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Abstract

This narrative study examined the experiences of four school district leaders as they led a technology-based change initiative in their respective school districts. This study incorporated Sandy Kristin Piderit’s change ambivalence theory as the theoretical framework, which provided a lens for this research study. The central research question guiding this study was: What is the nature of technological change ambivalence as perceived by school district leaders, and more specifically; how do leaders overcome ambivalence to lead a successful and sustained technology initiative within their school districts? The findings revealed that the technology-based change initiatives that the four participants led were very strategically planned and implemented, including aspects such as clear goals, stakeholder readiness, professional development, methods for monitoring success, and reflections. The findings also showed that they did experience ambivalence and the types of resistance that is tied to ambivalence as they implemented their initiatives. As a result, school leaders employed specific strategies to help overcome resistance and support resistors. Additionally there were a number of consistent steps that the school leaders took that led to the successful implementations of their initiatives, which in many cases also served to proactively prevent resistance that may have occurred.

Keywords: technology, technology initiative, ambivalence, resistors, overcoming resistance, change, change leadership, district leaders
I began this process years ago with the hopes to challenge myself and to continue to grow as a scholar practitioner and as an educational leader. In reflecting upon this journey, I can confidently say that I have done just that. Not only has this research study helped to push this growth, but so have the countless number of learning opportunities that I have had throughout this program. With all of that said, our work in growing and in learning is never done. I know that I will continually look for opportunities to further challenge myself and to learn.

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I have always believed that a person is, in part, the sum of their experiences. To that end, I have always considered myself most fortunate to have had the privilege of working with and learning from the countless number of administrators, teachers, and staff members with whom I have served. I have found that sometimes the best lessons are learned in places and through situations that you would never have expected.

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Chapter One: Introduction

Often in modern day education, we find ourselves faced with many different technology-based questions and decisions. When it comes to the discussion around incorporating innovative technological resources into both schools and classrooms, we find it “touches on just about every subject that technology addresses: social media, digital citizenship, content knowledge vs. skill building, internet filtering and safety laws, teaching techniques, bring your own device policies, school budgets” (Barseghian, 2012, p. 39). In considering what is meant by innovative technological resources, we identify not only phones and iPads, but tablets, interactive displays, student response systems, and laptops as well. All of this is ultimately geared towards meeting students where they are, in hopes to engage them in successful learning experiences that the students may otherwise not be able to attain (Hew & Brush, 2007). The use of technology in today’s schools is not a change that we can hide from for as Penuel (2006) makes clear: “[initiatives] that seek to provide laptop computers and Internet access to students for use at home and school are expanding rapidly across the globe” (p. 329).

A challenge that many organizations face is the need to adapt to new goals and demands (Piderit, 2000). With that said, and as important as technology is within schools, in order to have a technology-based initiative be successful, careful consideration needs to be given to the leadership surrounding the change, and particularly to how leaders consider and account for how the proposed changes impact the various stakeholders within the organization.

Statement of the Research Problem

Even though technology is impacting virtually every part of our lives, the integration of technology within the educational setting has not been all that successful (Zhao & Frank, 2003). The problem of practice that I sought to address through my research was to explore the skills
that are required of leaders to successfully lead the level of innovative technological change that is needed to meet students where they are and to help all students succeed. This, in a very large part, included the importance for successful change leaders to identify and engage those stakeholders who are both for and against the proposed organizational change. Not only was I exploring the positive benefits that could be realized by and for students when schools and teachers allow their students greater technology access through various technologies in schools, but the level of leadership skills needed to generate a sincere buy-in from stakeholders and the type of leadership needed to sustain that buy-in. In order to address this problem it was best to first explore the responsibilities of school leaders; then through their experiences, take a look at what school leaders perceive as the roles and needs of educators, as well as the challenges and needs of students.

**Responsibility of leaders.** Each and every day, in my role as a school leader, I saw students bringing in their own personal computers, and we as administrators and teachers instructed them to put them away or lock them up. In many cases, this reaction was rooted simply in our policy. Granted, these personal computers were coming into schools in the form of cell phones, tablets, and e-readers, but without a doubt they had more computing power than many of the desktop computers that existed in many schools. Marzano et al. (as cited in Pautz & Sadera, 2017) explained that school leaders are a key influence in the change that occurs within their schools, often “challenging the status quo” (p.51). Pautz and Sadera (2017) identified that strong school leaders took a strategic approach and created an environment where teachers could be risk-takers and challenge themselves.

Meeting students where they are and actively engage them in 21st century learning required school leaders to implement change that targeted the recognized limitations, which not
only not having the resources necessary to acquire the innovative technology, but that also addressed teacher comfort level (Pautz & Sadera, 2017). It is important that school leaders had a shared vision as part of their technology integration plan (Hew & Brush, 2007). School leaders must have developed a culture where stakeholders felt that there is a team effort and opportunities for growth for all (Pautz & Sadera, 2017). Having implemented a carefully planned technology initiative, that was built upon a shared vision, that supported and properly trained both teachers and students on the benefits of the technology, that identified the appropriate use of the technology for educational purposes, and that overcame barriers and sustained the initiative is critical (Hew & Brush, 2007). School leaders must also have developed strong partners, both internally within the school, as well as externally within the community in hopes to have positively impacted teaching and learning (Pautz & Sadera, 2017).

There was much to garner from the research on the role of school leaders in the general change process that could be applied to leading successful technology implementation within a school (Pautz & Sadera, 2017). In citing a number of research studies, Pautz and Sadera (2017) posited that successful technology leaders engaged their school communities through transformational and distributed leadership strategies, explaining that those leadership styles laid a strong foundation for what needed to be done in schools to ensure successful technology implementation.

It is apparent that there needed to be careful and strategic leadership layered in innovative best practices designed specifically for leading technology change in schools. The purpose of this doctoral thesis was to explore how leaders understood change ambivalence within their schools around technological change. Further, how school leaders understood how their response to technological change shaped their strategies for sustaining innovation was explored.
**Role and needs of teachers.** In hopes to have positively impacted student success, educators needed to meet students where they were, having communicated with them and having taught them in the style in which they learned best (Prensky, 2001). Teachers needed to actively engage students in 21st century learning experiences that helped students to develop the knowledge and skills that they needed to best handle real-world problems (Ertmer & Ottenbreit-Leftwich, 2010). Accomplishing this required both a level of access to technology, which in some contexts may have been difficult (Hew & Brush, 2007) and a level of utilization and integration of the available technology that was linked to specific student learning outcomes (Ertmer & Ottenbreit-Leftwich, 2010). It was the job of the school leader to create an environment which provides teachers with resources and that helps to foster this type of learning (Pautz & Sadera, 2017).

Morrison and Fujimoto (1997) explained that teachers who are engaging students through the use of technology are involved in what they term a “significant paradigm shift.” Furthermore, Snoeyink and Ertmer (2001) in citing Clouse and Alexander, explained that teachers are also changing their teaching philosophies when they begin to integrate various technologies into their classrooms. As educators were making this shift, it is important to point out that there are a number of obstacles that stood in the way of teachers effectively being able to utilize technology in their classrooms. Perhaps the most significant of these obstacles was understanding exactly what was meant by technology integration in the classroom. Hew and Brush (2007), citing a number of various research studies, explained that the concept of technology integration ranged from the teachers’ simple usage of technology with both themselves and by their students, to teachers having engaged students’ thinking skills through the use of instructional technology. Undergirding the concern that educators may not have had a common understanding of
integrating technology into instruction was a larger obstacle that some educators may not have even understood the role that computers could play in their classrooms (Bauer & Kenton, 2005). With all of that said, even once a common definition of technology integration was understood, Hew & Brush (2007) pointed out that other barriers included teachers’ own knowledge and skills, as well as their own attitude and beliefs of and towards the instructional technology.

