practices engaged in by superintendents during implementation: (a) Admitting their own technology usage struggles and mistakes to other district stakeholders; (b) Giving technology usage directives to district administrators and staff members as a way to increase when and how they use technology; (c) Using the district's technology infrastructure for district communications to the school community; (d) Initiating ongoing, open, and current technology conversations with different stakeholder groups; (e) Researching about effective technology implementation practices across the country, and (f) Gathering feedback for analysis from staff, parents, students, and community members about what has worked in the district technology implementation plan and what could be improved.

Useful information for superintendents and other district stakeholders.

Exploring Argyris and Schön's (1974) theory about mental maps people use to guide their actions, behaviors, and mindsets during the change process, the participants were asked to describe information their district stakeholders might need to help improve technology implementation. Six superintendents said it would be helpful to have more internal and external information about how superintendents, principals, and teachers can be best supported during technology implementation. Four superintendents indicated they want to know more about national and regional technology implementation successes, while two participants said they want more research-based information about the benefits technology implementation might have on improved student learning. Two participants said it would help them to have more information about how to establish technology plan expectations for appropriate online behaviors and for technology usage during standardized testing. One superintendent wanted more information about the most recent, relevant, and current instructional uses for technology. One superintendent indicated it would be helpful to get regular and ongoing affirmation from district stakeholders about how well the technology implementation plan is being communicated out to

different stakeholder groups. One participant said having more information about how to develop a mechanism for the warehousing and filtering of information would assist with technology leadership. Two superintendents indicated there is already too much information being sent to district superintendents from too many different sources.

General Questions

The fourth set of three questions was to collect general information from the superintendents about their knowledge of national and international technology leadership standards and about how the standards inform their decisions and practices, recommendations they would make to other aspiring and practicing superintendents who are also responsible for providing district technology leadership, and suggestions they would give to boards of education, principals, and teachers regarding how each stakeholder group might assist with the district technology implementation process.

Knowledge about NETS.A and ISTE technology leadership standards.

Eight of the superintendents said that the NETS.A. and ISTE standards for technology leadership are the essential tenets of their district technology plans and the driving guidelines for technology integration in the curriculum. Two participants indicated that the standards are included on teachers' Professional Improvement Plans (PIPs), formative and summative evaluations, and national teaching accreditation plans. Three of the superintendents said the NETS.A. and ISTE standards were either not used or not used well in their district technology plans.

Recommendations for aspiring and practicing superintendents.

Considering Heifetz et. al's (2009) adaptive leadership theory, four superintendents recommended that aspiring and other practicing superintendents remain fully engaged and involved in the district technology implementation process. They also recommended that

superintendents as technology leaders remain understanding, empathetic, and positive throughout the process. Four participants suggested superintendents remain current and knowledgeable about effective uses for technology to improve student learning and student achievement. Three superintendents claimed it is essential for superintendents to understand the district's current student learning patterns and themes to help inform technology leadership decisions. Two participants recommended conducting regular needs assessments, while two superintendents recommended superintendents establish robust technology infrastructures in their districts. Three of the participants said it is critical for superintendents to develop strategic implementation plans, and three participants said superintendents must engage other district stakeholders in the process. Two superintendents indicated that aspiring and practicing superintendents need to develop and empower a cadre of district turnkey trainers to help sustain the district's technology implementation. One of the participants said it is important for superintendents to establish recruiting and hiring policies and practices that require newly hired staff to demonstrate technology literacy and proficiency. One other superintendent recommended superintendents regularly infuse technology in board meetings, professional development sessions, and faculty meetings. Two participants said it is imperative that superintendents consistently and systemically explain the why and how of the district's technology implementation plan. Two other superintendents indicated superintendents must work to fully understand district cultures and dynamics before and during technology implementation.

Advice for boards of education, principals and teachers.

In terms of Weick's (1982) claim that schools are loosely-coupled organizations, the majority of superintendents said if given the opportunity they would advise their boards of education, principals, and teachers about being technology implementation ambassadors and advocates within the district and in the school community at large. "To the Board of Education

members, I would ask them to air their concerns and those issues that they may have internally...be the cheerleaders...." shared Superintendent 8. There were 10 superintendents who identified being district technology ambassadors as the number one thing they would ask of their boards, principals, and teachers. Four participants indicated that they would advise stakeholders to engage in direct and consistent conversations with the superintendent about technology implementation so they superintendents always have current and relevant feedback about what is working and what is not working. Three superintendents would ask their boards, principals, and teachers to support the superintendent's technology leadership practices and innovations. Three of the participants said they would advise stakeholders, particularly their board members, about the difference between measurement metrics used in education versus measurement metrics that might be used in Corporate America settings.

Brief Summary of the Research Question Results

Research Question 1

What are superintendents' beliefs about barriers that can influence their district technology leadership practices?

The main purpose of the first research question was to gain an understanding about superintendents' beliefs about barriers that can impact their technology leadership practices. The responses from questions 3a, 3c and 4c of the focus group guiding question route pertain to Research Question 1.

Question 3a asked, "What barriers do you believe exist that can influence your technology leadership?" The overarching themes identified by the superintendents as the biggest barriers to their technology leadership were (a) resistance by district stakeholders and community members to changes to existing district cultures and mindsets that focused more on adults than on student learning and student achievement, and (b) not having enough money to

support and sustain effective technology implementation, deployment of current and relevant devices, and ongoing infrastructure upgrades. One of the participants said the largest barrier for an already high-performing school district is presented when stakeholders cling to traditional mindsets and say something like, "...we're already really good...why do we have to do something different?" One superintendent spoke of recently sustaining significant budget cuts due to a reduction in state aid, and having to eliminate over 20% of the district's administrative staff, including its Director of Technology.

Question 3c asked, "What information do you, your teachers, or your students need to help improve technology implementation in your district?" The recurring theme regarding information that the participants wanted to help improve their technology leadership pertains to superintendents being provided with only the most relevant, current, and applicable information about how they can successfully customize technology implementation for the demographic groups of students and teachers in their respective districts. The superintendents indicated that they wanted filtered information from departments of education and other sources that might affect a district's technology implementation, rather than receiving too much information at the superintendent's level about technology issues that do not impact the operation of their specific districts. One of the superintendents indicated wanting information about "how technology implementation improves what the district is doing to help students and to run school districts."

Question 4c asked, "If you were advising your board of education, principals, and teachers about how they could assist your efforts to provide effective technology leadership, what would you say to them?" The superintendents overwhelmingly stated they would advise boards of education, building principals, teachers, and staff to constantly be technology implementation ambassadors, advocates, and "champions" when they were out in the community talking about the district's technology implementation plan. The participants indicated that

board members and district staff members oftentimes have greater access to the ears of parents and community members, and that they would want their boards and staffs to air their concerns internally versus engaging in negative conversations about the district's technology implementation to the general public. One superintendent said,

> ...the teachers, the principals certainly get more face time with the parents than superintendents. You know, we do if we do something bad...don't get a lot of people at our board meetings. We do get information out to the public about it. But, certainly not like their teachers. So, they need to be the ambassadors and really buy into the technology initiatives and explain it in PTA meetings, and at Back-To-School nights...any opportunity that they get. The board really has to understand it, too. So, when they get stopped at the supermarket or in the street, or wherever; that they can explain it...be comfortable in...understand and be able to explain it, but direct people with questions to the right people in the district.

Research Question 2

What technology leadership practices do superintendents actually engage in?

The second research question was asked to better understand what district superintendents actually do when leading technology implementation in school districts. The responses from questions 2a, 2b, 2c, 3b, 4a and 4b of the focus group guiding question route pertain to Research Question 1.

Question 2a asked, "As a superintendent, what are the first things you did to lead the technology implementation process?" I observed that there was a pattern among the responses about first conducting needs assessments to determine current district needs for student learning, professional development, and infrastructure upgrades. One superintendent spoke about meeting

with the supervisors of math, science and instructional technology "...really just to learn what had been happening in the district."

Question 2b asked, "As a superintendent, what are the second things you did to lead the technology implementation process?" A recurring theme in response to the question regarding second-order approaches the superintendents used during technology implementation was about focusing on changing traditional district cultures and mindsets relative to professional development and effective uses of technology to a more constructivist culture and mindset about how to help improve teaching and learning through the use of technology. One of the participants said, "...it probably took the first 4 years of constantly reaffirming the traditionalists in all...constituent groups that the process was moving forward...was working...was having an impact...probably took about four years for culturally the district to shift...from...initial question of 'Why are we doing it?'...into a question of 'How can we do it better?'..."

Question 2c asked, "What systems or structures have you successfully changed in your district?" There was a pattern of responses that related to the superintendents deliberate and strategic attempts to make adaptive and sustainable changes to existing technology implementation systems within their districts. One of the participants spoke of changing "...the ability for staff to be professionally developed...sending out key...administrators...to... technology workshops to see what was going on out there...empowering those people..." with the technology knowledge and information needed for successful district implementation.

Question 3b asked, "What do you actually do to lead technology implementation and integration in your school district?" The study participants overwhelmingly responded about superintendents remaining actively engaged throughout the technology implementation process. This pattern was observed through discussions about regular collaboration with stakeholders,

being the lead voice and decision maker before and during planning and implementation, and being model technology users in the district. One of the superintendents said, "I'm a user...discuss technology plans or new initiatives...I'm the face of the district...the first person to explain...before handing to someone else to go into further detail..."

Question 4a asked, "How do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices?" A noted theme in response to this question was that most of the superintendents use the NETS.A. and ISTE standards to frame what goes into their district technology plans and into the technology curricula and evaluation tools. One of the participants said the standards are the "...four or five essential tenets...melded into...five-point statement...adopted by the board for the implementation of technology...." Another superintendent indicated that the standards are "...highlighted...in...3-year technology plan...within the teachers' PIPs...tied to the national teacher accreditation standards..."

Question 4b asked, "What recommendations would you give to other aspiring or practicing superintendents about how to provide effective technology leadership in a school district?" I observed a recurring pattern of responses about recommendations to aspiring and practicing superintendents to spend time asking lots of questions, learning about district cultures and dynamics, and remaining current in their knowledge about technology capacity. Also noted was a theme about making regular and concerted efforts to remain actively engaged in a district's technology implementation plan. One of the study participants said,

> ...be sure...understand the culture and dynamics of the district they're in...prior to implementing...be knowledgeable...how technology is currently used, where it should be used more often based on input...decisions...are...guided by the themes of the current students in the district and the community, coupled with what's needed for students to be successful as they move on....

Summary of the Results

The purpose of this study was to gain a better understanding of superintendents' beliefs about technology leadership barriers and about how superintendents actually engage in technology leadership practices. Qualitative research methodology was used to gain insight about the findings, which are presented in Chapter IV. Results from data that was collected and analyzed from the telephone focus group interviews and written response group's responses revealed common technology leadership barriers superintendents encounter. Those barriers were (a) resistance by district stakeholders and community members (b) inadequate funding for technology devices, and ongoing infrastructure upgrades, (c) outdated or too much technology information, and (d) lack of implementation support and advocacy from boards of education, building principals, teachers, and staff members.

In terms of how superintendents actually engage in technology leadership practices, the following themes were observed in the findings: (a) superintendents conduct needs assessments to help inform decisions about district technology plans, professional development needs, and necessary infrastructure upgrades, (b) superintendents place a lot of emphasis on changing traditional district cultures and mindsets to them more student-centered and relevant to how 21st century students learn, (c) superintendents collaborate with other stakeholders to develop strategic district technology plans, (d) superintendents try to be regular users of technology, (e) superintendents rely on the NETS.A and ISTE technology standards to provide a foundational framework for technology plans and curricular development, and (f) superintendents take time to learn about and understand their district culture and dynamics before pushing forward technology implementation plans.

Chapter V includes: (a) an analysis of the research findings, (b) a summary of the telephone focus group interview responses and written response group's responses, (c)

conclusions that might be drawn from the study, and (d) implications for policy and practice; and recommendations for future research.

Chapter V

ANALYSIS, SUMMARY, CONCLUSIONS, STUDY LIMITATIONS, RECOMMENDATIONS, AUTHOR COMMENTARY

Introduction

The purpose of this study was to gain a better understanding of superintendents' beliefs about technology leadership barriers and about how superintendents actually engage in technology leadership practices. Data were collected through telephone focus group interviews and through written responses to a prescribed focus group guiding question route that consisted of 12 questions.

Dr. Stephen Thomas Wisniewski's (2010), doctoral dissertation entitled *Principals' Perceptions of Strategies for Offsetting the Barriers to Technology Integration in Elementary Schools in New Jersey* provided the backdrop for the current study. Wisniewski (2010) used a quantitative approach in the form of a paper and pencil survey to investigate principals' perceptions about technology implementation barriers, and he borrowed the independent variables from research conducted by Hew and Brush (2007): (a) lack of professional development, (b) access to technology, and (c) time for mastery. Wisniewski (2010) used a tool called the *Principal Survey*, which consisted of 25 questions assembled to gather descriptive data and designed eight original survey questions borrowed from 17 survey questions from *The Use, Support, and Effect of Instructional Technology Study (USEIT, 2004)*.