Many teachers may have been under-prepared to be able to effectively integrate technology into their instruction (Bauer & Kenton, 2005; Snoeyink & Ertmer, 2001). According to a 1999 U.S. Department of Education Survey, about a third of teachers felt comfortable with incorporating the use of technology into their classrooms (Russell, Bebell, O'Dwyer, & O'Connor, 2003). This pointed to the need for increasing specific professional development opportunities for teachers, either through providing hands-on learning opportunities (Hew & Brush, 2007), or incorporating more experiences within their teacher preparation programs (Bauer & Kenton, 2005; Russell et al., 2003; Ertmer & Ottenbreit-Leftwich, 2010). In addition to providing attention to increasing the skills of teachers, there existed a need for school leaders to address their beliefs as well, for even if the educators were knowledgeable about the technology, they may not have believed that it is what is best for their students (Hew & Brush, 2007).

According to Cuban (as cited in Ertmer & Ottenbreit-Leftwich, 2010) many teachers, regardless of educating 21st century learners, used the same educational tools within their classrooms as they had always used.

**Challenges and needs of learners.** In an attempt to prepare a true 21st century learner, schools and school leaders must work to ensure that students are ready for global competitive success (Pautz & Sadera, 2017). Technology has directly impacted all fields, and has changed the way that many professions, police officers, mechanics, doctors, etc. go about their work
(Ertmer & Ottenbreit-Leftwich, 2010). Over the last two decades, technology has changed the way we live, communicate, and how students learn (Siemens, 2013). As such, the knowledge that was needed for success beyond school had grown exponentially, which required schools and school leaders to consider how best to help students gain this knowledge (Siemens, 2013). Technology could help students develop the skills necessary to solve complex, real-world problems (Jonassen, 1995). Therefore, it made sense that in considering technology usage in education, we needed to consider moving beyond simply supporting traditional pedagogy as a supplemental teaching tool and let it become a key teaching tool in the classroom that led to positive student learning outcomes (Ertmer & Ottenbreit-Leftwich, 2010).

Students today are different from students of the past, and our educational system was not designed to best teach them (Prensky, 2001). Students were coming to us, ready to learn, with a unique set of abilities, preferences and attitudes that we have not seen before in our classrooms (Thompson, 2015). The use of technology in today’s classrooms has become an unavoidable way of life for the students in our schools, which forces students to learn and teachers to teach differently from what they have in the past (Snoeyink & Ertmer, 2001). The students who compose our current K-12 learners were considered to be digital natives, having grown up surrounded by and immersed in technology from the day they were born, which in many cases was very different from the personal experiences of their teachers (Prensky, 2001). In short, each new group of students learned differently from prior groups.

I posited that it is due to many reasons, including but not limited to teacher comfort levels, school and district policies, and fear of the unknown, that teachers may not have been leveraging these important technologies for educational purposes. This is perhaps leading to students’ not having been best prepared for success as they entered their post-educational worlds.
As part of understanding the steps that school leaders should have taken to ensure the successful implementation of a technology-based change initiative within an educational setting, this study sought to better understand the needs of educators.

**Evidence Justifying the Research Problem:**

In justifying the importance of this research problem, I had not needed to look much further than the school districts in which I had served. At the time of this writing, my current school district may have been classified by many as quite traditional in the pedagogies used in the classrooms, yet working to increase the amount of technology available to students and teachers within the building. The addition of educational technology was something that was occurring in most schools across the state, as well as the country. In 2001 federal technology spending increased to $729 million, from just $21 million in 1995 (Russell et al., 2003). During the 2004-2005 school year, districts spent $7.89 billion on technology (Hew & Brush, 2007). In my school, most classrooms had desktop computers, which in some cases may have been a number of years old. Additionally, most classrooms were equipped with a document camera and a projector. Most academic teams or departments within the building also had access to a cart of laptops for student use. At the time of this writing, we were seeking to place 10 student laptops devices into each classroom, as well a number of interactive boards throughout the building.

Bauer and Kenton (2005) explained that schools have not yet been successful in achieving full technology integration, and suggested that in order to remedy this, school leaders needed to take charge and lead, fearing that if successful change did not occur, then schools would fall behind other sectors. Hew and Brush (2007) stressed the importance of having a technology implementation plan that was designed to address the barriers, such as the need for resources, professional development, beliefs about the change, etc. that may have stood in the
way of a school achieving success. Again, using my context as a representative example, the reactions that stakeholders had to the change was almost as impactful to its success of the change as securing the resources. There were many barriers that may have stood in the way of a successful technology-based organizational change (Hew & Brush, 2007). Amongst perhaps the most challenging of those barriers was the reactions of those impacted, which include support, overt and passive resistance, and/or ambivalence (Pautz & Sadera, 2017).

Similar to the situation in my school district, there were a number of technological initiatives that were currently mounting across the educational landscape. From my experience many of these initiatives were referred to as one-to-one, which placed a computer device into each student’s hands. This not only allowed students the opportunity to access knowledge in school through means in which they may learn best, but it also helped to prepare them for success in a technology-centric 21st century. Regardless of the initiative, there needed to be a well-structured and detailed leadership plan, which included looking at and revising school/district policies, educating students on acceptable usage, professionally developing educators, etc., all aimed at ensuring that the initiative is both successful and sustainable.

**Deficiencies in Evidence**

With all of the focus having been on devices in schools, there has been very little work around the role of the principal in leading those efforts (Pautz & Sadera, 2017). A lack of scholarly research in this area would have impeded the ability for school leaders to make research-based decisions designed to help their school move forward in technology implementation (Pautz & Sadera, 2017).

There appeared to be very little research on the strategies that school leaders used to ensure that innovative technological initiatives were successful and were sustained in schools. In
part, this is may have been due to the fact that schools and school districts had set their focus primarily on technology acquisition and not enough on the implementation of the change; and more on technology usage, rather than technology implementation (Bauer & Kenton, 2005). Additionally, the type of technology may played a part in this as any time we attempted to consider the utilization and application of technology for educational purposes there was the possibility that our research could not keep up with the new functionality and applications that new technology provided. It appeared as though by the time conclusions and implications of research were shared on a particular technology, we had moved onto a different technology altogether. It is this lack of up-to-date research on specific technologies being implemented in schools that I had found to be lacking in much of what I had reviewed.

Although there appeared to be much literature that talked about technology in the classroom (e.g. calculators in classes, use of mobile devices, one-to-one computing initiatives, blended learning initiatives, educational software programs, etc.), I had not found research studies or even examples that talked specifically about what leaders had done to ensure that their new technology initiatives were successful and sustainable. A large part of this success and sustainability is contingent on how the stakeholders responded to that change and how the leaders of the organization mitigated those responses. According to Piderit (2000), researchers had largely overlooked the potentially positive intentions that may motivate negative responses to change. To her point, and as part of the change efforts of a school leader, I had not found studies that addressed how school leaders could have worked to overcome resistance and ambivalence that stakeholders had towards a technologically-based change initiative. It was my hope that my work in this area would help to contribute to the currently developing body of work on the topic of present-day technology implementation in today’s classrooms and schools.
The Audience

It was my hope that in exploring how successful schools and school districts had implemented their technology initiatives that I would be able to provide important qualitative data to school leaders and decision makers within schools and school districts. With the data in hand, leaders in both schools and school districts might have been more willing to develop specific leadership plans, policies, and professional development opportunities for their faculties that allowed them to maximize the benefits of the technology that they had acquired for the students. This may also have helped the teachers to be more comfortable in developing opportunities for both instruction and assessment, which incorporated the usage of the technology.

Significance of the Problem

Innovative technology in education was such a present-day hot topic that even the Federal Government had placed an emphasis on this in schools. In the final version of the National Education Technology Plan (NETP) a call for support was issued for “efforts to ensure that all students and educators had 24/7 access to the Internet via devices, including mobile devices, and that states, districts, and schools needed to adopt technologies and policies that enabled the leveraging of this technology that the students already had” (Watters, 2010, p. 1). A major goal of the United States Department of Education plan was to put a computing device in the hands of every student (Scherer, 2011).

As with any important initiative it often took resources, especially fiscal, to make it possible, and to that end the Office of Educational Technology at the U.S. Department of Education, through its national broadband plan, was working to make E-rate more available and flexible so that they could cover the cost of devices such as smartphones (Schachter, 2012).
These funds would have gone directly to school districts and schools for various technological projects. Having placed an emphasis on technology initiatives allowed districts to expand their definition of a textbook to include not only books, but a digital content and computer software and equipment (Levin, 2011).