The adaptive leadership theory (Heifetz et. al, 2009) regarding the first-order and second-order change processes (Argyris & Schön, 1974; Fullan, 2001; Marzano & Waters, 2009) was

the conceptual framework that supported the findings of this study about superintendents' beliefs about barriers that can influence their technology leadership practices, and how superintendents actually engage in technology leadership practices. Karl Weick (1982) provided further support for the idea that during adaptive changes in educational organizations superintendents might lead technology implementation initiatives more effectively if they recognize the "loosely coupled" nature of school districts that are comprised of independently functioning and independently thinking individuals who might represent very different mindsets within a school system they have in common.

Also supporting the current research is the work of Hattie (2012) in terms of superintendents needing to be learning leaders during the first-order and second-order change processes. Barber (2008) and Hattie (2012) provided substance to the argument that during implementation superintendents should focus on the "deliverology" (Barber, 2008) of implementation. Senge's (1990) research regarding how organizational systems learn gave strength to the claim that systemic learning is not always neat, orderly, or timely; so the learning must be carefully massaged by a learning leader (Hattie, 2012) who knows how to expand his or her own learning as well as the learning of others within a school system. Argyris and Schön (1974) provided foundational support to the idea that the mental maps people have "with regard to how to act in situations" require attention from the superintendent trying to change traditional mindsets before and during technology implementation. Argyris and Schön's (1974) theories of action relative to incremental first-order changes that might reflect what people espouse they believe and do during technology implementation, versus sustainable second-order changes that might reflect what people actually believe and do during implementation; lends support to beliefs superintendents said they have about barriers they might encounter during different phases of technology implementation.

Two research questions were asked in this study: (a) What are superintendents' beliefs about barriers that can influence their district technology leadership practices? and (b) How do superintendents actually engage in technology leadership practices? Data were collected through telephone focus group interviews and through written responses provided by superintendents. The data were analyzed to look for common themes, patterns, and trends among participant responses.

Chapter I of this study includes an introduction to the issue being studied: Superintendents' beliefs about barriers that can influence their district technology leadership practices and how superintendents actually engage in technology leadership practices. Chapter II contains a review of relevant and pertinent literature about district leaders' technology leadership practices and barriers that might impact those practices. Chapter III contains a description of the research methodology used in this study to collect, transcribe, and analyze data collected through telephone focus group interviews and through written responses to the focus group guiding question route. Chapter IV presents the research findings and a brief summary of the research question results. Chapter V provides an analysis, summary, conclusions, and recommendations for policy, practice, and future research.

Analysis of the Qualitative Research

I collected and analyzed data from three telephone focus group discussions and from one written response group of superintendents to gain an understanding about superintendents' beliefs regarding barriers that can influence their district technology leadership practices. A prescribed and guiding question route consisting of 12 questions was used to gather data, which were transcribed for analysis and observation of recurring themes and patterns. The following repeated themes emerged from this research: (a) resistance by district stakeholders and community members to changes to existing district cultures and mindsets that focused more on

adults than on student learning and student achievement can present obstacles to a superintendent's technology leadership practices, (b) superintendents sometimes do not have enough district money to support and sustain effective technology implementation, deployment of current and relevant devices, and ongoing infrastructure upgrades, (c) superintendents want technology information that is current, relevant, and applicable for implementation successes in their specific school districts, (d) superintendents would advise boards of education, building principals, teachers, and staff members to constantly be positive technology implementation ambassadors, advocates, and "champions" when talking to community members and parents about the district's technology implementation plan, (e) conducting initial and ongoing needs assessments are critical as a first step in helping superintendents make informed decisions about district technology plans, professional development needs, and necessary infrastructure upgrades, (f) placing effort and energy on changing traditional district cultures and mindsets about professional development and about effective classroom uses for technology to more constructivist models is an essential second step during technology implementation, (g) the need for superintendents to strategically and deliberately map out a district's technology implementation, (h) superintendents must be regular technology users who remain actively engaged and at the forefront throughout the implementation process, (i) the NETS.A and ISTE technology standards provide a basic framework for the development of district technology plans and curricular development, and (j) superintendents recommend that before and during implementation, aspiring and practicing superintendents constantly carve out time to learn about and understand a district's culture, dynamics relative to technology implementation.

Summary of the Research

Research Question 1

The first research question asked, "What are superintendents' beliefs about barriers that can influence their district technology leadership practices?" Chapter II discussed Houston's (2001) claim that district superintendents are expected to provide transformative technology leadership that creates student learning focused district cultures. There was also discussion about Ausband's (2006) suggestion that there are technology integration barriers at the district level that can influence a superintendent's technology leadership practices and behaviors. Hew and Brush's (2007) research (cited in Chapter II) named six overall technology implementation barrier categories the researchers broke into subsets: (a) resources, (b) knowledge and skills, (c) institutional factors, (d) attitudes and beliefs, (e) assessment, and (f) subject culture. The most frequently occurring barrier identified in Hew and Brush's (2007) research was lack of access to financial and technology resources. This study's results included six of the eleven participants indicating that a lack of sufficient and sustained funding is a major barrier to their technology leadership practices. The findings of this study also revealed that six superintendents believe traditional 20th century and outdated mindsets and district cultures can present obstacles before and during the technology implementation process. The two main technology implementation barriers identified in this study, (a) lack of resources, and (b) outdated mindsets and district cultures; are reflected in some of the literature that was reviewed in Chapter II and in the research findings in Chapter IV. For example, Hew and Brush (2007) reviewed 48 empirical studies dating between 1995 and 2006 and discovered 123 barriers that K-12 technology leaders might encounter. Hew and Brush (2007) grouped the barriers into six categories and listed them in order of relative frequency: (a) resources (b) knowledge and skills (c) institutional factors (d) attitudes and beliefs (e) assessment, and (f) subject culture.

Research Question 2

The second research question asked, "What technology leadership practices do superintendents actually engage in?" The findings from the current research are congruent with the literature about organizational learning, and first-order and second-order change processes reviewed in Chapter II of the study. For example, Hattie's (2012) argument that a leader's own learning during the change process can influence the learning of others within the organization, and Senge's (1990) claim that organizational learning is impacted by a leader's learning, support the idea that what superintendents believe and do during technology implementation provides the framework for the beliefs and actions of other stakeholders. Further, the adaptive leadership theory (Heifetz et al., 2009) (discussed in Chapter II) provided a scaffold for the notion that first-order and second-order change processes (Argyris & Schön, 1974; Fullan, 2001; Marzano & Waters, 2009) during district technology implementation can be influenced by both barriers to implementation, and by how a superintendent actually engages in technology leadership practices. Karl Weick (1982) gave additional support to the idea that during adaptive change processes within loosely-coupled educational organizations, superintendents might effectively lead technology implementation initiatives if they allow the loosely-coupled nature of the system to foster opportunities for capacity building and collaboration.

The findings of this study identified the following ways in which the participating superintendents actually engage in technology leadership practices: (a) Superintendents conduct needs assessments to help inform decisions about district technology plans, professional development needs, and necessary infrastructure upgrades, (b) Superintendents work on changing traditional district cultures and mindsets to develop more student-centered 21st century thinking about teaching and learning, (c) Superintendents collaborate with other stakeholders to develop strategic district technology plans, (d) Superintendents try to be regular users of

technology, (e) Superintendents rely on the NETS.A and ISTE technology standards to provide a foundational framework for technology plans and curricular development, and (f) Superintendents take time to learn about and understand their district culture and dynamics before pushing forward technology implementation plans.

McCampbell (2001) claimed that what district leaders do or do not do during technology implementation can either yield or hinder "optimal benefits for students." The data collected in this study support that idea and show the majority of superintendents strategically engage in deliberate first-order change and second-order change (Fullan, 2001; Marzano & Waters, 2009) technology leadership actions to help them (a) shift district cultures, mindsets, and technology practices onto a focus on student learning and student achievement, (b) improve and increase offerings of technology-focused professional development for administrators and teachers, and (c) make informed decisions about necessary infrastructure upgrades.

Participants in this study indicated the importance of superintendents regularly engaging in visible and relevant use of and research about diverse technology systems for professional development, district communications, and student learning so other district stakeholders and community members are accustomed to seeing the superintendent play an integral role in the technology implementation process. The superintendents overwhelmingly spoke of conducting ongoing needs assessments before and during implementation, so they can constantly collect data and feedback for evaluation of the effectiveness of technology initiatives. The notion of superintendents being engaged participants in a district's technology implementation process is also supported by Lim and Khine's (2006) research about the need for district superintendents to remain an active part of the technology implementation process and hold principals and teachers accountable. Puentedura's (2006) research (discussed in Chapter II) provided empirical evidence about the essential role district superintendents play during different

phases of technology implementation. As Puentedura (2006) and the Maine Department of Education rolled out the nation's first major one-to-one technology learning and teaching initiative, Dr. Puentedura provided Maine's superintendents and principals with ongoing technology training as one way to keep them engaged throughout the process. The literature about the superintendents' key role in the success of the Maine Learning Technologies Initiative (MLTI) is aligned with the findings of this study.

Conclusions

This study was conducted to help us understand superintendents' beliefs about barriers that can influence their district technology leadership, and about how superintendents actually engage in technology leadership practices in terms of Heifetz, Grashow and Linsky's (2009) adaptive leadership theory. According to the adaptive leadership conceptual framework, there are multiple phases embedded in the adaptive leadership systemic change process: (a) Adaptive leadership is specifically about change that enables the capacity to thrive, (b) Successful adaptive changes build on the past rather than jettison it, (c) Organizational adaptation occurs through experimentation, (d) Adaptation relies on diversity, (e) New adaptations significantly displace, reregulate, and rearrange some old DNA, (f) Adaptation takes time, (g) Distinguishing technical problems and adaptive challenges, and (h) Distinguishing leadership from authority (Heifetz et al., 2009) . The theory's authors suggest organizational leaders need to lead constituents through adaptive changes if they want to achieve relevant, effective, and sustainable change within organizations.

Eleven current New Jersey superintendents volunteered to participate in this study. The participants were interviewed through telephone focus group discussions or through a written response format, based on their preferred option for participation. The same focus group guiding question route, consisting of 12 prescribed questions, was used for the telephone focus groups

and for the written response group. Two research questions provided the backdrop for the study: (a) What are superintendents' beliefs about barriers that can influence their district technology leadership practices? (b) How do superintendents actually engage in technology leadership practices? Qualitative procedures were used to analyze data collected from the telephone interviews and from the written responses. Overall, the 11 superintendents described how they deal with barriers to their district technology leadership and their actual technology leadership practices through adaptive leadership lenses that take first-order and second-order change processes and implications into account.

In terms of adaptive leadership focusing on change processes that build capacity and sustainability (Heifetz et al., 2009), the superintendents in this study agreed strategic second-order changes to traditional and out-of-date district cultures and mindsets must be led by them in order to achieve effective and lasting technology implementation. I observed superintendents in this study recognize there might be barriers that can influence their technology leadership practices, however; the superintendents shared that they make deliberate efforts to actively engage and empower themselves and other stakeholders throughout the technology implementation process. The participants described conducting ongoing needs assessments and leading systemic professional development efforts throughout deployment of district technology plans. Data collected from needs assessments assist the superintendents in their final decision making about relevant technology-driven professional development to help improve student achievement and student technology literacy. The superintendents in this study agreed that by responding to targeted professional development needs in the area of technology implementation, they (the superintendents) increase the learning of other stakeholders in a way that helps them shift their thinking about how 21st century students learn; and about the best instructional and building leadership practices to improve student learning.

Relative to successful adaptive changes building on the past rather than jettisoning it (Heifetz et al., 2009), I determined that the majority of participants attempted to bridge elements of previous technology plans and implementation practices within their districts with their current visions for technology implementation. It was revealed in the study that the superintendents asked lots of questions, surveyed stakeholder groups, and regularly met with different constituent groups to learn about what had already been done in their districts; and about what district stakeholders want to see happening regarding technology implementation initiatives. Concerning organizational adaptation occurring through experimentation, the superintendents agreed about the importance of developing what one participant labeled, "a flexible technology plan." The participants all described providing leadership based on district technology plans, however, they also spoke of conducting ongoing needs assessments throughout implementation to ensure currency and sustainability of the plans.

In dealing with adaptation relying on diversity (Heifetz et al., 2009), the superintendents explained their engagement of other stakeholders in collegial conversations that provide information about what is working and where improvement is needed in district technology plans. The majority of participants agreed that it is essential for superintendents to develop technology committees or cadres of technology leaders who will help them periodically re-develop technology plans to keep them fluid and relevant.

Based on new adaptations significantly displacing, reregulating, and rearranging some old DNA (Heifetz et al., 2009), one superintendent described the need for superintendents to be empathetic and understanding that systemic change can cause high levels of anxiety for some people, therefore, a portion of stakeholders will "get on the train kicking and fighting." The superintendents agreed that they must still make hard decisions about technology implementation based on what is best for their students, despite knowing there might be pockets of staff and

community members who oppose and try to sabotage plans for technology implementation. The participants overwhelming agreed that if given the opportunity, superintendents would advise their boards of education, principals, teachers, and staff members to be technology implementation ambassadors when publicly discussing a district's technology plan.

With regard to adaptation taking time (Heifetz et al., 2009), the participants agreed that the process of changing old mindsets, cultures, and practices relative to technology implementation takes time. One superintendent described it taking about 4 years of "constantly reaffirming the traditionalists in all...constituent groups...for culturally the district to shift...." The majority of superintendents described the importance of superintendents taking time to learn and understand the history, culture, and dynamics of their school districts before deploying technology plans.

Concerning the distinction between technical problems and adaptive challenges (Argyris & Schön, 1974; Heifetz et al., 2009; Hew & Brush, 2007; Marzano & Waters, 2009), all of the superintendents described the first and second things they did to lead technology implementation within their districts. The majority of superintendents described first-order steps that included conducting needs assessments, enhancing professional development, and approving infrastructure upgrades. I observed descriptions of second-order changes that focused on changing traditional district cultures and mindsets about professional development and student learning; and about effective classroom uses of technology.

In the matter of distinguishing leadership from authority (Heifetz et al., 2009), the majority of superintendents described developing committees, teams, and cadres of technology leaders; which two superintendents described as "champions" and "technology turnkey trainers." The superintendents agreed that they must be model and regular users of technology, and that they should be able to explain elements of the technology plan to different stakeholders. The

majority of participants explained that superintendents should be actively engaged in the implementation process, but should surround themselves with teams of technology experts in the district who can facilitate deeper conversations and professional development sessions in the area of technology. The literature base in Chapter II suggested that superintendents might encounter first-order and second-order barriers to their district technology implementation (Hew & Brush, 2007; Puentedura, 2006; Wisniewski, 2010). In general, the 11 superintendents who participated in this study understand and recognize potential technology leadership barriers, yet they manage to successfully provide relevant and effective technology leadership in their districts. Two major barriers identified through the literature review in Chapter II, and observed through data collected in this study are: (a) traditional and outdated district cultures and mindsets about best practices for 21st century teaching, leading, and learning, and (b) lack of sufficient district financial and technology resources to sustain technology plans. The superintendents who participated in this study explained actual technology leadership practices they engage in that help them overshadow and work beyond barriers to technology implementation in their districts. Those practices are discussed in detail in Chapter IV.

Study Limitations and Possible Impact on the Results

Regarding the sample size of 11 New Jersey superintendents who volunteered to participate out of almost 600 superintendents invited to participate in this study, it is possible that the study's recurring themes and patterns do not reflect beliefs other New Jersey superintendents have about technology leadership barriers, or about how superintendents actually engage in technology leadership practices. Hurricane Sandy and its aftermath in the Northeast section of the country during the months of October to November of 2012, and the November 2012 Nor'Easter storm could potentially have limited the number of New Jersey superintendents who were available to participate in and provide data for analysis in this study. There were six

superintendents in this study with less than 5 years of service as district superintendents. It is possible their beliefs and opinions about 21st century technology leadership were more aligned with current technology standards and best practices. It is also possible those less veteran superintendents dominated discussions and written responses about technology leadership barriers and actual practices. Finally, it is possible researcher bias influenced the data collection, interpretation, and analysis in terms of the researcher's technology proficiency, technology literacy, and multi-platform technology system capacity.

Recommendations for Policy, Practice and Future Research

Recommendations for Policy

Hinged upon the results and conclusions of this research, the following recommendations are made for policy:

1. Policy makers should facilitate annual assessments, evaluations, and modifications to the NETS.A and ISTE technology standards to assist district superintendents in their efforts to remain current and fluid in 21st century technology leadership practices.
2. Policy makers should establish and deliberately communicate out a framework of technology implementation guidelines and regulations with benchmark timelines for local boards of education and school district personnel.
3. Policy makers need to increase federal and state funding allotments provided to school districts for 21st century technology-driven leadership, instruction, and learning.
4. Policy makers must include district superintendents in adaptive change processes and conversations about goal setting and action planning for effective district technology implementation.
5. Policy makers need to support superintendents' technology leadership by developing a new state-wide technology observation and evaluation model for teachers and principals.

Recommendations for Practice

Based on the results and conclusions of this research, the following recommendations are made for practice:

1. Superintendents must aggressively research, apply for, and pursue technology education grants and funding based on their current student learning needs.
2. Superintendents should be the primary faces and voices of district technology implementation plans as a way to ensure their active engagement in the process.
3. Superintendents should work with their boards of education, principals, and teachers to develop ongoing and relevant quarterly or monthly internal needs assessment mechanisms for data collection and analysis, and for technology implementation goal setting.
4. Superintendents should engage in monthly or quarterly focus group discussions about technology leadership barriers and actual practices with other regional and national superintendents. Those structured discussions about leading stakeholders through first-order and second-order paradigm shifts should be framed in the adaptive leadership theory (Heifetz et al., 2009).

Recommendations for Future Research

Connected with the results and conclusions of this research, the following areas are recommended for future research:

1. Three telephone focus group interviews of six participants, and written responses provided by five participants made up the 11 total New Jersey district superintendents who provided data for analysis in this study. It is recommended that additional focus group interviews be conducted to provide data from a larger sampling regarding superintendents' beliefs about technology leadership barriers and actual practices.

2. It is recommended that focus group interviews of boards of education and department of education members be conducted to help understand their beliefs about factors that might influence the roles they play in a district's technology implementation.
3. It is recommended that a quantitative research study with a survey instrument be conducted to include a mixed methods approach to collecting data for analysis about superintendents' beliefs about technology leadership barriers and actual practices superintendents engage in.

Author Commentary

The purpose of this study was to gain a better understanding regarding superintendents' beliefs about barriers that can influence their district technology leadership and about how superintendents actually engage in technology leadership practices. Heifetz et al.'s (2009) adaptive leadership theory was the conceptual basis for the research, and it provided a framework for analyzing a superintendent's district technology leadership barriers and practices. The reviewed literature revealed that organizational leaders can expect to encounter barriers to first-order and second-order changes during implementation initiatives. However, senior leaders -- such as district superintendents -- must exercise consistent resiliency by engaging in best practices that can aid others to continue learning about how to adapt to organizational changes that are relevant and sustainable. Data from this research show that some New Jersey district superintendents agree there can be barriers that influence their district technology leadership practices, however, the superintendents are strategically engaging in collaborative efforts to overcome first-order and second-order change obstacles during implementation. These results differ from those of previous research that suggested superintendents lack the technological and technical knowledge, expertise, and savvy needed to make educationally sound decisions about technology equipment, software purchases, and 21st century digital infrastructure upgrades which might influence student learning and student achievement (Cuban, Kirkpatrick, & Peck, 2001).

It is recommended that state and federal policy makers include district superintendents in conversations about 21st century technology leadership standards superintendents are expected to follow and implement at the local educational agency (LEA) level. It appears from this study that district superintendents understand there might be a possible connection between a district's

technology implementation initiatives and 21st century student learning and college and career readiness. The superintendents who participated in this study echoed a sentiment of wanting additional opportunities to share their beliefs about barriers that can influence their technology leadership practices, and their beliefs about how superintendents actually engage in technology leadership practices.

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Appendix A: Letter of Solicitation

November 16, 2012

Dear Superintendent of Schools:

My name is Sharon Biggs and I am completing a doctoral dissertation in Educational Leadership through Seton Hall University's two-year Executive Ed.D. Program.

The title of my research is "*Superintendents' Beliefs about Barriers That Influence Their District Technology Leadership Practices.*" The purpose of my research is to understand the perspective of a district superintendent regarding his/her beliefs about barriers that might influence district technology leadership practices.

I would like to have 15 superintendents volunteer to participate in my study. I will conduct three separate focus group interviews with five superintendents in each group between the months of November 2012 and December 2012, and participation will not interfere with Thanksgiving Break or Winter Break. If an interview is not convenient for you, you may email me written responses to the questions at sharon.biggs@student.shu.edu.

The focus group interviews will last approximately 45 minutes via telephone conference calls. I will also take notes with a LiveScribe Smartpen during each of the sessions, and the LiveScribe Smartpen will audio-record the conversations.

The identity of the participants will not be revealed by me at any time.

If you are interested in participating in my study, please email me at sharon.biggs@student.shu.edu and I will contact you with more information. Thank you.

Sincerely,
Sharon M. Biggs
Sharon M. Biggs
SHU Doctoral Candidate

Appendix B: Informed Consent Agreement Form

SETON HALL UNIVERSITY
1 8 5 6

Informed Consent Form

1. **Researcher's Affiliation:**
Sharon M. Biggs is a doctoral student at Seton Hall University, enrolled in the Ed.D. Executive Educational Leadership Cohort Program.

2. **Purpose of the Study:**
The title of the dissertation is "*Superintendents' Beliefs about Barriers That Influence Their District Technology Leadership Practices.*" The purpose of the research is to gain a better understanding about 1) beliefs superintendents have about barriers that can influence their district technology leadership, and (2) the actual technology leadership practices superintendents engage in.

3. **Procedures:**
The researcher will conduct three separate focus group interviews with five superintendents in each group between the months of November 2012 and December 2012. Participation by the 15 volunteer superintendents will not interfere with Thanksgiving Break or Winter Break. The interviews will last approximately 45 minutes via telephone conference calls. The researcher will arrange for the set-up and scheduling of the conference calls ahead of time. The participants will be emailed the questions prior to the focus group discussions. A LiveScribe Smartpen will audio record the participant responses during the telephone discussions. The researcher will also take notes with the LiveScribe Smartpen during each of the sessions. If any participants are unavailable to participate in one of the telephone focus group interviews, he/she will have the option of responding to the guiding questions in written format. The participant will be able to email the responses to the researcher.

4. **Study Instruments:**
Data will be collected from the participants via a predetermined question route that consists of three (3) demographic questions and nine (9) additional open-ended questions. The questions were written by the researcher to solicit responses regarding superintendents' beliefs about their technology leadership role in school districts. The questions will serve to promote conversation among the participants. Here are examples of four of the focus group questions and four of the demographic questions:

Focus Group Question Examples:

1. How long have you served as a district superintendent in New Jersey?
2. As a superintendent, what are the first things you did to lead the technology implementation process?
3. What barriers do you believe exist that can influence your technology leadership?
4. What do you actually do to lead technology implementation and integration in your school district?

Demographic Question Examples:

1. Gender
2. Race/Ethnicity
3. Age Range
4. District Factor Group

5. **Voluntary Nature of the Project:**
Participation in this research is voluntary. You may opt to refuse participation or discontinue participation at any time with no penalty.

6. **Anonymity:**
There is no anonymity in the study. The identity of the participants will not be revealed by the researcher at any time. No names will be used during the discussion or in the transcripts. No reference to the names of the participants or the school districts represented will be part of the dissertation when the data is analyzed.

7. **Confidentiality:**
All data collected by the researcher will be kept confidential by the researcher. Confidentiality cannot be controlled with others due to the nature of telephone focus group interviews.

8. **Security of Stored Data:**
The audio recordings and notes will be transcribed into written format for the data analysis. All data will be stored on a portable hard drive (USB memory drive), and will remain in the possession of the researcher in a secured place. The recordings and notes will be destroyed after three years. No one other than the researcher and the dissertation committee will have access to the actual recorded data.

9. **Risks:**
There are no risks associated with this research.

10. **Benefits:**
The potential benefit of participation in this research study is that it will add to a current limited body of literature and knowledge about the technology leadership role of the superintendent from the superintendent's perspective. Participation in the study has the potential to provide data that will help broaden the knowledge base about expectations for a superintendent's technology leadership.

Signature

11. Remuneration:
There are no monetary benefits or remuneration of any kind for participating in this study.

12. Contact Information:
The researcher may be contacted for further information, answers to pertinent questions, or for information about research participants' rights by contacting the researcher at the following:

Sharon M. Biggs (c/o Dr. James Caulfield), Seton Hall University/Executive Ed.D. Educational Leadership Program Cohort XV, 400 South Orange Avenue, South Orange, NJ 07079; Email: sharon.biggs@student.shu.edu.

Faculty Advisor: Dr. Anthony Colella, Seton Hall University, 400 South Orange Avenue, South Orange, NJ 07079; Email: AJColella@iCloud.com.

Institutional Review Board (IRB): Dr. Mary F. Ruzicka, Seton Hall University, 400 South Orange Avenue, South Orange, NJ 07079; (973) 313-6314 or irb@shu.edu.

13. Permission to use LiveScribe Smartpen Recorder:
A LiveScribe Smartpen audio recorder will be used to audio record the discussions during each of the 45-minute focus group telephone interviews to enable the researcher to transcribe and analyze the data at a later date. Participants have the right to review any portion of the audio recordings and request that it be destroyed. The participants' names will not be used anywhere during the interview. The audiotaped recordings and written transcripts will be stored on a portable hard drive (USB drive) in a secured space. The data will be included in the dissertation without personal or school district reference. All data will be destroyed after three years.

14. Acknowledgement of Informed Consent Form:
I have carefully read all of the Informed Consent Form material and agree to participate in the research study. I acknowledge that I received a copy of the Informed Consent Agreement.

_____ _____
Printed Name Date

_____
Signature

Expiration Date
OCT 18 2013

Seton Hall University
Institutional Review Board

OCT 18 2012

Approval Date

Appendix C: Script for Opening and Closing Focus Group Interviews

Opening: Thanks for participating in my dissertation study. For about 45 minutes we will engage in a focus group conversation to help us better understand superintendents' beliefs about barriers that can influence their technology leadership practices. Today's discussion will also help us understand what superintendents actually do to lead technology implementation in their districts. As a reminder, I will ask three background questions and nine open-ended questions. After the data are analyzed, a summary of the findings will be sent to all of the participants involved in this research. Please feel welcome to respond freely and informally to all of the questions. Now, let's begin.