Considering and researching the benefits of leveraging technology within schools and classrooms had many implications for many different stakeholder groups. In starting with the most targeted group of stakeholders, the students, who as Rosen (2011) pointed out are using their cell phones more and more with each passing day; Rosen even went as far as to refer to present-day children as the “iGeneration” (p. 12). Additionally, we would have been hopeful to see the benefits of having allowed students access to a great array of online learning activities and applications in a very timely way. I also believed that we would see the benefits in many other aspects of the classroom by teaching students through a means that they were most familiar with.

Allowing students to utilize technology in the classroom was not a silver bullet; however, exploring this topic as to attempt to benefit education and improve student learning outcomes was of the utmost importance. There are many different facets to this issue, which I hoped to address in my review of the literature, and which I also hoped would help to guide my research in this area. This research will add to the limited body of data on how educators and educational leaders implement a successful and sustainable technology initiative with the goal of ensuring that the technology is leveraged more effectively and for the benefit of students.

Positionality/Author Background

When moving forward on a journey of research it is imperative to be reflective and to understand how one’s own position in society might have an unintended impact on that research
That said, it was important to mention and disclaim that I, myself, am classified as a digital native, one that has grown up surrounded by technology since birth. This is opposite of digital immigrants, who in part due to the changing times, have had to make a move to using new technology not needed or available at points earlier in their lives. To that end, I have always been fascinated with the benefits that technology can bring not only to myself as I looked to ways to utilize technology to increase my own level of efficiency, but also within the classroom in providing students with meaningful and relevant learning opportunities. Quite similar to many in my generation, Generation Y or the Millennials (depending on whom you read), I also liked and wanted immediate answers to questions and/or clarification on issues. Often I used features of digital technology (i.e. cell phone with Internet capabilities and texting features) to solicit that immediate feedback.

As most would agree it was difficult, if not impossible, to remove one’s self from one’s teaching, and therefore I was always looking for opportunities to utilize technology within my classroom. In my time as an educator, I had worked to stay current on instructional technologies and their uses through my attendance at a number of workshops and coursework. Over the years, I have also written and received hundreds of thousands of dollars’ worth of grants for the schools in which I had served to implement various instructional technologies such as interactive whiteboards, document cameras, interactive tablets, projectors, student response systems, etc. into classrooms. In working to help other educators develop a level of capacity and comfortableness with instructional technology, I had served as a trainer for a number of technology professional development opportunities both within the district and the state. Although my role as school leader had precluded me from being completely immersed in the district dealings surrounding technology, I was still very much involved with discussions and
decisions on technology strategic planning and implementation within my districts. So for purposes of this positionality statement, it is safe to say that I am a believer in the use of technology within schools.

It is also important to note that I also completely utilized mobile technology to increase my own efficiency as a building administrator each and every day. I did not go anywhere without my smartphone, on which I could always access and manage my contacts and calendar with a click of a button, as well as access our student information system, budget files, meeting minutes, agendas, etc. within seconds. Although my cell phone was always on me both at work and at home and provided all of the same features as an iPad, I also frequently used an iPad at meetings simply for the larger view. In addition to these types of mobile devices, I also used both a laptop and a laptop that changes into a tablet frequently and for various specific functions.

When it came to children and technology, I did think that there are some definite positive implications. Using my own daughters as examples, who at the time of this writing were 10 and 8 years old, and who were very comfortable using an iPad and have been since when they were each about the age two; operating it better than many adults could, not only navigating and using apps, but also adjusting iPad settings such as brightness and sound. Although they did use technology to play games, these “games” had been strategically selected by my wife and me to help support their learning of various skills and concepts such as letters, numbers, basic math, shapes, and colors. I believed that their immersion into this technology had helped them to develop to where they are today. My fear has always been what might have happened to their learning potential when they entered a traditional classroom setting. Where I certainly agreed that the learning of traditional skills in traditional ways were important, I was concerned about classrooms that discouraged the use of such technology and perhaps had certain policies which
precluded its use. I thought that out of fairness, this predisposition and concern of mine had an impact onto my positionality.

As I mentioned previously, at the time of this writing, I was serving in the role of a school administrator. It was in that role that I was responsible for leading a number of initiatives each and every day within the school. That being said, through the years I had worked to be a student of leadership, learning all that I could in hopes to best be able to positively affect those in whom I serve. It was my philosophy, demonstrated through my practice, that there was not one singular style of leadership that a leader used in every situation, but rather that a leader must be versed in various leadership styles to best work the situation that was in front of him or her. Depending on the situation, the leadership styles that I had employed have included directive, transformational, collaborative, servant, etc. This was germane to this study, as the study will focus on those strategies that school and district leaders used within their own professional context.

Lastly, as a school leader, who is involved in a number of state organizations, which allowed me much access to other school leaders, I had seen and heard of a number of technology initiatives that focus primarily on technology acquisition. There was very little, if any, focus on the change that needs to occur within the school, as well as within the stakeholders that ensured that the newly acquired technology was helping to positively impact student achievement. As a result of various types of technologies having been around in schools for a while, I had even seen different types of technologies become obsolete before making an impact for students. As a school leader responsible for the school resources and student outcomes, I viewed that as a waste. I had observed many teachers over the years that are still teaching in traditional ways, not
utilizing the new technology that had been provided to them in their classrooms. I also thought that these experiences as a school leader impact my positionality as well.

**Research Questions**

For the purposes of this study, I was specifically interested in taking a deeper look into the following question(s):

1. What was the nature of technological change ambivalence as perceived by school district leaders?
   a. How did leaders overcome ambivalence to lead a successful and sustained technology initiative within their schools’ districts?

**Theoretical Framework: Change Ambivalence Theory**

Piderit’s (2000) change ambivalence theory was the primary lens through which this research was conducted. Employees’ reactions to an organization’s change are built upon three specific dimensions: cognitive, emotional, and intentional (Piderit, 2000). Piderit built her theory of the three dimensions from the works of earlier scholars such as Lewin and French, as well as more recent scholars such as Maron, and Dent and Goldberg. These scholars focused their work on the various types of resistance, as well as based much of their work on that of early attitude theorists such as Katz, as well as Rosenberg and Hovland (Piderit, 2000).

**Cognitive change.** Researchers such as Watson (1982), and Armenakis, Harris, and Mossholder (1993) began to look at resistance as being a cognitive state; they found that participants may have had specific negative thoughts about the change being proposed or implemented. In some cases they had not believed in the change. In looking at resistance through this lens, it will be possible to see if educators who are resisting the technology-based change are specifically deciding to do so, though not believing in the potential positive effects of the change.
**Emotional change.** Researchers such as Coch and French, and Vince and Brussine, described the development of resistance due to an emotional state. Specifically, they found that participants involved in an organizational change resisted due to feelings of anxiety, which sometimes led to frustration and even negative behaviors (Piderit, 2000). This aspect of the framework should be extremely helpful in taking a look at how teachers' feelings' and their own confidence with the technology impact the initiative's success.

**Intentional change.** In regards to resistance specifically due to behaviors, Piderit (2000) explained that researchers such as Abolafia and others such as Ashforth and Mael had defined the specific resistance behavior as acts of defiance or omission. They had studied resistance to change in terms of behavior and usually found the behavior to be a specific action against the change, or even an inaction. This aspect of the theoretical framework will help to provide a lens should teachers be making the decision, as explained by Ertmer and Ottenbreit-Leftwich (2010), to continue teaching as they always have rather than participating in the change. These behaviors run in contrast to the desired behaviors of an organization change such as compliance and the willingness to be part of the change. One thing that was evident in Piderit’s review of the empirical research was that in many cases these conceptualizations of resistance overlapped.

Piderit developed this theory through diving deeper into an area of change leadership, specifically the resistance to change, which had previously been overlooked by many researchers (Piderit, 2000). Prior to Piderit’s research, most leaders simply perceived any resistance to change as purely negative and those who perpetrated the resistance as disobedient. Up until Pederit’s work, very little research focused on the resistors to the change; rather, as Piderit (2000) citing Klien and Thomas stated, “Researchers had taken the perspective of those in charge of implementing change, and so scholars have written less about the perspectives of those with
less power” and “Perhaps scholars, as well as practitioners, need to be cautioned against playing
the blame game” (Piderit, 2000, p. 784). Piderit (2000), while citing Krantz, goes as far as to
suggest that “resistance to change had evolved into a way of change leaders blaming the less
powerful for unsatisfactory results” (Piderit, 2000, p. 784). This suggests that the perception of
power in the decision-making had directed the research on this issue.

How leaders viewed the perceptions of those they led could impact the way in which
leaders designed the implementation of an organizational change. This makes better
understanding the reasons why employees might resist a change all the more important for
change leaders to consider. Piderit (2000) did point out that in some, although not yet fully
integrated research, there could have been good reasons for employees’ resistance to change that
was “motivated by more than mere selfishness,” such as resistance that was aligned with an
employee’s own ethical principles (Piderit, 2000, p. 784). These employees who have what they
believed to be legitimate concern with the proposed change knew that resistance could lead to
penalties and/or negative consequences for themselves, therefore substantiating the reasons for
resistance (Piderit, 2000).

Piderit’s change ambivalence theory is based on how employees within an organization
respond to the change along the three aforementioned dimensions. If the reactions along the three
dimensions of cognitive, emotional, and intentional were positive (as depicted in figure 1.1), then
there is support for the change and the proposed change will be stably implemented. If the
reactions to the change were negative along any of the three dimensions, then there was enough
resistance to the change to cause the initiative to collapse (as depicted in figure 1.2). It is when
the reactions were neither equally positive nor negative along any of the dimensions that there
existed employee ambivalence to the change (as depicted in figure 1.3) (Piderit, 2000, p. 783).
An example of this could be an employee whose “individual cognitive response to a change was in conflict with his or her emotional response to the proposed change” (Piderit, 2000, p. 787), which for example could have been someone who knew that this change was ultimately for the best, but may lack the confidence needed for the change. “Conceptualizing employees’ responses to proposed organizational changes as multidimensional attitudes permitted a richer view of the ways in which employees may respond to change” (Piderit, 2000, p. 789). Not simply mistaking those who are ambivalent about the change due to negative reactions along a dimension for being a resistor allows us to better support employees through an institutional change.

In addition to ambivalence occurring across the three dimensions, it is also possible that ambivalence could occur within a single dimension (as depicted in figure 1.3) (Piderit, 2000, p. 787). This alone may be enough to make the success of the proposed change initiative unstable. Piderit (2000) shared an example of an employee exhibiting cognitive ambivalence who “might simultaneously believe that the change proposed is in his or her organization is necessary for its future survival, but is not yet sufficiently well researched” (Piderit, 2000, p. 787). How leaders support this individual might be vastly different than how they may support others with ambivalence across other dimensions or within a specific dimension.

In a practical sense, anyone with experience with change leadership within an organization knows that there is a group of those in favor of the change, often referred to as “early adopters,” and those who are immediately against the change. Pederit’s theory not only helped me to better understand the reasons that are motivating the latter group, but also allowed me to garner very valuable information about the often larger middle group—those who are ambivalent to the change. Specifically, by applying the multi-dimensional view, I was able to better analyze the different reactions along the different dimensions (Piderit, 2000).
Piderit’s change ambivalence theory is a theoretical framework that spoke to the proposed attitudes that were required for successful change leadership, which was at the root of my problem of practice. As I previously mentioned, in order to help give students the best opportunities to meet with success in the 21st century, we need to utilize methods and resources through which they learn best. In order to accomplish that and in assuming that one of those important resources is technology, we as school leaders need to best understand all of the aspects that go into a successful technology-based change initiative.

In having dived deeper into the leadership for technology-based initiatives that have been implemented in schools, I hoped to uncover various resistances that have occurred and strategies of how leaders had handled the resistance, as well as the resistors. As the problem of practice implied and as the research questions sought to discover, I was specifically looking at how ambivalent attitudes amongst stakeholders impacted the change process and what had been done to mitigate those issues within a successful technology-based change initiative. Hew and Brush (2007), as well as Pautz and Sadera (2017) explained some of the possible barriers and resistance that leaders might face when attempting to lead a technology-based initiative within their schools.

Not only did this study validate those barriers, but it also added to the list of possible reasons for resistance. Through applying the three pillars of Piderit’s change ambivalence theory, it was possible to see how the specific reasons for resistance to technology implementation could have fallen within each of the categories of cognitive, emotional, and/or intentional. Not only will this help us better understand resistance specific to technology change, but it could also help us to understand how school leaders address these concerns. Without a doubt, Piderit’s change
ambivalence theory helped to focus my research question(s), as well as my proposed methodology.

*Figure 1.1. Theoretical framework diagram: The change is most stable when stakeholders are supported equally and fully within each of the three dimensions (Pideret, 2000).*
Figure 1.2. Consideration of an equally positive reaction in all of the three dimensions is important for sustaining organizational change. (Pideret, 2000)

Figure 1.3. The change become unsustainable when stakeholders’ ambivalence exists in even just one dimension. (Pideret, 2000)
Chapter Two: Literature Review

Introduction

The following literature review is broken down into a number of different sections, each providing a different angle on the problem of practice and each designed to provide a comprehensive examination of the literature that is currently available on the topic of both current technology in education, as well as the leadership involved in technology-based change initiatives. This literature review begins by reviewing the history of mobile technology initiatives and research as well as current technology policies that exist in schools. While this literature review also lays out the case as to why such an initiative would be beneficial for today’s learners, it also points out the many concerns that have risen from such programs.

Additionally, I reviewed the key considerations that must be taken into account when developing a specific technology programs, citing common programs in today’s schools such as Bring Your Own Device (BYOD) within a school. Lastly, I reviewed current literature surrounding transformational leadership, which is a highlighted as a common leadership style when talking about leading technology initiatives within schools. Upon the conclusion of the literature review I highlighted some key points as well as discussed where I believe future research is necessitated and why work in this area is important. All of which I attempted to frame in the context of a research study designed at determining how best to lead initiatives designed at supporting student success by meeting students where they are.

History of Mobile Technology in Schools

Although to many the term mobile device is synonymous to current day cell phones and iPads/iPods, it has without a doubt been a topic of discussion within education for a number of years. Unfortunately and as one might imagine, there is not a great deal of information on this
topic, as it is relatively new, i.e. only in the last 12–13 years (Penuel, 2006). A practice that predates the prevalence of mobile technology as we currently know it, yet is tied to the idea of permitting students to use their own technology in schools, is the concept of one-to-one computing. Here schools were looking to achieve a ratio in which there would be one device for each student. The earliest one-to-one computing initiatives originated in the mid-1990s, sponsored by companies such as Microsoft. Companies often offered an opportunity for schools and school districts to allow students to buy a leased laptop that they were expected to use in school (Penuel, 2006). A simple criticism of these early one-to-one computing studies was that there were not enough of them; therefore researchers concluded at that time that there was too little research-based evidence to determine whether such programs were effective (Penuel, 2006).

Germaine specifically to my problem of practice were studies and literature surrounding the topic of mobile devices in schools. We were quick to find in the literature that such thinking about exploring the use of mobile devices in education is not new. Studies date back to 2000 and 2001 with SRI, a nonprofit research institute in California, (Tatar et al., 2003) and how the device of the day (the Palm Pilot) might be best utilized in the classroom. Another common mobile technology and how it was utilized to make learning interactive that was heavily researched a number of years ago but has stood the test of time, and is present in most secondary schools, is the graphing calculator (Tatar et al., 2003). Currently, Schachter (2012) talked about how students in all grade levels, including students in elementary grades, in a growing number of school districts are being encouraged to bring in their own mobile devices. Bring your own device (BYOD) and/or bring your own technology (BYOT) programs have been piloted in Ohio, Minnesota, Texas, and Georgia with more states possibly on the way (Chadband, 2012).
all mark major changes to the old recommendation of leaving your own technology at home, or locking it up in your locker, which I specifically refer to within my problem of practice.