Closing: As we conclude today's conversation, please know you are welcome to email me any additional comments or statements you might want included in the discussion by December 11, 2012. It's been a pleasure working with you. Enjoy the holidays.

Appendix D: Transcripts of Focus Group Interviews and Written Responses

Group 1: Telephone Conference Focus Group

TRANSCRIPT of Group Responses

Telephone Focus Group 1

Saturday, December 8, 2012

8:30 a.m. – 9:15 a.m.

Participants: Supt 1 and Supt 4

Supt 2 – Requested written response format due to having the flu

Supt 3 – No Show

Question 1a

Researcher: How long have you been a district superintendent in New Jersey?

Supt 1: 12 years

Supt 4: 1 year

Question 1b

Researcher: What is the District Factor Group (DFG) of your school district?

Supt 1: I

Supt 4: I

Question 1c

Researcher: Is your current district suburban, urban, or rural?

Supt 1: Suburban

Supt 4: Rural

Question 2a

Researcher: As a superintendent, what are the first things you did to lead the technology implementation process?

Supt 4: When I came into the position, we had just started our two-year technology plan; and, we conducted a needs' assessment. And, we actually had a group or cadre of individuals including administrators, teachers, and community members to develop that survey; and then helped us to create the actual plan. That included looking at purchases, looking at teachers' level of understanding of how to use the technology instructionally; and then assessments throughout to see if technology had a positive impact on day-to-day instruction.

Supt 1: When I came to the district, they had committed philosophically to an aggressive technology adoption program. And, the first order of business for me, since some of the heavy lifting had been done already; was to design an implementation strategy for the deployment of devices, and the creation of a sustainable professional development model to allow the process to have some chance of success.

Question 2b

Researcher: As a superintendent, what are the second things you did to lead the process of technology implementation?

AND

Question 2c

Researcher: What systems or structures have you successfully changed in your district?

Supt 4: The second process was again, looking at the standards for teachers in their professional development. Especially in light of the new evaluation tool that we have here in New Jersey. So, I will answer the second and third questions. In this case, we looked at the technology. We looked at the instrument that was developed for our district, to determine if teachers were receiving training; and to see if we were using technology in order to fulfill that requirement. At the same time, we looked at the teachers in the district and looked at our whole strategic plan.

And, a big part of that is how technology is the driver of the instructional vehicle we're using in order to reach our goals.

Supt 1: The second thing I did was to put my head down and wonder what in God's name I had gotten myself into (LAUGHTER in the group). But, on a more serious note; the second thing was to set about some initiatives to try to change the traditional culture that existed, and to some degree still exists in pockets in the district. So that they would...they meaning all of the stakeholders, not just teachers and the administrators; but the community, to at least give the opportunity...give the chance for the promise of technology to impact student learning and student achievement to a degree; and to at least allow the process to go on. Now, I've been in the current position for seven years; and it probably took the first four years of constantly reaffirming the traditionalists in all of those constituent groups that the process was moving forward. It was working. It was having an impact. And, it took probably about four years for culturally the district to shift where we got away from the initial question of "Why are we doing it? Why are we doing it? Why are we doing it?" into a question of "How can we do it better?"

Researcher: We'll segue right now into the 3a question.

Question 3a

Researcher: What barriers do you believe exist that can influence your technology leadership?

Supt 1: Well, again, just to continue that thought. The biggest barrier was the fact that in the district that I am serving, we were and continue to be a high-performing school district. And, the largest barrier was to get people to say: "Look, we're already really good. Why do we have to do something different?" to continue the success that we have. It took, as I said, a long time for people to get over the fact that we couldn't just rest, if you will, on the traditional approaches that we had taken successfully.

Supt 4: As far as the barriers that I have encountered are sort of the same thing; but, more of how we actually use the technology. We're still working on that, where technology is not perceived as something we do every day. That technology is just our way of life, like using the telephone or using the computer. We're just beginning to glean that in. And, that has been one of the difficult conversations that a lot of times all the stakeholders would like to just focus just on the technology. But, not put as much focus on not on the overall goal of where we want to be as an "I" district. And, because we are a rural district, unfortunately that's small' there's that financial piece that is a big barrier, too. So, that's probably one of the biggest influences as far as the day-to-day; how can we maintain our level of success; as well as how we're continuing to move forward.

Question 3b

Researcher: You've both touched on this somewhat already, but even more specifically; what do you actually do to lead technology implementation and integration in your school districts?

Supt 4: I try to model that every day. Between the use of my iPad for teacher evaluations, but more importantly, recently we have a Twitter account. And, I try to make an effort every day to send at least one tweet out to the community to just let them know exactly what is happening in our schools. And, what are some of the success stories. You know, what are some of the good things that are happening? We also still do the weekly newsletter using our website. But, one of the things I had found, especially with our population; it's a very young parent population. When I say young, you know, late 30s early 40s; that is one of the vehicles that they use as far as staying in contact with their children, but also with the schools. So, that's one of things that I try to make sure that I model, and that it's just part of what we do at our school district.

Supt 1: I would affirm that same statement about modeling. And, sometimes if we get to the point where I would have to direct people to communicate using our technology for the

submission of forms or submission of data, analysis of data in a format that we could share easily and manipulate; you know, some of my administrative staff was also very traditional. And, everything had to be done on paper. I would also, while we're somewhat more limited in our Twitter; but we do have that; but, I utilize the infrastructure that we have to communicate with our staff and with our community. And, I also do some pretty basic stuff. Such as when professional development is taking place I will attend the meetings. I will affirm why we're doing it over and over again. And, if you will, try to make sure that the participants know that I am committed to it. That I see value to it. And, that I'm willing to devote my time to supporting them in their efforts.

Question 3c

Researcher: What information do you, your teachers, principals, or students need to help improve technology implementation in your districts?

Supt 4: I think that just the constant reminder that technology is just part of the fabric of school again. When I way that, I look to the benefits of blended learning in the classroom. And, reminding ourselves that what our role is as educators is also to constantly remember that times are changing, and the way students learn has changed. And, not only that teachers need that support and understanding; but that superintendents need to have that support and understanding. And, that will be. And, these are the things that we need in order to make sure that we're going to have successful...you know, that we're going to help our students achieve success...you know, as they graduate from high school and go on to secondary school. And, that's one of the things I think is problematic. We don't have superintendents in the leadership that is proactive and looking at all the opportunities, and sharing that with your staff. A lot of times you might have...there might be information that is available to the superintendent, but if we're not sharing it with the overall staff that can be prohibitive to our efforts to move forward, or vice versa. So, I

think always leaving the lines of communication open. And, also making sure that all our stakeholders, whether or not, community members have students in the district or not; that making sure that the school is part of that...that we truly are a learning community regardless of what your role is in the community.

Supt 1: I would again affirm everything said by Supt #4. But, I would also emphasize, if you will, that one of the drawbacks, if you will, of the technology that we have is the flood of information that we have access to. Including, you know, data about students. The information that keeps coming down from the State Department of Ed, the federal level, you know; and all the other constituent groups that are out there that are engaged in this process. And, what I have been struggling with is trying to provide some mechanism; and, this is what I would like to see information about; some mechanism for organizing the data, organizing the flow of information into a simpler format so that people are not spending time bleeding through what is irrelevant in order to focus in on what will be of consequence, what is important, what can help us do our jobs better.

Question 4b

Researcher: Okay. And, then I'm gonna switch the order of the last three questions because the conversation is already leading me to the question: What recommendations would you give to other aspiring or practicing superintendents about how to provide effective technology leadership in a school district?

Supt 1: Again, I think some of the elements that we've already touched on are key and essential. The needs' assessment that Supt #4 described is vital for a superintendent to then work with some committed staff to create an implementation strategy for not only the infrastructure; which I have to stress is vital. A robust infrastructure is absolutely essential for any implementation. Because the easiest excuse that someone can come up with for not utilizing what is available is,

"It doesn't work." So, creating a robust infrastructure is important. That doesn't necessarily require, you know, everybody involved. You need some committed people who are knowledgeable. And, then creating an understandable implementation strategy for the deployment of the technology that then can focus on a wider group of committed people. And, one of the successful approaches that we've utilized is to create a cadre of what we call "turnkey trainers." The term is not unfamiliar, but these are staff members who are paid some money; we generally bring them in for a week in the summertime. And, then they get a couple of extra hours during the week. It's not an enormous amount of money, but it's still money. And, they are model users, and they're available in the buildings all day long to people.

Supt 4: One of the things...absolutely laying the foundation is critical...one of the things that I have done is make sure of the same thing, as far as having a cadre of folks who understand it, and I call them my champions. And, one of things that we've done is that as we hire new teachers coming in; that is one of the criteria that they must have -- a thorough understanding of how to use technology as a teacher. Not so much the "what" but how are they using it. Not so much just computers or the Internet, but other things that are considered technologically...their whole thinking about students can learn. And, that is something that we touch open every time during our faculty meetings. All our faculty meetings are professional development in nature. And, the teachers are receiving enough hours. We're trying to move away from, you know, you go to a workshop and you get "x" amount of hours for attending. Or, you know, an in-service day. That way, we have two faculty meetings; so every month we have two professional development days that we are utilizing. We have a Literacy Initiative that I implemented this summer, and that is something that is throughout the district. So, everybody is involved. And, technology is one of the vehicles that we use in order to deliver that professional development to our staff. So, that would be one of the things. With anybody who's aspiring, you're looking at

the entire organization and finding out where the organization's strengths and weaknesses are and then building it. Finding those champions to really help deliver what you would like to project to the district.

Supt 1 Added: I would also add that I think it's important that we as the district leader, and then we have to encourage our building level leaders; to, if you will, create an environment where people are comfortable taking a risk. And, what I mean by taking a risk is trying something new, etc. And, making sure that the teacher, particularly on the other end; knows that this is not gonna end up in their evaluation. And, there's not gonna be a penalty, if you will, for trying something and it being unsuccessful. That kind of attitude is something that is very important. And, it's overly conflictive, but when I attend meetings, I usually start my section of it that way; and end my section of it that way.

Question 4a

Researcher: How do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices?

Supt 1: I'm unfamiliar with NETS.A. I don't...unless that's the national education technology standards. (CHUCKLE in the group) Okay, we don't use those acronyms anymore, but those bases; those four or five essential tenets in each one of those programs have been kind of melded into our five-point statement that was adopted by the Board for the implementation of technology.

Supt 4: We basically did the same thing as far as you will see those highlighted also in our three-year technology plan. And, also within the teachers' PIP you will see that. And, also tied to the national teacher accreditation standards. We have the three of them tied together. So that it's not all the standards for these two, but then we use the essentials of one or two as far as the instructional component.

Supt 1 added: Right. We lifted five that we felt were important to us. And, kind of changed the wording a bit. Because we didn't want to reinvent the wheel. We made the wording much more relevant to our particular situation. But, we were informed very, very strongly by the national plan for technology education.

Question 4c

Researcher: If you were advising your Board of Education, Principals, and Teachers about how they could assist your efforts to provide effective technology leadership, what would you say to them?

Supt 1: How about this, Supt #4? I would say to my Board, "Get out of my way."

(LAUGHTER in the group)

Supt 4: I've pretty much said that, too.

(LAUGHTER in the group)

Researcher: Would you elaborate on that a little?

(LAUGHTER in the group)

Supt 1: Yeah, sure absolutely. Quite frankly, my board of education is a reflection of my community; when I pause and think on this. They are a very strong reflection on the community. They are...they're successful individuals who have their own successful model of getting through school; which they kind of project onto everything else. And, you know, they also need training and reassurance that the world is changing, the way kids learn is changing, and that the school has to continue to move in that direction in order to support that changing environment; which, will ultimately lead to our children having better opportunities for success. So, what has to happen is that they need reassurance as we continue to move in this direction. And, that takes an enormous amount of time. There's a lot of care and feeding, if you will, that has to go into this.

Supt 4: Absolutely. I agree with everything you said. I think also the same thing is true for my community that the school is a reflection. And, also because we are in a rural area; it's a big part of the community. That is the focal point of the community. And, so everything that happens; everyone knows. Literally, everyone knows. And, because it is a very high socio-economic...most of them own their own businesses. Either own their own businesses or they're very successful, you know; commuting back and forth to New York City. Sometimes, that makes it a little bit difficult. Especially, I have two board members who are vice presidents of...you know, lead up technology firms. So a lot of times they will add their input about how we do this and this. And, there's always that reminder that we are...yes, there is a business here, but our business is schools. (LAUGHTER in the group) And, sometimes it's cut and dry. There's a lot of different factors that go into our decision making every day. And, just reminding them of their roles and my role as the superintendent of schools.

Supt 1: Yeah, I'd have to echo that. Cause they...a lot of times, the board members; especially the successful ones; they're used to a different measurement metric than what we have. And, you gotta really...you have to spend a lot of time making them and helping them understand that our measurement metric is equally as valid. It's just different.

Question 4c (cont.)

Researcher: And, how 'bout your Principals? What would you say to them? And, the teachers? In regards to how they could assist your efforts?