**Technology Policy in Schools**

Although accessibility and affordability are important, it is often local school policies which limit availability. This leads us to the question as to why we require students to lock up their mobile devices and not use them for educational purposes. Therein lies the topic of school-based policies. As cited by Rebecca Hill (2011), a 2009 study conducted by Common Sense Media found that 69% of all schools ban students’ cell phone use during the school day. The most common reason for doing so was due to text messaging distractions and cheating (Hill, 2011 and Kolb, 2011). An interesting statistic shows that although such a ban exists, 65% of cellphone-owning students in schools that ban cell phones still bring them to class every day, and approximately 58% of the students still use them (Hill, 2011).

A research study on whether students were aware of the policies relating to cell phone usage while in high school was conducted by M. Beth Humble-Thorton (n.d.) and was titled: *Student Reflective Perceptions of High School Educational Cell Phone Technology Usage*. Here she was specifically seeking to determine whether or not there exists a possible gap between school districts prohibitive policy towards students’ use of cell phones and the technological capabilities that cell phones have for positive educational benefits for students. There were three objectives that the author stated for conducting this study. She wanted to investigate college freshmen’s reflection of high school cell phone usage policies, investigate the perception of cell phones as possible educational learning tools, and investigate the potential perceptual differences by gender as they relate to cell phone usage in schools.

In the conclusion of Humble-Thorton’s (n.d.) study, she determined that students were in fact aware of their high school’s policy on cell phones, as well as the fact that they did not feel
that they were able to use it at any time. She also discovered a potential gap in the way that the different genders perceived both teacher- and student-initiated educational cell phone applications. Her conclusions included that males responded with a statistically higher degree of acceptance for cell phone usage, which she thought could be due to female students’ placing more emphasis on face-to-face communication or that perhaps males feel more comfortable responding to questions indirectly.

**Benefits of Utilizing Technology in Schools**

With many of the above policies already in place, the question now is: Why should we seek to explore the utilization of technology in the classroom? Without a doubt, there is a vast number of benefits, with perhaps the largest of which is financial. To date many schools simply provide the technology that students need for learning. However, with increasing demands for more technology coupled with tough challenging times, many are starting to consider that it may be beneficial for schools and districts to allow for students to bring their own devices (BYOD).

**Increased access.** The literature clearly points to two directions that schools and districts take when allowing students to utilize their own technology for educational purposes. One way is to supplement students who cannot bring their own devices with a school-based one-to-one computing initiative (Schachter, 2012). This would be the school district and/or school purchasing enough mobile devices to cover those students who do not have their own. The second method is the inverse in which schools and school districts allow students to bring in their devices to fill in the gaps that exist within the school’s technology availability. Although not having to purchase each and every student a computing device will save the district a substantial amount of money, studies also show that there is also a significant savings in the cost of technology maintenance. This is the case, as school districts that allow students to use their own
technology do not need to provide as much tech-support due to the fact that there are significantly fewer school-owned devices (Schachter, 2012; Hill, 2011).

In addition to the cost savings benefits, the power of mobile devices should not be underestimated. No longer do students (or adults for that matter) simply use a cell phone to make phone calls. Rosen (2011) cited research that shows that a typical teenager sends and receives approximately 3339 text messages per month, which translates into more than six messages every hour they are not sleeping. During this same time period the research shows that teenagers make and receive only 191 phone calls. She stated that this is up significantly from about two years ago where teens received about the same number of texts as they did phone calls. This shows that mobile technology use amongst teenagers is on a rapid rise.

Without a doubt, devices are becoming a way of life for society, and especially our current student population. An example of this comes again from Rosen (2011), who explained how when at a family reunion a question was asked about a specific movie, that sent all of the children ages 10 to 18 immediately to their smartphones, where within 30 seconds they all had the answers. This speaks to the way that students learn, the technology that they have available to do so, and a potential impact that this could have in the classroom. The features that we all use on our cell phones could also be used for educational purposes within the school. Take for example how phones now can be utilized to take pictures and videos to be shared immediately within the classroom through media such as blogs or other web 2.0 tools. Rosen put it quite nicely by saying “To children the smartphone, the Internet, and everything technological are not tools that all—they simply are” (p. 12). In her research of thousands of teenagers and their parents, she refers to this group of children as the “iGeneration” (p. 12). When trying to engage today’s students in the classroom, many wonder whether or not it is actually worth it to fight this
trend. Some like Schachter (2012) frame it by saying, “if something’s coming, we might as well invite in and learn to manage it.”

**Benefits for teachers.** In order to help continue to illustrate how technology can maximize learning in the classroom Liz Kolb (2011) presented an actual and complete sample lesson. The lesson began with a warm-up at the beginning of class in which students texted it in their responses while they watched others do the same. Next, students were placed in groups and asked to create an 8 to 10-minute podcast debating different viewpoints on the major causes of a war. To help find facts for their debate, students were permitted to utilize their phones to conduct immediate Internet research. Once the students had completed their podcast, they sent it electronically over the web to the teacher who could not only immediately listen to it but also provide the students with immediate feedback. Lastly, prior to the students exiting the classroom, they were asked to scan a barcode with their phones which led them to a set of online resources, which included both videos and documents that would aid them in their homework assignments. Essentially what that last step in providing the homework assignment did was “flip” the classroom, and interactively extended the learning beyond the walls of the school.

Another fascinating feature of mobile devices is the fact that their capabilities expand beyond the device itself. Many of the articles contained within this literature review speak to the numerous apps that are available to students who might utilize mobile technology in the classroom. Although some apps might cost a small fee, many apps for teaching and learning are completely free. That said it is important to also keep in mind that the more “platform neutral” teachers are in their utilization of online technology (i.e. using web-based programs such as Google Docs, Edmodo and netTrekker) will allow more students to access the learning regardless of the type of device that they have (Schachter, 2012).
Levine (2011) talked specifically about the shift that is going on in present-day education that includes moving from traditional textbooks to more online rich resources and activities. He cited the fact that both California and Texas, which as we know in education are the two states that drive what the textbook publishers do, are making moves away from traditional textbooks. As the resources that classroom teachers rely upon become more and more digitized, then the need for increased student access to online content will increase. It is here that the utilization of technology by students in schools will prove even more beneficial.

New outcomes for the new learner. One of the specific missions in schools and school districts of today is to provide students with the knowledge and skills to be successful in the 21st century. These 21st century skills include many of the same attributes that are connected to the discussions of the utilization of mobile technology within classrooms. As Gasser and Palfrey (2009) explained, approximately 161 billion GB of digital content was created stored around the world, which as they describe is “equivalent to 12 stacks of books reaching from the earth to the sun or six tons of books for every living person” (p. 15). This clearly marks a significant change in the amount of information being generated and shared by today’s students. Gasser and Palfrey (2009) also told us that a typical worker in the knowledge economy deals with 200 emails, dozens of instant messages, multiple phone calls, and several text messages a day. This is why it is imperative that we work to develop 21st century learning skills while embracing the technology that the students already have and will use in their lives.

When considering how to best prepare students with 21st century skills it is important to keep in mind that so many adults use these devices for work-related purposes such as scheduling, research, etc.; therefore in order to help ensure that students remain competitive, we should reconsider prohibiting students from using these devices in schools (Hill, 2011).
fact, Hayes (2012) talked about how in an attempt to separate themselves from others and recruit better candidates, various employers are more frequently adopting their own BYOD policies in the workplace, allowing their employees to bring and use their own devices. Gilbert (2012) went a step further describing that the benefits for companies to allow BYOD include “improved collaboration; retention and attraction of quality employees; reduction of help desk requests and overall IT spending; and the improvement of employee creativity, satisfaction, and productivity” (p. 39).

Ultimately, for students to be successful in the 21st century they will need to have some basic skills, which include “the ability to text message, take mobile photos and videos, and connect to the Internet by cell phone” (Kolb, 2011, p. 40); without a doubt, they will also need to know how to multitask. Fortunately, students by virtue of being so connected with their mobile technology are already quite proficient at multitasking, perhaps even more than any other generation.

**Benefits for students with special needs.** As educators an extremely important focus of the work that we do is the emphasis on helping all students to succeed, regardless of whether or not they are diagnosed with a specific special need. In addition to simply benefiting all students, technology in the classroom can specifically help students with special needs succeed. For example students who are visually or hearing impaired can be empowered by being able to access certain websites, through which students can utilize speech-to-text to be able to utilize e-mail, blogs posts, tweets, reminders, etc. (Kolb, 2011). Adolescents with disabilities, who already have a problem with oral language, vocabulary acquisition, reading comprehension, and written communication skills can benefit when responsive instruction is used (King-Sears, 2011). What is ideal about utilizing technology within the classroom specifically to help students with
special needs is the fact that these accommodations can and will help everyone, even those students without Individualized Educational Plans (IEPs).

Implementing technology to support student learning is something that takes careful planning and we should never implement technology just simply to implement it, but rather use technology in the regular context of learning. If not, “It may not be as efficient or even worse detrimental, especially for students with IEPs” (King-Sears, 2011, p. 570). A specific educational setting in which many students with IEPs are serviced is directly in the inclusion classroom, which is where instruction is usually facilitated by two teachers in a co-taught model. In order to be successful in this model both of these teachers must certainly be on the same page with the technology usage and implementation in the classroom, especially if they are to ensure seamless instruction.

**Postsecondary usage.** In addition to having the aforementioned benefits in both the K-12 classroom for both regular and special education students, and in developing a 21st century learner, allowing students to utilize technology in schools might also better prepare them for success in college. In a study by Louise Barkuus (2005), the researcher when observing student behavior in a university classroom in which students were permitted to utilize their wireless devices found that the interactivity that the professor was using allowed students to directly and anonymously ask questions of the instructor as well as to complete polls and ratings. She stated that “allowing students to ask questions anonymously of the teacher inspired more interaction in the class, especially amongst the students who are known to be more shy” (Barkuus, 2005, p. 3).

**How young?** Although there are clearly many benefits to utilizing this type of technology in the classroom, there has been a common inquiry by many of the authors as to whether or not it was appropriate for children and if so how young. There has been research
conducted in regards to technology usage at very young ages. One such study conducted by Eugene Geist (2012) titled *A Qualitative Examination of Two Year-Olds Interaction with Tablet Based Interactive Technology* explored how toddlers, ages 2–3, interacted with touch screen devices and how that interaction compared to traditional computer usage. He also wanted to learn how autonomous the children are in using these devices; what degree of adult support is required; and how the activity on the computer influences the children’s social interaction with other children and adults. He also wanted his research to answer the question whether touch screen devices are developmentally appropriate for toddlers aged 2–3. He had found that as early as age 2, children could easily and naturally interact with the touch screen and that their “ability to work and explore independently with the device is much greater than with traditional computers” (p.30). He also found that the device allowed the teacher to engage the students in more investigation than would be possible without the iPads or with traditional computers (p. 30).

**Concerns of Utilizing Technology in Schools**

As cited previously, the age of the children being immersed into technology use is a concern of some; however, with that said, there also exist other concerns that I will examine within this literature review. These concerns are some of the many that school leaders may face in implementing a technology-based initiative within their schools. One such concern that was common throughout much of the literature was the issue of parity and the access that students have to such mobile devices. Although studies show that approximately 75% of teenagers own their own cell phones (Hill, 201; Waters, 2010), 85% of high school students have an iPod or similar MP3 player, some with Internet accessibility (Williams & Pence, 2011). Although it is predicted that the prices of such mobile devices will continue to go down (Moore, as cited by
Chan et.al 2006), there still exists a real and legitimate concern about student access to technology.

In almost every school and school district that has explored implementing and/or has implemented a BYOD policy, there exists the need to address an issue of parity, as some students may not have the same access to mobile devices as others. Santos (2013) talked about BYOD policies generating a “digital divide” (p. 3). Even in a complete technological overhaul in an affluent Colorado High School, leaders were mindful of student access (Barseghian, 2012). Some of the reviewed literature has shown that PTOs and PTAs often help support students and their families by providing financial assistance or searching for a more generic low-cost device to help students get the best learning (“Advantages and Disadvantages,” 2012). Additionally some schools have even contracted with cell phone companies to provide mobile devices to students (Hill, 2011).

As one article described, some schools simply have the BYOD initiative be funded directly by the individual families, but as that same article suggests, that depends very much on local community and culture (Scherer, 2011). Robert Meurant (n.d.) in his literature review: Cell Phones in the L2 Classroom: Thumbs up to SMS, spoke of cell phone penetration rates that exceed 100% in some countries, which means that some individuals own more than one such device. Even in the United States, is believed that it is possible that by 2015 all students in all grades will have a smartphone (Hill, 2011). Therefore it is possible that this will no longer be an issue or a potential digital divide anymore. However, should funding be a limiting factor, an even simpler solution might be in how the teacher organizes the students to work cooperatively for group work in the classroom, as they can place students without such a device with those that do to complete the tasks (Williams & Pence, 2011; Barseghian, 2012).
Although it is the hope that higher penetration rates of mobile devices amongst students will help to close what is called the “digital divide,” it is a concern in some of the literature that until the day where all students have access to a device, BYOD programs could actually increase the digital divide that schools have been working hard to minimize and/or eliminate. In hopes to counter this some suggestions include allowing students in need to borrow a device from the school. Unfortunately, a major issue that we face each and every day in schools is that of bullying, therefore it is always a concern to avoid indirectly setting up our students to be picked on and/or bullied, which in this case could be based upon the type of technology that they have or do not have. Therefore any program such as this would have to be done in such a way so that the student in need could do so without facing any kind of stigma.

Although much of the literature spoke of fiscal benefits in allowing technology in schools, some are concerned that there could be a fiscal consequence. Schools and school districts, as required by CIPA (Child Internet Protection Act) regulations, must have substantial privacy filtering policies and protocols. The concern arises from students having an unfiltered level of access to the Internet that the use of mobile devices might allow, causing a violation of CIPA, which then could cost the district highly valued and important federal E-rate funding. Furthermore, schools and school districts fear possible litigation should students be able to access unapproved web content by bypassing the school's filtering by using their own cell phones with their own data plan(s) (Hill, 2011; Watters, 2010). Although, as cited by Scherer (2011), the director of the Office of Educational Technology for the US Department of Education addresses the filtering concern, many still feel it is important to wait until CIPA is officially modified, therefore avoiding the necessity of deciding between accepting E-rate funding or not (Hill, 2011).
Even if districts were comfortable in ensuring adequate filtering there is yet another concern in having the capacity in school buildings to allow students to access to the web with their devices. Present-day networking infrastructure in most schools and school districts is unfortunately insufficient to support a one-to-one and/or BYOD initiative. The National Technology Plan addresses the importance of addressing and improving broadband networks (Scherer, 2011), but authors warn that “coverage is not the same as capacity” (Schacter, 2012, p. 30). This is to say that just because a school's Wi-Fi network is accessible to all of the technology that the students are using, it may not be properly designed to handle the increased volume of users. This concern is not unique to K-12 schools, as Santos (2013) talked about the same concern in higher education institutions, pointing out that saturation of the network could occur quickly as students connect with their devices limiting the access for others. In hopes to address network issues, schools and school districts are developing plans such as building multiple networks: one for the general use WI-FI traffic and a second more secure network for the general business of the school (Schachter, 2012; Hill, 2011).

Finally, the most common concern expressed in a number of the articles is the fear that allowing technology to be used in the classroom may cause a distraction. In a student’s opinion, “Technology has become such a social and fun way for us to do things that, in a way, it's more useful to power down the classroom, especially with cell phones, because otherwise you'd be distracted” (“What screenagers say about,” 2011, p. 45). Also, Barkhuus (2005) in her study spoke to the fact that even in the post-secondary environment students using technology in class, without clear guidelines, led to distraction. Dovetailing with and exacerbating the potential distraction is the fear that students will believe they are entitled to use their devices for personal use in class (Meurant, n.d.). In hopes to help address that concern, Farrace (2012) shared with us
an interview with technology pioneer principal, Eric Sheninger, who said “Mobile devices become a distraction when we treat them as such,” clearly calling for a switch from traditional thinking.

**Considerations for Implementing a Technology Initiative**

There are a number of key considerations that school leaders and innovative teachers must keep in mind in attempting to implement a viable technology program within their schools or classrooms. First and foremost, leaders need to consider professional development for teachers so that they are able to best utilize this technology in the classroom and develop lesson plans that are interactive (Scherer, 2011). Chadband (2012), talked about an example where a technology director in a district trained teachers on using the devices, as well as how to install and connect to wireless networks. He then used teachers who had expertise with a particular device as the facilitator of workshops for other teachers (Chadband, 2012).