Supt 4: I would say just having ongoing conversations about where we're at. Always asking that question "How are we doing as we talk about meeting those goals, and meeting the benchmarks?" "How are we going to continue to help our students be successful?" There's always ways of improving or even going back and evaluating and saying that, you know, it worked for this group of students this year. But, you know, the students who are coming

up...you know, it's just very different for them. And, some of the things that are happening; I think even most recently with Super Storm Sandy. I think that really tested a lot of superintendents. I know for the county I'm in, we were hit pretty hard. And, we were out for two weeks without electricity. And, you know, how did we get to the community...relied on my leadership to find out, "Well, what are we gonna do?" You know. So, I think again making sure that the principals have, and reminding them that they have a voice in this. And, that I rely on them for their support and their leadership within their schools.

Supt 1: Yeah. I would add as well that what I've also tried to convey to the teaching staff and the administrative staff; principals in particular; is that this tidal wave is coming whether we like it or not. You know, I see the discussion in the legislature over what Supt 4 said before about Blended Learning and online learning, etc. And, it's a fe de compli (fait accompli). And, I would just rather be more in control of that process, at least at a local level; rather than have it dictated from the top. And, I try to get my staff to understand that. That either, you know, we can take control of the process, or we can let the process control us.

Supt 4: Absolutely.

Researcher: Well, I would like to thank both of you as we conclude this conversation. Please know that you're welcome to email me any additional comments or statements that you might want included. And, I would just ask that those be sent to me by December 11th. And, it's really been a pleasure working with the two of you. Thank you for your interest in my dissertation study.

Supt 4: Thank you. Good luck.

Supt 1: Good luck to you.

Researcher: Thank you, enjoy the holidays.

Supt 1: Ah, Supt 4. If I attend TechXpo I'm gonna wear a little button on my lapel with a number 1 on it.

(LAUGHTER in the group)

Supt 4: I like that.

Supt 1: If you wear number 4 we can spot each other.

Supt 4: (LAUGHTER in the group) Okay.

(LAUGHTER in the group)

Researcher: So long. Thank you both.

Group 2: Telephone Conference Focus Group

TRANSCRIPT of Group Responses

Telephone Focus Group 2

Saturday, December 8, 2012

9:45 a.m. – 10:30 a.m.

Participants: Supt 5 and Supt 9

Supt 6 – No Show

Question 1a

Researcher: How long have you been a district superintendent in New Jersey?

Supt 5: 14 years

Supt 9: 6 months

Question 1b

Researcher: What is the District Factor Group (DFG) of your school district?

Supt 5: J

Supt 9: CD

Question 1c

Researcher: Is your current district suburban, urban, or rural?

Supt 5: Suburban

Supt 9: Suburban

Question 2a

Researcher: As a superintendent, what are the first things you did to lead the technology implementation process?

Supt 9: Well, you want to start Supt 5 and then we'll go in order? You've got 14 years on me, so go ahead (LAUGHTER in group).

Supt 5: Yup, okay. The first thing was to develop a flexible technology plan. You know, when you think of iPads, you know they're about 2+ years old and they had a big impact on educational technology. Whether it's regular education or special education. So, the first thing is to develop a flexible plan that is less of a, sort of a recipe and more of a vision.

Supt 9: Okay, I mean, you know, I'd done a lot of this work in a previous district. When I'd come to the district they already had an educational plan in place – a process for smartboards in every room, and a one-to-one initiative. Now, coming from the former district to now this district that is piloting. As Supt 5 said, you try to think that you can possibly predict that the majority of the tech plan that there would even be iPads or iPad minis. Or, that they would have some of the options of different capabilities of what they can do. So, the idea that regardless maybe of what the device is, what are the skills that you want kids to have? What it is that you want them to be able to do? The bottom line is they've gotta know what they're doing. If they have iPads, how are things much better than if they have whatever the device is? So, focus on what you want children to be able to do regardless of what device they're using.

Question 2b

Researcher: Okay, and then following up on that question, what are the second things you did to lead the implementation process?

Supt 5: Making sure that the resources to implement your plan are in place. That the financial or professional development, or any other resources needed are available to make your plan successful.

Supt 9: And, I would agree. Making sure that you can sustain that vision. As wonderful as it would be for every child to have a one-to-one device or to have some of these resources; to make sure that we're using them well. And, that it's working. That we can sustain that over time. To have the ability to have that kind of a financial investment and have the financial structure to support it. So, I would certainly agree.

Question 2c

Researcher: And, segueing from the sustainability idea, what systems or structures have you successfully changed in your district?

Supt 5: You know this is where reality sort of hits a little bit. And, with funding sort of uncertain over the past three years; and we were hit with a 100% cut in our categorical state aid...so, making the decisions on the budget, and putting off things that were developed in the plan...where the reality of the state's inability to sustain the funding...we had to make some changes as far as implementation of certain devices that we thought we were going to be able to do when we first developed the plan. We had to engage in the process of developing a new plan that was sort of above and beyond the state's requirements.

Supt 9: My dissertation was on one-to-one computing implemented in Greensboro, North Carolina a few summers ago where they have a one-to-one program for third grade. Now, I come from a district where we had one-to-one program for eighth graders. So, I'd say that the change in the short time that I've been there...if anything, I'd want to caution them and I'd want them to understand that the technology is not necessarily the solution. I have board members who think that if you just give every kid an iPad...and as great as that can be and with all the wonderful possibilities that come with that...that it'll solve all of our problems. Or, just reverse whatever it is that's gonna happen. So, in the time that I've been there I've really cautioned them and encouraged them to go farther. But, I want them to go deeper instead of wider. That

trying to get one into the hands of every kid at, for example, the middle school, which obviously is something that we can't sustain financially…let's really dig down deep and see what the Science class looks like in seventh grade with an iPad. You know a one-to-one or a virtual cart. And, if that truly changes the dynamics and the teaching becomes iPad-centric vs. just an add-on; and, if they're using a $500 device to take notes. That's an expense and a luxury that we really can't afford. So, if we really take a look at what it is that kids are able to do; and at the end of the day and even re-evaluating some of the resources that we use. Um, some of the first smartboards are coming to end of life. And, we bought 65-inch t.v. sets that…um, Apple TV…so that instead of one child going up and manipulating a smartboard, we have a solar projector in the ceiling of all our classrooms. For half the price for an iPad, every kid in the room can have an iPad. And, through Apple TV, the teacher can say you know, "Okay, Billy go ahead put yours up on the screen." And, the child can manipulate their iPad and have that show up just like a smartboard up on the screen. And, at half the cost in terms of the device for the room; now with all the iPads, of course. So, even that sort of thing, where the district I had come from was just finishing up and was very proud of the fact that they'd finally gotten a smartboard in every class. The dynamics changed so quickly and…to think that's gonna be the ultimate answer for student performance. You know, in three years who knows what these kids are gonna need? We really have to focus on the skills we want 'em to have, and the collaboration, and the products for a worldwide global audience. And, that technology's gonna come and go. And, teachers have to be adaptable to that. And, you know, we can't focus on any one product as THE answer.

Supt 5 added: I think that has to be the question: Can teachers keep up?

Question 3a

Researcher: And, that's a great move into the next question about what barriers do you believe exist that can influence your technology leadership?

Supt 5: Where I just started off...can our workforce keep up with this change? You know, also going back to the cuts we sustained, we had to eliminate over 20% of our administrative staff. And, one of those people was our Director of Technology. So, that type of thing has really influenced my leadership. Because myself and the Business Administrator have had to take over that role, and; it's been a challenge. We're doing a good job, but certainly not as good or even close to as good as someone who is trained for the job. You know, someone who has the expertise; whether it's schooling or life lessons with technology.

Supt 9: I think I would agree. I can't imagine doing what you do and then also having the responsibility in terms of assuming that role, as well. We're fortunate enough to still have a tech trainer. And, you know, we try to approach it from where we talk to them about what they want to do. You know, in three years if you come back what would the district be like? What will the kids and adults be able to do? And, a couple things. It really has been a focus on professional development. And, as we try to get the focus on content; um, I'm not that interested in having an Introduction to Excel class. I'd rather have them, in this case, for the support staff; and for the instructional staff. But, meet with the secretaries, for them...would be reporting that they do every year that takes three days. Not because of them. But, show them the Excel skills they need to get that report done and into the classrooms. And, for teachers; if a teacher says, "Aaah, I can't do it this particular period because I'm teaching history." And, they've had two weeks to do it. Instead of just going in and just showing them in general the iPad; saying, "Alright. Well, let's using the resources we have, how do make these two weeks really engaging for the kids. And, find a way that's in context -- technology makes sense to get your job done. So, um, try to

make the technology as relevant as possible during the professional development. But, we're fortunate enough to have that person there. Now, you know, I can't change the way people do it...their mindset...it's difficult...it has to be demonstrated by the more veterans ones. We've got them to change that. You know, teachers can get focused on, "I've gotta have this app to get the project done." And, again, part of that comes from the changing technology. They don't realize that, you know, there's six other apps out there that do the same thing. We're trying to train kids to be adaptable and know that it doesn't which word processor you have just as long as you can come up to the goal. Um, so teachers get very fixated on that...the actual product. And, meanwhile we're trying to teach our kids to be adaptable...and, sometimes it's difficult.

Supt 5 added: And, the kids are usually...they sort of innately understand that the app, no matter which one it is...I think teachers sometimes worry about being the expert in a particular app or software. When, you know, the knowledge is definitely necessary. But, the kids you know, you look...when I watch my kids, you know, play a game or they try to conquer a game with their friends. They do it and then they hand it off to the kid who is better at this part of a game or that part of a game. And, the kids, you know, I'm not worried about teaching our kids keyboarding and certain apps. They're gonna learn that cause they wanna learn it to accomplish their goal.

Question 3b

Researcher: What kinds of things do you actually do, the two of you, to lead technology implementation and integration in your school districts?

Supt 5: I'm a user. I definitely demonstrate use when I can so that it's sort of public. So they see that...so they see it. And, when I discuss technology plans or new initiatives that I'm the face of the district so that people know...you know, there may be people who know more than

me. But, I'm the first person to explain it before handing it off to someone else to go into further detail. But, it's critical that I understand it and for people to explain that, as well.

Supt 9: And, I would agree also. Just to show that you have some experience. And, also to admit when you don't know. You know. I'm clear that I know what I need to know, but I'm not the expert. That somebody else will handle the nuances of it. And, that there's promise to the role that teachers can have. You know, that you have a superintendent that...you know, there are some parts that kids are going to dominate in. And, teachers being in the classroom can be confident to have kids come up and say, "We know you can do this, this, and this." But that's okay. As the superintendent I don't have to know everything about the nuances. I have to understand what it can do. With the new evaluation system that we're using to do observations, it wasn't just the training and the online test that we had to take. But, it's using the software to do an observation. And, I've already had principals come back and say, "I need a laptop." And, for me to be able to do another six observations – I've used it on an iPad. And I can say, "Well, I've used it on an iPad. You had a laptop. You have iPads. We're not gonna spend $1,500 just so you can do observations. It is possible. I've done it. You need to go back, practice, and get used to it." You know, go back and do thirty or forty of them. And, if it really is an issue then come back. But, me being able to do it makes for pretty easier conversations than if I weren't involved in something like that and have people say, "Well, it can't be done that way." Um, so to have some knowledge and some experience will show that you know what it is that you're talking about...allows you to reach the goal that you want to reach.

Question 3c

Researcher: What information do you, your teachers, principals, or students need to help improve technology implementation in your districts?

Supt 5: You know, I think we need to know the benefit...you know, as the other superintendent said earlier. Just to have it to take notes is not critical. You know, it has to be the benefit to the learning. To the instruction. To the...you know, in a straighter path, how does it improve what we're doing in helping students, and helping run districts?

Supt 9: And, I agree. Just having technology for technology sake...you know, you'll hear people say, "Oh, the kids are enjoying it. It's more engaging." The gist of it. Plugged in for an electronic...that's not necessarily true. I mean, I've seen some people teach on their smartboard, and literally use a film strip from 1978, which might have been a great film strip and a great resource. But, someone converted that to a digital format. It still had the...status on the bottom right hand side. So, all he did was replace the film projector from 1978 to a $2,000 device and they're still lecturing in front of the classroom. Um, that's not progress. We have got to our teachers to realize they are not required to be the sole source of information. They don't have to be the expert. The information is already out there, and the kids should be supported and learning from multi-media textbooks...Um, there's a math teacher in Khan Academy where the kids can go home and study core knowledge on their own time and then they apply it in class. So, that whole traditional structure of getting the information in class and applying it outside gets flipped. So, teachers need a lot of confirmation that that's okay.

Researcher: Supt 5, did you want to add something?

Supt 5 added: Yeah. You know, what Supt. #9 said. Teachers have to feel comfortable taking risks. Education is a big social experiment like parenting. There's certainly enough research on education and parenting. Um, and, you know they have to be able to take those risks comfortably. And, as long as there's some real good thought behind it. You know, the flipped classroom. And, for that teacher in the example that was given...you know, that's a huge risk. And, I commend the guy for doing it.

Question 4b

Researcher: Now, I'm gonna move over the next question, 4.1, to Question 4.2: What recommendations would you give to other aspiring or practicing superintendents about how to provide effective technology leadership in a school district?