It is not only adults that see a need for quality professional develop, as even students weigh in on the need for teacher professional development with the utilization technology in the classroom. Students were cited as stating that “there's a lot of pressure for teachers to use technology, but no one teaches them how” and “What drives me nuts is when we're going to watch a YouTube video, 10 minutes later the teacher still hasn't figured out how to start it. It's kind of cute. But it’s a waste of time” (“What screenagers say about,” 2012, p. 45). Regardless of how the professional development is organized and implemented, instructional leaders need to support teachers to help them understand technology tools as they apply to instructional practices (Farrace, 2012).

Although many may argue that quality professional development is at the heart of a successful implementation of a technology program, other factors such as quality communication
and positive teacher perception of the importance of the initiative cannot be understated.

NASSP’s Technology Principal of the year, Patrick Larkin, when interviewed by Farrace (2012) stressed the importance to build a conversation with parents and community members about the importance of technology integration and availability in the school. Working to inform all parties of this shift to a technology-centric atmosphere is an important step in communication that will also help to shift the understanding and beliefs of all stakeholders.

Another major aspect in today’s educational context that will certainly have an impact on any integration of technology into the classroom is teacher evaluation. This has been a growing cause of concern and stress for teachers as they work to complete their evaluation processes to the best of their abilities. As evaluations are seen as being high-stakes, it is important consider how best to fairly and effectively evaluate teachers’ use and integration of technology. To this end, evaluators need to know both what to look for as well as how to supervise it (Beglau, 2011). Principals should therefore become familiar with technology standards such as the national educational technology standards for teachers. As was mentioned previously, technology is not the be-all and end-all in the classroom. Quality technology use will be accompanied by other signs of high-quality teaching, such as clearly defined learning goals, good classroom management, and checking for student understanding, all of which principals should be familiar with in observations of quality teaching.

Although all of the above considerations are extremely important in ensuring that teachers are best able to teach with technology and students able to learn with it, and that the shift and goals have been clearly communicated to all stakeholders, without attention to some other key points, none of this will be possible. As I mentioned previously, trepidations about the implementation of a technology initiative in a school and/or school district include specific
concerns on surrounding the idea of technology infrastructure. Raths (2012) suggested that organizations consider capacity and coverage issues, similar to what I had mentioned previously, as well as directory services, device registrations, role-based access control, and application-level filtering. He also cautioned that Gartner, an IT consulting firm estimates that approximately “80% of newly installed wireless networks will be obsolete by 2015 due to improper and/or insignificant planning” (Raths, 2012, p. 30). Without a doubt, ensuring a proper implementation of a BYOD initiative includes a number of key considerations.

Transformational Leadership

The literature has pointed to the specific leadership style of transformational leadership that may offer leaders a greater chance of success when implementing a technology-based initiative within their schools. A Transformational leader, as defined by Bass (1999), is one who “inspires, intellectually stimulates, and is individually considerate of (those they lead)” (p.9); and as a result places a stronger emphasis on uplifting the “morale, motivation, and morals” of their followers, as well as “fosters autonomy and challenging work” amongst the subordinates (Bass, 1999, p.9). Bass (1999) also explained out how transformational leaders move beyond their self-interests and align both their personal interests and the interests of the other members of the organization to the values and interests of the organization. Transformational leaders do this through “idealized influence (charisma), inspiration, intellectual stimulation, and/or individualized consideration” (Bass, 1999, p.11).

In Two Decades of Research and Development in Transformational Leadership, Bass (1999) outlined all that has been done over the last twenty years to contribute to this deep understanding of transformational leadership. Transformational and transactional styles are two common leadership practices; however there exists key differences of within these two styles.
Contrasting with the definition of a transformational leader, a transactional leader “caters to their followers’ immediate self-interest” how transactional leadership alone cannot provide ultimate job satisfaction (Bass, 1999, p.9). Additionally Bass cited how various changes in both the workforce and marketplace, over the last two decades, has resulted in leaders being more transformational and less transactional (Bass, 1999, p.9).

Bass (1999) posited that transformational leadership is a better model of leadership, citing a number of tools that have been used and studies that have been conducted that point to that end. One such study used the Multifactor Leadership Questionnaire (MLQ), and implied that although leaders display levels of both transformational leadership and transactional leadership, those with higher levels of transformational leadership had higher employee satisfaction.

There are a number of popular leadership models and constructs available to school leaders. In hopes to help us to better understand transformational leadership, Bass also explained in this seminal work how the various models of leadership interrelate. For example, Bass (1999) clearly pointed out that a leader can be transformational and use a directive, participative, authoritarian, and/or democratic approach at the same time. The same is true in the leader-member exchange (LMX) model, as the last step is usually transformational in nature.

Bass (1999) confirmed this in talking about how the personality and upbringing of the leaders plays an important part in whether or not they lead through transformational leadership. This points to the importance of leaders selecting a leadership style that is in line with who they are as an individual. Transformational leadership can be taught and certainly developed, however Bass did insist that there must be both willingness and some ability (Bass, 1999). He also pointed out that women are more likely to exude more transformational leadership than their male counterparts. Vinkenburg et al. (2011) took a very close look through two quantitative studies
that focused on the preconceived stereotypes of men and women in leadership roles and explored how gender stereotypes about Bass’s styles of leadership (transformational, transactional, laissez-faire, etc.) either “constituted an advantage or impediment for women's access to leadership positions” (p.10). They confirmed Bass’s (1999) statement that participants did believe that women displayed more transformational leadership than men. These findings suggested that “women seeking promotion should work to blend individualized consideration with inspirational motivation, exhibiting both sensitivity and strength and that men are advised to place their emphasis on inspirational motivation” (Vinkenburg, Van Engen, Eagly, & Johannesen-Schmidt, 2011, p.19).

**Transformational leadership in schools.** In following the progression of work following Bass’s seminal article, some researchers such as Gold et al. (2003), Hallinger (2003), and Marks & Printy, (2003) chose to focus primarily on exploring the construct of transformational leadership and how it thrived in a school setting and amongst school leaders. In talking about the application of transformational leadership within schools, a few of the articles referred to the interconnectedness of the models of both transformational and instructional leadership. Gold et al. (2003) and Marks & Printy (2003) conducted studies on how these leadership models were intertwined and how they hoped to discover a positive impact on both teaching and learning when these models are combined. In taking transformational and instructional leadership together, Gold et.al (2003) found that school administrators were not only proactive in their attitude to change, but through frequent communication and encouragement they were able to create and share a sense of purpose. Furthermore, Marks and Printy (2003) termed the combination of “transformational and instructional leadership as integrated leadership” (p.392). Both Gold et.al (2003) and Marks and Printy (2003) provided
evidence that it is important to cultivate and develop the leadership capacity within the school, and that teachers did, in fact, have both the desire and expertise to lead (Marks & Printy, 2003.). Hallinger (2003) worked to synthesize the research that had been conducted on both transformational and instructional leadership, as well as to compare the similarities and differences between the models. He pointed out that the definitions of the two models are ever-changing in response to the “changing needs of schools in the context of global educational reforms” (Hallinger, 2003, p.329).

In addition to building up the body of work that was started with Bass, some have been able to build on it, branching into a number of different and specific directions. One such direction has been in how transformational leadership has affected the leaders’ and subordinates’ integrity, as well as their emotional and psychological well-being, in essence answering the question as to how does transformational leadership works.

Psychology of transformational leadership. Before I review the literature on how transformational leadership is used in various organizations, I thought it best to explore the specific psychological effects that this leadership style has on various stakeholders within the organization. An example of can be seen in the work of Arnold, Turner, Barling, Kelloway and McKee (2007), who found that transformational leadership exerts a “positive influence on the psychological well-being of workers” (p. 200). They explained this to mean that more satisfaction that one finds in one’s work creates a stronger connection between transformational leadership and psychological well-being (Arnold, et al., 2007).