Supt 5: Um, you know, Change doesn't happen overnight. And, there's probably nothing worse than leading a charge and looking behind you and there's no one there. You have to engage your administrative team and faculty in explanations on why the change and how you feel it improves the district; and improves the learning. And, then explain how you are going to evaluate it to see if what you're doing works. And, as long as it's validly supported.

Supt 9: And, I would say too, as far as leadership goes; empower others. Ask them what they see as the vision. Ask them what they would do…you know, as they're taking that drive home from work…see the dream world of what you see kids being able to do. Okay so, "How do we do that? How do we get there?" You know, it may not be my vision, but see what makes sense. Is there something I haven't thought of? So, for others… to tell them, I guess, it's okay to take risks and take a chance. As the superintendent, I don't have all the answers. But, I'm constantly trying to make things better and try to make improvements. And, that I'm there for them to give them the support they need.

Question 4a

Researcher: How do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices?

Supt 5: I look at the standards and try to infuse what is practical and what is attainable. I think this conversation would have been interesting…no, it's interesting right now, don't get me wrong. (LAUGHTER in the group) But, four years ago before the economic shift that we're going through…you know, when the resources are…getting resources are very competitive.

And, sometimes there's camps that form that you know, they say, "Let's not buy technology, give teachers big raises..." But, I think it's important that we look at not just these standards but at all standards in education. And, make sure that we don't make sacrifices now that we'll never be able to regain in the future. You know, you may have to be creative about class size to be able to maintain your facilities

Supt 9: Um, well. To be honest, I wasn't really familiar with the standards until my doctoral work. As part of the process it was what I knew as anecdotal or organic five or six years ago. And, then in the research find out there are some standards that were part of pre-conferences. So, it's one of those standards, as well. It's one of those things, I'll be honest with you; the research would say you use those standards to inform your planning. I think what happens probably in a lot of cases is they may be used in some cases to almost justify the planning. Or, if you may have missed some things at first. I've seen places where a grant comes through or a fund of money. An opportunity for collaboration between districts, and someone will say, "You know, well we can get you 400 smartboards. And, do you want 'em or not?" So, you put the smartboards in and then you think about: What are we gonna do? Why do we want to do this? How are we gonna train people? Back to one district where it was very much about making the front page and having the headline because they had a one-to-one program...they considered an online course for all kids to take in high school...but, then we had to really investigate if that was a good idea...whether there was something better...how many hours of work the kids would have to put in. And, we realized it was averaging about an hour and fifteen minutes a night for the online course outside of class. So, it looked good in the paper; but...you know...it's not just the standards, it's the research...There was a presentation two or three summers ago when I was in Denver, and there is a group, it's called "Redesigning Education – the acronym is REd" And, they list eight to ten characteristics of a district if you're really gonna have success with

technology implementation – this whole, "here are the factors of influence." They talked about principles for proactive leadership, professional development, and all these other things. And, the standards are absolutely a part of that. And, typically most schools hit three of those things; four of those things…or, if you know that you want iPads, and you have to go back to the standards…

Question 4c

Researcher: If you were advising your Board of Education, Principals, and Teachers about how they could assist your efforts to provide effective technology leadership, what would you say to them?

Supt 5: Um, you know, I think they're the ambassadors to the district. Just as the superintendent is. But, the teachers, the principals certainly get more face time with the parents than superintendents. You know, we do if we do something bad. Because we don't get a lot of people at our board meetings. We do get information out to the public about it. But, certainly not like their teachers. So, they need to be the ambassadors and really buy into the technology initiatives and explain it in PTA meetings, and at Back-To-School Nights. And, any opportunity that they get. The board really has to understand it, too. So, when they get stopped at the supermarket or in the street, or wherever; that they can explain it. And, you know, be comfortable in saying…you know, understand and be able to explain it, but direct people with questions to the right people in the district.

Supt 9: You know, as Supt 5 said; they are the people that are gonna be stopped in the supermarket a lot more often. And, they're out during the day. They see people. They talk to the old timers who say things like, "When I was there all we had was chalkboard and slate, and all that sort of thing; and, what do they need all this technology for that sort of thing?" These are gonna be some of your best ambassadors for what's going on in the classroom. And, so we went

to digital board meetings in the six months that I've been there. I was able to talk the board into going digital with an incentive of getting an iPad. That wasn't the only incentive, but let's practice what we preach. It's not that big of a leap because the agenda is not that complicated. You know, do we use the PDF version of the agenda, or do we use software on the iPad? We put the apps on all board members' iPads that the kids are using. So, when we talk about the seventh grade math program, when they're using a particular app; or particular whatever it may be...we put the apps on all board members' iPads. When they got it, they became informed about what we were gonna choose for the new digital textbook for the high school level. You know, we're trying to decide between two or three of them. They can actually see 'em on their iPads. And, they can see, "Well this one would cost $14, and so on." Um, we're not really sure to what degree they're really gonna use that. But, at least it's there. And, the fact that they're using them, I think that sends a good message to teachers who may be a little reluctant; and for anybody in the community with questions regarding technology that we've stopped using a 1950s model for board meetings. You know, it's good for them to see technology being used at the board meetings. It's just a little easier to sell it if they see that we, as ambassadors, are using it. And, the next time, to be honest; I have an initiative I want to have approved; they've got it in their hand and it's not as difficult to sell it for the votes.

Researcher: Well, if there are no additional comments, we are at the conclusion of today's conversation. Again, I'd like to thank both of you for participating, and know that you're welcome to email me any additional comments or statements that you might want included. And, I would just need those by December 11th. It's really been a pleasure working with the two of you, and I thank you for your interest in my dissertation study. And, I'd like for you to enjoy the holidays.

Supt 5: Thank you, too. And, good luck.

Supt 9: Thank you, too. And, Supt. 5, have a great school year.

Supt 5: Thank you. You, too.

Group 3: Telephone Conference Focus Group

TRANSCRIPT of Group Responses

Telephone Focus Group 3

Saturday, December 8, 2012

11:00 a.m. – 11:45 a.m.

Participants: Supt 7 and Supt 8

Question 1a

Researcher: How long have you been a district superintendent in New Jersey?

Supt 7: 2 years

Supt 8: 11 years

Question 1b

Researcher: What is the District Factor Group (DFG) of your school district?

Supt 7: I

Supt 8: I

Question 1c

Researcher: Is your current district suburban, urban, or rural?

Supt 7: Rural

Supt 8: Suburban

Question 2a

Researcher: As a superintendent, what are the first things you did to lead the technology implementation process in your district?

Supt 7: Um, we have in our leadership team in the district; we have a Coordinator of Information Technology. And, then we also have a Supervisor of Math, Science & Instructional Technology. And, I met with both of those people; the Information Technology and the Instructional Technology people when I first began, really just to learn what had been happening in the district. What had been budgeted...what had been the focus or the priority. And, then just kind of walking through the schools and talking with people, meeting with the principals... began to form a vision of what our next steps ought to be? So, that formed the basis for me. I was very fortunate to come into a district where the previous superintendent had been a very strong technology leader. So, more of my focus has been about maintaining what we have; and not as much about building. Because I think the building part for us had already happened.

Supt 8: The first thing that I did was determine how the technology we currently had was being utilized.

Researcher: Okay, and would you elaborate on that a little bit?

Supt 8: Certainly. Once I determined that our computer labs were set and good to go, that we had a number of computers, desktops, in the classroom and in our Science labs; in addition to determining that we had COWS or computers on wheels...carts that went into classrooms. I wanted to know how they were utilized and how often they were utilized. And, whether or not teachers were interested in having more technology to use.

Question 2b

Researcher: Okay, and what are some of the second things you did to lead the implementation process?

Supt 7: We began our...my district is a K through 8 district and we send to a regional high school. And, there's a lot of interest in our community in articulating with the high school and trying to be as consistent as possible with the other sending K to 8 districts. And, I'm fortunate

that those other superintendents are very open and very collaborative. So, we'd been meeting, and we were looking at what was happening at the high school where our K through 8 students were attending. And, there was a lot of interest in a...you might call it a BYOD or BYOT; Bring Your Own Device or Bring Your Own Technology to school. And, I had reading about some of the work that was going on in New Milford High School up in North Jersey; and Eric Sheninger, who is the Principal there, had been a speaker at my previous district. So, I began to read a lot on just what that looked like. Um, and, I knew that high schools were really interested in it. And, I don't have a high school in my district, but I have a middle school. And, I began my career as a middle school teacher. And, I feel very strongly that middle schoolers are capable of mature and sophisticated tasks when we set it up properly for them. So, I really began to talk with the administrators, with our tech people; and then, eventually with our students and teachers about whether this was a viable option for us. And, we're actually moving forward to probably pilot either our eighth graders or our seventh and eighth graders bringing in their own tech devices probably by second semester. So, really the second thing was looking at what would the next step be for our district and for us. It was the Bring Your Own Device for our middle schoolers, and to pursue that.

Supt 8: Uh, the second things that I did was take a look at our budget because once I understood, um, the interest of the teaching staff to have more computers; whether they were laptops or more desktops. When we got into that further, I took a look at our budget I saw what constraints were there, and what we could possibly do without. Um, but not shortchange the educational program to infuse more technology.

Question 2c

Researcher: What systems or structures have you successfully changed in your district?

Supt 7: We had a system where when staff members or teachers needed to have a tech repair, or a tech request put in...we have a kind of a computerized system for that. But, our tech department really was not...other than responding to all of the requests that were coming in...they weren't tracking...you know, was there any trend? Was there any...they weren't prioritizing what was coming in. So, we were finding that our poor tech team was just running you know, hither and yon all over the place trying...and there was no ability to be proactive about anything. So, a few months into my position last year I sat with the department and talked them through how to really analyze the requests that were coming in so that they could then do some training sessions with our staff members about some of the really simple things that were going wrong...that teachers could actually fix themselves. And, it's really helped our tech team to be, I think, a much more calm group of guys. Because, now we've trained our staff and empowered them to handle some of the problems themselves. And, it's helped our tech team to be more proactive and less responsive. Last year I think it was all triage for them. And, they're in a much better place now.

Supt 8: I think the systems or structures we've successfully changed has been the ability for our staff to be professionally developed, so to speak. Um, that system of professional development that focused on technology, um, wasn't up to a standard that I believe was going to allow for successful implementation. The staff development was probably the first thing. The second is sending out our key staff administrators to a technology workshop to see what was going on out there. I think it's important not to reinvent the wheel. So, what we've done a lot of is utilize what's been successful in other districts. You know, one was more staff development, another was an increase in technology and we have piloted a number of programs to see what ideas would be best. You know, the discussion of what's better: the tablet or the laptop...has been discussed and piloted. And, those results are in. So, a lot the changes had to do with information

and knowledge. Knowledge is power. So, with that said, everyone kind of came on board. And, probably the third biggest component of that is it was not a top-down…this is what we're gonna need to do. More so a bottom up, and this is what it is we can do. And, what I've done from our position…from my position…is responded to what that majority theme is…I mean, there are always people on the fence and of course, there are always people opposed to any kind of change in an implementation of technology. Um, you know absolutely would cause some anxiety for those people that are, you know; technologically illiterate, so to speak. So, I think a lot of it had to do with empowering those people. I think that for superintendents working with any initiative that those people who are going to be responsible for implementing it are on board.

Question 3a

Researcher: What barriers do you believe exist that can influence your technology leadership?

Supt 7: For us I think the barriers are…well, money certainly would be one. But, beyond that. It would really be trying to help, um, staff members overcome nervousness and anxiety about trying out new things with technology. Um, I'm gonna go back to the reason why we're really aiming at the Bring Your Own Device initiative. It's because there comes a point where you can train your staff members only so much. And, in the end they just have to start using what you've trained them for. And, begin applying it. But, if now you've got students coming in with devices expecting that the level of instruction will include more technology, or the assessments will be more open so that kids can be working on collaborative projects; it really forces the teacher to start to move in that direction even if they had not been ready to do it. Um, we…in advance of all of the initiatives, we had been surveying our staff and one of my questions to them was, "If we were to start this initiative next week…which, we won't…but, if we were to do it next week, would you welcome the technology? Would you, you know, try to learn a little bit and maybe some of your lessons would infuse students' technology? Or, would you not be ready

at all?" And, thankfully, the bulk of our staff...probably two-thirds of the staff was, "I welcome it, let's start." But, I still had those few comments where it was, "I need more training." And, um, you know, "We need to set up the rules so that nothing goes wrong." And, you're always gonna have those people. So, I think that the challenge for me is acknowledging that that group of people exists. And, handling it as much as I can. But, not letting that get in the way of what our ultimate vision is.

Supt 8: I think Supt 7 said it beautifully. Really, beautifully. I concur with everything that was said (LAUGHTER in the group). I do. I do...I wouldn't have said it any better than that. The only way to make something happen after you've surveyed and gotten your info and made a decision as a leader is to move forward with it. Because people will get on the train. It's just, you know, how many of those people are gonna get on the train, you know, kicking and fighting. I think that getting as much information as much as you possibly can. You know, staff developing as much as you can. Giving them tools, some of which they'll use; and some of which they won't. But, at least they have more than they did. And, saying, "This is the vision and this is how we're moving forward." Um, get on the train. And, making sure that you have the financial backing to be able to do it. Supt 7, you did a great job.

Question 3b

Researcher: And, now what do the two of you actually do to help people get on that technology implementation train?

Supt 8: What do we do to get people onto that technology implementation train?

Researcher: Yes, what do you actually do to lead the technology efforts in your district?

Supt 8: I hopefully make a decision which will focus them in an area after...and, we just did. And, so part of the reason that I'm smiling is that there was a huge elephant in the room. Because we went back and forth for probably a year. Tablets...Laptops...iPads...um, do we just

leave what we have? Do we bring on a device? I just made a decision Monday afternoon to do a one-to-one initiative in our district. A laptop for every student.

Researcher: Congratulations.

Supt 7: Good for you.

Supt 8: Well, thank you. I...It was going around and around and around and around. And, it got to the point at the end of the last meeting that I made my recommendation. And, that is what we're going to do. Now, I had a feeling I was going to head in this direction only because I'd established the budget in a way...I've worked with the business administrator, of course...to rely our infrastructure to support this kind of initiative. It's not like we're just doing it. You know, our buildings need to be ready and set with access points. We've spent a great deal of money doing that so that our infrastructure is ready for over 2,000 computers that we'll probably have set to roll out hopefully in September. With that said, what do I do? Um, I remain positive. I provide information that is un-biased so it's not this is what she feels like doing. I provide research that moves in this direction all under the umbrella of this is what is going to change what students learn, this is going to change the way you teach. I understand it's uncomfortable. I deal with the elephants. I deal with things people are thinking before they even say it. I mean, I'm empathetic, sympathetic, but I am...I do put forward very high expectations. And, because this conversation has gone on for so long, it wasn't a fly-by-night decision. It's just a decision. You get to a point where you need ta...just get off the pot. And, you need to move forward. And, having a lease agreement will allow an out if for some reason we need it...But, I know that if in fact this isn't working out, we will have the ability to back off. But, I really don't see any other way that school districts can move forward in our technology world and the expectations of college students without adequately addressing those issues during the K to12 years. So, that's...uh...you know, what have I done? I guess, a lot of research. A lot of empathy moving

forward. You know, I'll always be a teacher. I always say that. When I stop being a teacher I no longer should be in my position. So, I understand that aspect of it…being taught how to use a computer from a fourth grade student, you know, 15 years ago. He knew more than I did. Like the kids with the video…cameras…you know, they know more than us. As far as the Bring Your Own Device…we entertained that for a while…There are districts in my area that are doing that, as well, because they don't have the ability in their budget to do that. A lot of kids do have laptops and do have their own devices. Even if it's just a smartphone. But, it does have the ability to research. Um, we just chose not to go in that direction because we were worried about the platform. I do have a high school in my district. And, there needs to be filtering in place. We need to have control. Otherwise, we were gonna have kids off on sites that are inappropriate. And it's a little bit more difficult. It can be done. You have to get another server. And, I know that. But, we were just worried about that component. But, every school district is different with its own dynamics and cultures. And, decisions need to be made based on what's best for the students in those districts. I understand that.

Supt 7: So, um…and, it's good that I had time to think and listen. So, thank you for that. I try to read up as much as I can but I'm not a tech expert by any means. But, I'm open and interested. It's funny, several districts ago I was the tech expert in the district…and here's why…because I knew how to attach documents to email (LAUGHTER in the group). So, in my current position, um, you know I'm very fortunate that I have people for whom this is their specialty. And, I try to really honor that. And, I don't pretend that I know everything. But, I do read all the professional journals and the publications. And, I do keep my eye on what's happening in other places. And, then my modus operandi is generally to clip articles and leave them in different people's mailboxes. And, try to figure out who among my staff who are the ones with the energy to move this forward? And, it was really fortunate in that we had a few

teachers in our middle school who really were very attached to this and eager to try it out. And, the ASCD conference was held in Philadelphia in last March, which was close enough for us to go. You know, we could never have afforded to send people, you know, beyond the eastern seaboard. And, so we sent a group of our middle school folks to the ASCD conference and they focused mostly on the collaborative technology. And, Heidi Hayes-Jacobs and all of the...and they came back and they were so jazzed. And, then we worked with them to establish...you know, what turnaround workshops they could then present to larger groups, in our middle school first? And, then in our other school? So, that group's really been our..kind of our turnkey first group...they're trying out a lot of awesome things in their classrooms...within their curriculum. So, that's kind of what I've done. I've tried to plant ideas. Get people to places that I know can give them knowledge and training that we could not do in our own home community. And, then support them. And, nudge them a little bit as they come back so that the knowledge then begins to spread.

Question 3c

Researcher: What information do you, your teachers, principals, or students need to help improve technology implementation in your districts?

Supt 8: Uh. I'll jump in. I mean, my first response would probably be the most recent information, whichever changes. Um, and learning from those districts around the country who have successfully implemented...whether it's a Bring Your Own Device or one-to-one initiative...Um, I'd like to be able to learn from people who have experienced it already. I think that should be the nature of our profession anyway. Why reinvent the wheel? So, the information I would want is that of those who have done it already. Regardless of the choice made. And, work to not make those...That would be my response.

Supt 7: Um, I think for us and for me it would be knowing that we had communicated out our plan to everyone. And, that we had established parameters and expectations for behavior. One of things we've been working closely with our middle school students on first, and then I'll bring in the staff, as well. But in surveying our middle school students about them being able to bring in their own technology, I asked them what behaviors or etiquette do you think will need to be taught to the kids. And, they were brilliant. They came up with exactly what I was thinking up. But, it's so much better when the kids make the rules for you. (LAUGHTER in the group) It would have been the same rules, anyway. And, I know there's nervousness among the staff about...you know, some people want a bazillion rules in place. And, I don't come from that place professionally; I don't come from that place with how I reared my children. You know, you set up expectations for respectfulness and sensitivity and then deal with the issues as they come along. I might not do that in a high school setting, but I feel comfortable doing it in a middle school setting. So, I think that for me and for the staff, they would like to be assured that there are parameters in place; that everyone understands...parents and staff and kids understand...you know, what we're allowed to do...what we want to be using this for...And, so for me there's going to be a lot of communication in the early part of winter as we move forward with that.

Question 4a

Researcher: Okay, and speaking of expectations, how do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices?

Supt 8: In our case it certainly drives our technology plan. Um, you know, our four or five year lookout. Technology plan is infused throughout, you know, certainly with our set of common core. Um, for institution of the implementation of the common core. The technology those

standards refer to are definitely included throughout our curriculum, so they're very important in driving our decisions so we make sure we hit the mark.

Supt 7: I would say the same thing. And, we're just now revising our K through 8 technology...uh, instructional technology...and, looking at where the gaps are and looking to make it more relevant and applicable so it's not stand-alone technology. It matches back to, you know, Science instruction and Social Studies. And, um, so we're doing the same thing as Supt 8 just described.

Question 4b

Researcher: Okay, and if you were to give any kind of recommendations to aspiring or practicing superintendents about how they could provide effective tech leadership, what would you say to them?

Supt 8: I would tell them to be sure that they understand the culture and dynamics of the district they're in. Or, that they're going to. Prior to implementing any kind of change, and I think that's pretty much applicable for any initiative; I think it's important to understand the history and the culture -- the past practice from many different perspectives. Um, I think that an aspiring superintendent needs some time in order to do that. Needs to be knowledgeable of how technology is currently used, where it should be used more often based on input. It's good to have some of the community in to be receptive to the fact that what an individual aspiring superintendent may think needs to happen. In every district to remove that component to make sure that decisions, um, are guided by the themes of the current students in the district and the community, coupled with what's needed for students to be successful as they move on. I think it's important to, uh, keep all those things in mind. And, not move forward just thinking that...not move forward isolated. That the decision really needs to be one of community and understanding with some empathy with the fact that change always leads to anxiety. And, to be

understanding of all of that. And, tell them to go into another profession, you know, maybe you know, consider working in a gas station, you know (LAUGHTER in the group). I'm only kidding.

Supt 7: I completely agree. Um, and, I think it's…this doesn't only pertain to instructional technology leadership. I think it's leadership, in general that really needs to be so prepared for any long-term decision that you wanna make. So, it's, you know, it's a lot of observing and figuring out past history. Asking lots of questions. And, then exactly as Supt #8 said, really thinking of what's the most appropriate match for the community that you're in. My previous superintendent, I had indicated in response to one of the first questions; was a very strong technology leader. And, I would say, really worked to make the district a lighthouse district with regards to technology. That was not well received by the senior citizens in the community, who really didn't understand why people needed all that high-tech gear. You know, they were seeing their grandchildren come over to visit with them; and the grandchildren couldn't take their eyes off of their, you know, uh, their high-tech device.

Supt 8: And, asking the question why senior citizens needed to pay for it (LAUGHTER in the group).

Supt 7: Right. So, I think in being prepared and talking with really all constituent groups. And, certainly with board members. Because while most board members tend to be very supportive of initiatives that are going to move a district forward. You may have some who, you know, have a different agenda. And, so all of those pieces…prepping your board…prepping your staff…prepping the parents…other, you know, township officials, or whoever else factors in in that particular community. Getting all of that background work done in advance makes moving forward on the decision so much more fluid.

Supt 8: I agree.

Question 4c

Researcher: And, now I'm going to tap into the comment about the board of education members and lead us to the final question: If you were advising your Board of Education, or even your Principals, and Teachers about how they could assist your efforts in technology leadership, what would you say to them if you had a platform to do that?

Supt 7: (CHUCKLE) I'm just gonna be funny for a minute. I'm sure there are times when we just wanna say to our boards: "Could you just be quiet until this decision is made?"

(LAUGHTER in the group)

Supt 8: You know, the answer...my answer to that would be: A decision has to be made based on a lot of information and guidelines. Um, you know, as the educational leader, um, you know, I speak for all the people that we have heard from to date. And, it is an initiative that we believe in. To the board of education members, I would ask them to air their concerns and those issues that they may have internally. But, when they go out into the community to be the cheerleaders. That it is important that everyone hears the same message and that it's not conflicted. Because that will only add to more...more up and down as we move forward. So, I would kindly and respectfully ask my board of education to appreciate the initiative that we're moving forward with, with the understanding that the proper research was adequate and appropriate, and was conducted beforehand. This is the effort that we're going to move toward. And, I would ask them to support it, um, publicly as I think that will make a difference in a successful implementation.

Supt 7: Very similarly, that and then also what I have learned is that with my particular board, I try not to surprise them. I give them... if I know they need to be voting on something two months from now; I'm already starting to give them articles. Or, turn different committee

structures to talk this up so that there's a momentum that begins to build positively. So then when there is a vote they've already, you know, been a part of those conversations.

Supt 8: Right, very true.

Supt 7: The other piece that's happened quite nicely is, I came into my district at a time when the old strategic plan was expiring. And, so we crafted a new strategic plan and, really it…I think it set for me a journey over the next five years that will bring all the things we need into the district. And, so when I talk about Bring Your Own Device, or when I talk about empowering students and, um, offering them leadership opportunities within the district; all of that follows back to the strategic plan. So, it's hard for board members to disapprove something when they approved the strategic plan and it's the direction they want the district to be going in. So, I try whenever possible to tie it back to the strategic plan; or to district goals. So that they understand that when we're talking about this…we agreed that this is the direction we want to go in.

Researcher: Okay. Now, this is the conclusion. I'd like to again thank the two of you for not only your interest in my dissertation, but for taking time out of your Saturday morning to engage in this focus group conversation. And, if there are any additional comments or statements that you think of later and you want to include; you can email those to me by December 11th for transcription. Uh, it's been a pleasure working with the two of you, and I hope you enjoy the holidays.

Supt 7: Good luck to you.

Supt 8: Good luck, Sharon.

Supt 7: Thank you very much, Sharon -- good luck to you. I did my doctoral program through Seton Hall, oh gosh, probably about 15 years ago at this point. So, I know where you're at and hang in there. You're doing great.

Researcher: Thank you so much.

Supt 8: And, I concur. I did my dissertation at Seton Hall already, as well. Uh, graduated about seven years ago. Um, so I wish you well. And, uh, absolutely we're gonna take time out of the morning to do this because we needed it. And, hopefully folks will come on board with us. So, go get it.

Researcher: Thank you both. Thank you so much.

Appendix D (cont.)

Written Response Group 4

Superintendents A, D, E, F and G

Superintendents B and C (No Responses Provided)

Group 4: Written Response Group

Table 4. Focus Group Interview Guiding Question Route

Written Response Supt A

Question #	Question
1	***Background Characteristics***
1a	How long have you been a district superintendent in New Jersey? 2.5 years
1b	What is the District Factor Group (DFG) of your school district? CD
1c	Is your current district suburban, urban, or rural? Suburban
2	***Adaptive Leadership***
2a	As a superintendent, what are the first things you did to lead the technology implementation process? Since I was the Assistant Superintendent in the district prior to becoming the Superintendent, I was already quite involved in technology. Therefore, my work was and is a continuation of what I previously started. (Note: When I became Superintendent, the Assistant Superintendent position was not replaced.) There is consistent and ongoing communication between the leaders of instructional and non-instructional areas. We also work to ensure that we find a balance between equity in what is provided to each teacher (or other category of employee) while also supporting those individuals who are more advanced in their technology abilities. One of the most important shifts in our district in terms of technology was making sure there was a true purpose and goal for the technology being purchase and that it was not just being purchased because it was the latest thing. For example, last year we began an iPad pilot program. This was initiative for a very specific purpose in the area of speech (an app was available that provided the same services as a piece of traditional software at significant savings) and then other specific areas were identified in intervention, self-contained special education, primary grade literacy centers, and ESL. We are now considering other tablets before we spend any more money on iPads. I anticipate that we are going to end up with a combination of workstations, iPads, and some other form of a tablet depending upon the grade and content area.
2b	As a superintendent, what are the second things you did to lead the technology implementation process? When I became Superintendent, I discovered that none of the staff members in the technical services department were being evaluated. Therefore, I modeled by evaluating the Manager of Technical Services and then required that person to evaluate his own staff. Our Human Resources Manager assisted with this process. The process included goal setting and follow-up for each individual. While this is not implementation, it does have an influence on how the technical services department supports the use of technology for teaching-learning, administration, and communication.

	WRITTEN RESPONSE – SUPT A (cont.)
2c	What systems or structures have you successfully changed in your district? I don't know that I can name a specific success story in terms of technology in the past two and a half years. I do believe we have continually made progress and are taking all the necessary steps to make sound decisions regarding technology.
3	***Technology Leadership***
3a	What barriers do you believe exist that can influence your technology leadership? The biggest barrier is time. With the many responsibilities of the Superintendent's role, it becomes difficult to spend as much time on one area. I am fortunate, however, to have some excellent administrators and teacher leaders in the area of technology to advance district initiatives.
3b	What do you actually do to lead technology implementation and integration in your school district? As previously explained, there is direct and ongoing communication regarding all aspects of technology. The expectations regarding use of technology are communicated to stakeholders and assessed as much as possible. I also use technology whenever possible during presentations, workshops, etc. Finally, technology integration is part of teacher evaluation.
3c	What information do you, your teachers, or your students need to help improve technology implementation in your district? There is actually too much information! As previously stated, the biggest issue is time and, of course, money is always an issue.
4	***General***
4a	How do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices? These resources are used as needed when major decisions are being made. We also look to the NJ Standards in technology to guide our work.
4b	What recommendations would you give to other aspiring or practicing superintendents about how to provide effective technology leadership in a school district? Gather input from users of technology; be sure you have a plan for how the technology will support or improve teaching/learning, communication, or efficiency; surround yourself with others who have a keen understanding of both sides of technology – the technical side and the instructional side.
4c	If you were advising your Board of Education, Principals, and Teachers about how they could assist your efforts to provide effective technology leadership, what would you say to them? Provide me with feedback regarding the effectiveness of our current practices and offer suggestions for any changes, additions, etc. we need to make.

WRITTEN RESPONSE – SUPT D

Table 4. Focus Group Interview Guiding Question Route

Question	Question
1	***Background Characteristics***
1a	How long have you been a district superintendent in New Jersey? 3 years
1b	What is the District Factor Group (DFG) of your school district? B
1c	Is your current district suburban, urban, or rural? Suburban
2	***Adaptive Leadership***
2a	As a superintendent, what are the first things you did to lead the technology implementation process? Complete upgrade of network, iPads in all high school classrooms, projection equipment in all elementary classrooms, iPad carts in middle school
2b	As a superintendent, what are the second things you did to lead the technology implementation process? In-service
2c	What systems or structures have you successfully changed in your district? Monitoring of instruction, public relations
3	***Technology Leadership***
3a	What barriers do you believe exist that can influence your technology leadership? Time
3b	What do you actually do to lead technology implementation and integration in your school district? Work with my tech people on committees
3c	What information do you, your teachers, or your students need to help improve technology implementation in your district? Methods of instruction
4	***General***
4a	How do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices? Not very well
4b	What recommendations would you give to other aspiring or practicing superintendents about how to provide effective technology leadership in a school district? Work hard, thick skin, don't compromise the students
4c	If you were advising your Board of Education, Principals, and Teachers about how they could assist your efforts to provide effective technology leadership, what would you say to them? Don't think tech is a magic bullet. Implement it with great care and enthusiasm/

WRITTEN RESPONSE – SUPT E

Table 4. Focus Group Interview Guiding Question Route

Question #	Question
1	***Background Characteristics***
1a	How long have you been a district superintendent in New Jersey? 2 years
1b	What is the District Factor Group (DFG) of your school district? FG
1c	Is your current district suburban, urban, or rural? Suburban
2	***Adaptive Leadership***
2a	As a superintendent, what are the first things you did to lead the technology implementation process? We conducted a needs assessment of our current technology. We then formed a district level committee that had representatives from each school. The committee is made up of teachers, administrators, board members and parents. The committee has developed a technology plan that provides a strategic approach to technology implementation
2b	As a superintendent, what are the second things you did to lead the technology implementation process? I attend conferences, seminars and workshops. I also have visited other districts with exciting initiatives. I share my findings with the administrative team and the members of our curriculum committee
2c	What systems or structures have you successfully changed in your district? We have made sure that all district classrooms are equipped with large screen displays that are wired to a computer with internet access. We revamped the district and school web pages. We are using teacher web pages to inform parents and provide learning tools for students. We currently have pilot programs either running or getting ready to run using Wikispaces, Google Docs and BYOD
3	***Technology Leadership***
3a	What barriers do you believe exist that can influence your technology leadership? Lack of understanding as to how the various tools can be used to help students learn.
3b	What do you actually do to lead technology implementation and integration in your school district? I sit on the tech. steering committee, and meet regularly with the administrative team and our tech. department to discuss these issues. We survey parent, students and staff in this area.

	WRITTEN RESPONSE – SUPT E (cont.)
3c	What information do you, your teachers, or your students need to help improve technology implementation in your district? We need information from those in the field who have successfully implemented technology as a tool for learning.
4	***General***
4a	How do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices? They don't.
4b	What recommendations would you give to other aspiring or practicing superintendents about how to provide effective technology leadership in a school district? Needs assessment, read, learn and investigate…make sure to ask the question, "how will this tool help students learn?" before making any technology decision.
4c	If you were advising your Board of Education, Principals, and Teachers about how they could assist your efforts to provide effective technology leadership, what would you say to them? Read, learn, listen and ask. Work to develop a long-range plan that focuses on student learning.

WRITTEN RESPONSE – SUPT F

Table 4. Focus Group Interview Guiding Question Route

Question #	Question
1	***Background Characteristics***
1a	How long have you been a district superintendent in New Jersey? I am currently in my 8th year
1b	What is the District Factor Group (DFG) of your school district? FG
1c	Is your current district suburban, urban, or rural? Suburban
2	***Adaptive Leadership***
2a	As a superintendent, what are the first things you did to lead the technology implementation process? Conducted a needs assessment working with a small committee of district personnel and with BOE representation able to assist with identifying the present level of technology use, availability of computers, inventory review, and support in place. Expanded the hours of support that was currently in place through the budget process-expanded the part-time technology teacher at one school to eventually be 3 full time people district wide.
2b	As a superintendent, what are the second things you did to lead the technology implementation process? Explored and entered into a shared service agreement with the high school district we have a send/receive relationship with. When their needs no longer enabled the one technician to be shared, I explored a new shared services agreement with a different district. We had use of a technician to assist with tech support 2 days per week and had the option of contracting for hours with their network engineer. This worked for a period of time, but was later determined to be more cost effective to hire our own personnel full time. Consultation with outside resources (vendors) to have them look at the infrastructure as part of an expansion referendum project. Contracted with an outside vendor to expand and update infrastructure. The Board supported the need for additional personnel and so to date we have a service support contract with a vendor for networking support, a full time Technology Coordinator, and 2 full time teacher level positions (one in each school teaching part-time computer special area classes and doing tech support in that building).
2c	What systems or structures have you successfully changed in your district? Our district now has 3 computer labs in 2 schools (one is a thin client lab) and another mobile computer lab in the middle school (donated by the PTA). Every classroom now has SmartBoard technology, document cameras, speakers, and supportive educational software. Our Spanish instruction in grades 1-3 is conducted via OoVoo to maximize resources (the Spanish teacher at the Middle School conducts live lessons to students using the SmartBoard and OoVoo from her classroom across town). We are in the process of installing the necessary infrastructure for a wireless solution district wide.

	WRITTEN RESPONSE – SUPT F (cont.)
3	***Technology Leadership***
3a	What barriers do you believe exist that can influence your technology leadership? The technology upgrades and systems are becoming so complex and change so rapidly it's hard to know if a recommendation is the most cost effective or the best for the longest term investment. Also, as the educational leader there is no time to develop the expertise necessary to know if the direction being recommended is the best fit for your district. The CSA must rely on the personnel in the district and trust their motives and expertise in order to make good decisions. The Superintendent must be a good steward of the resources entrusted to him/her and with the caps on the tax levy there is little room for waste or inefficiency.
3b	What do you actually do to lead technology implementation and integration in your school district? Meet regularly with the Technology Coordinator, BA and vendor providing network engineering. I am involved with every decision and have every recommendation explained to me until I have an understanding of the goals and implementation schedule before the project moves forward. I am also involved with explaining initiatives, needs, and costs to the Board and sometimes have to translate the initiatives for the Board (how the initiative will help the district meet the goal of higher student achievement and ability to compete globally) in order to get their support.
3c	What information do you, your teachers, or your students need to help improve technology implementation in your district? The teachers need to know how to use the provided software and hardware so they feel comfortable integrating it in ways that support the learning goals of the lesson. The teachers need to know how to solve basic troubleshooting issues (turn it off and reboot) so they are empowered to solve their problems in a timely manner. Teachers and I also need to know the long term requirements of technology use for high stakes testing. This needs to be communicated with the parents and students so they know the impact computer literacy instruction will have on a child's ability to demonstrate proficiency in the content areas.
4	***General***
4a	How do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices? We have used the ISTE standards to guide decision making in the past. Currently the ISTE standards are incorporated into the teacher evaluation tool to make observations and evaluative statements regarding teacher proficiency with computer technology.
4b	What recommendations would you give to other aspiring or practicing superintendents about how to provide effective technology leadership in a school district? Be involved with all the conversations in your district to gather a basic understanding of what is currently in place and what the long term needs are...don't fool yourself into thinking that when you complete a technology project it will be finished and that you will be set for a while. The upgrades are so frequent and change happens so rapidly that it is best to expect expandable solutions. The basic infrastructure must be able to expand in the future.
4c	If you were advising your Board of Education, Principals, and Teachers about how they could assist your efforts to provide effective technology leadership, what would you say to them? Keep an open mind; keep learning incrementally to stay aware of changes and opportunities. Try new things, technology is a tool that should be used to enhance instruction, delivering lessons more effectively, not in place of instruction.

WRITTEN RESPONSE – SUPT G

Table 4. Focus Group Interview Guiding Question Route

Question #	Question
1	***Background Characteristics***
1a	How long have you been a district superintendent in New Jersey? July 2012
1b	What is the District Factor Group (DFG) of your school district? FG
1c	Is your current district suburban, urban, or rural? Suburban/Rural
2	***Adaptive Leadership***
2a	As a superintendent, what are the first things you did to lead the technology implementation process? Oversaw completion of wireless Facilitated final stages of student information database system Hired new Systems Operator Planning (presently) bandwidth expansion Initiated exploration of steps toward BYOD Ensured process put in place for accurate NJ SMART submission Reviewed each department budget for anticipated new purchases of technology in keeping with district vision Reviewed budget requests to ensure digital text is included Maximized use of administrative software – ie AESOP for subs, AppliTrak for staff recruitment Initiated exploration of other administrative functions (ie budget) that can be further enhanced through technology Initiated Facebook and Twitter for district Exploring creation of district app
2b	As a superintendent, what are the second things you did to lead the technology implementation process? Next steps will consist of re-visit of district tech plan to correlate with increased usages of tech in district Next steps will include data based assessment to measure how effectively tech is utilized for instruction
2c	What systems or structures have you successfully changed in your district? See 2.1
3	***Technology Leadership***
3a	What barriers do you believe exist that can influence your technology leadership? Expense Security concerns – ie: BYOD poses some risks including but not limited to viruses Disagreement among stakeholders – sometimes this includes buy-in from your tech staff Putting purchases in front of application – in other words, purchasing equipment before you know what you want to do with it

	WRITTEN RESPONSE – SUPT G (cont).
3b	What do you actually do to lead technology implementation and integration in your school district? Facilitate a common vision and make the ultimate recommendation to the BOE for the acquisitions that will implement that plan
3c	What information do you, your teachers, or your students need to help improve technology implementation in your district? I think the key issue with technology is how to truly integrate it into instruction and to maximize the features it offers. In many classrooms teachers use Smartboards like a projector screen and use 2 dimensional aspects of technology such as PowerPoint
4	***General***
4a	How do the technology leadership NETS.A and ISTE standards inform your technology leadership decisions and practices? Practices correlate with standards but I am not sure that the practices actually flow from the standards
4b	What recommendations would you give to other aspiring or practicing superintendents about how to provide effective technology leadership in a school district? Be comfortable and model the use of technology personally. Be conversant and familiar with its utilization – try out use the same features you ask of teachers in your own presentations and meetings.
4c	If you were advising your Board of Education, Principals, and Teachers about how they could assist your efforts to provide effective technology leadership, what would you say to them? Begin with the end in mind – what do you want to accomplish in your classrooms and how can technology aid in that effort versus starting with a particular technology and finding a way to use it.