Through a quantitative field study involving 230 employees at a government agency, Pieterse, van Knippenberg, Schippers, and Stam (2010) described a connection between the style of transformational leadership and the innovation that occurs within an organization. An
interesting aspect of their work is the emphasis that the authors placed on the role of psychological empowerment, which is a tenet that undergirds quality transformational leadership. Their findings point to the fact that transformational leadership is influential only with high levels of psychological empowerment (Pieterse et al., 2010), again tying these two constructs together. They continued to point out that with that higher level of psychological empowerment, transformational leadership is more effective than transactional leadership as it relates to leading innovation (Pieterse et al., 2010). On a similar note, Popper, Amit, Gal, Mishgal-Sinai, and Lisak (2004) went on to further explain that three types of psychological capacities that are needed for leadership were self-confidence, proactive orientation, and pro-social relationships. They also mentioned that transformational leadership is an important category of socialized leadership, which added a new aspect not previously seen throughout this literature (Popper et al., 2004).

Each of the above helps to give a solid context for how this type of leadership style might be best for the implementation of the type of technology initiatives outlined previously. Specifically, they help to begin to explain a reason why this type of leadership might be best for trying to promote innovation, as innovation does require a certain level of risk taking. All of this could be a very strong foundation for the implementation of a technology-based initiative within a school or school district.

In regards to integrity, Parry and Proctor-Thomson (2002), through their quantitative study, had discovered a “moderate to positive relationship between perceived integrity and transformational leadership” and found that transformational leaders to act with higher levels of integrity (p.12). Quite consistent with what Bass (1999) termed laissez-faire leadership, this
study found there to be a high correlation with that style of leadership and lower participant perception of integrity (Parry & Proctor-Thomson, 2002).

Expanding upon the psychological impact of transformational leadership even further, Popper et al. (2004) and Arnold et al. (2007) both through their quantitative studies explored the impact that transformational leadership had on the psychology of leaders and subordinates. Popper et al. (2004) introduced us to the fact that they found a significant correlation between transformational leadership and high levels of locus control, which they defined as “the way in which a person perceives the ability to control events.” Additionally, they were able to deduce from their study that “leaders are characterized by higher levels of locus control than non-leaders” (p.257). Furthermore, Arnold et al. (2007) had results that directly supported the fact that transformational leadership increases positive mental health effects and that transformational leadership positively impacts the psychological well-being of employees, which is all a result of workers finding a sense of meaning in what they are doing (p.200).

Closely aligned to the psychological impacts of transformational leadership, which we have seen to be positive, is the emotional impact that this leadership construct has. This was further studied quantitatively by Rubin et al. (2005), in which citing Bass they stated that “transformational leadership was the most active and effective form of leadership” (p.845). Their study found that transformational leadership and emotional recognition were, in fact, closely aligned. They specifically found that agreeableness and not just extraversion predicted transformational leadership. They also found that the strongest combination of characteristics is “emotion recognition and extraversion [and that they] can significantly and positively influence transformational leadership” (p.854).
Transformational leadership for technology implementation in schools. As is germane to my problem of practice, I specifically analyzed a number of articles surrounding the role of transformational leadership as it relates to technology leadership within the public sector, most specifically a school setting. Afshari, Bakar, Luan, Samah, and Fooi (2012) in citing Yee, mentioned that “transformational leadership has been indicated as one of the most significant factors influencing and promoting the integration of technology in schools” (p. 165). In their earlier work, Afshari et al. (2008) explained that transformational leadership provides a strong level of adaptability that is key in leadership for technology. An important aspect of transformational leadership is the leader’s ability to be able to set and communicate a clear vision for technology usage within their schools (Afshari et al., 2012). Afshari et al. (2008) also explained that in order to be do this, it is important for school leaders to understand technology and be proficient with it themselves.

This theme of the benefits of transformational leadership continued with Ng Wee (2008), who, with the conclusion of his study on the benefits of transformational leadership in schools, determined that secondary school teachers agreed that transformation leadership did have a positive effect on the integration of information and communication technologies into teaching. The researcher also went a step further making a suggestion that school leaders should do more to be transformational in their leadership style, especially if they are to promote technology integration (Ng Wee, 2008).

Jen-Chia, His-Chi, and Ya-Ling (2011), through their quantitative study, found that “transformational leadership affects organizational innovation through its influence on the followers’ perception of external supports for innovation” (p. 50). The findings of this study included empirical evidence of a correlation between the support for innovation and
transformational leadership (p. 56). The findings also explain an important relationship that exists between transformational leaders and what has been defined as organizational innovation, which lead to the overall support for innovation within the organization. Another key finding that the researchers pointed out that helps to bring many of these points together is the fact that “when school principals used the strategies of transformational leadership, support for innovation, and organizational learning at the same time, organizational learning is highly effective in achieving organizational innovation” (Jen-Chia et al., 2011, p. 58).

The literature also points out that school leaders may need to employ more than just transformational leadership within their contexts. Marks & Printy (2003) in their study of 24 schools, most of which were urban with higher percentages of SES and minority students, claim that transformational leadership alone is not enough to sustain instructional leadership. The authors suggested that school leaders should combine transformational leadership with shared instructional leadership, a style that they termed “integrated leadership,” a combination that they thought would be best designed to help improve school performance (Marks & Printy, 2003, p. 392). Hallinger (2003) also supported this notion through his work in exploring school leadership, and specifically the role of the principal, in which he compared and contrasted the similarities and differences between both the instructional and transformational leadership models. He went into depth describing the three dimensions of instructional leadership, which he said included “defining the school mission, managing instructional program, promoting a positive school learning culture” (Hallinger, 2003, p. 346).

Without a doubt there is a great deal of very good literature surrounding this topic of the style of transformational leadership in schools and how it relates to the specific success of a technology initiative. Before positing whether or not this this may be the best style of leadership,
it is important to explore other contexts in which this leadership style has shown similar successes.

**Transformational leadership for technology implementation in the private sector.** In considering the effects of transformational leadership as a preferred style for technology leadership in schools, it may be beneficial to consider the effects of such leadership in organizations other than schools, namely organizations within the private sector. This was quite a common theme that occurred across many of the articles. In describing a study that took place in Australia, Sarros, Cooper and Santora et al. (2008) looked at the responses of 1,158 managers within an organization in hopes to determine the link between transformational leadership, organizational culture, and organizational innovation. Jung, Chow, and Wu (2003) conducted a similar study of 32 Taiwanese companies within the technology field, and determined that there was a direct correlation between transformational leadership and innovation. A key point in their study was the fact that the transformational leadership style allows for the type of organization in which innovation thrives, as it is in these types of organizations that employees feel free to experiment with “new ideas and approaches” (Jung et al., 2003, p. 539).

This literature on transformational leadership within different types of organizations other than schools indicates that successful leadership is successful leadership regardless of the context. As a matter of fact there are a number of lessons that can and have been learned from leadership in the private sector that can be used to ensure better success in leadership within schools.

**Measuring transformational leadership.** Regardless of whether or not we are talking about schools or organizations within the private sector, it is always very important to reflect upon and assess the success of the strategies that we employ to help make change. To that end,
there was significant literature explaining the various tools that could be used to assess the level and success of the transformational leadership that occurs within an organization. Some of these tools appeared to be more formal in their construction; while others such as the descriptive surveys utilized by Hendry and Woodward (2004) measured the overall effectiveness of transformational leadership in their organization. Through employing this tool, the researchers found that employees cope better with change when there is communication (especially vision), relationships, energizing andenthusing others, consultation, and innovative problem solving (Hendry & Woodward, 2004, p. 156).

More formal assessment tools, yet a seemingly generic measurement for the success of leadership styles in general, were the axes of the Full Range Leadership Model and the MLQ, both described by Judge, Woolf, Hurst, and Livingston (2006) which they explained could be used to measure the overall quality of a specific leadership style. The Multifactor Leadership Questionnaire (MLQ) was also described by Oke, Munshi, and Walumbwa (2009), who explained that most studies employ this tool in order to measure the effectiveness of a specific leadership style within an organization. The most specific measurement tool that I discovered for the presence and success of transformational leadership was called the Transformational Leadership Scale by Podsakoff et al, described by Sarros et al. (2008). Not only was this the first tool of its type, but it appeared to be able to dig deeper into the specific characteristics of transformational leadership.

**Literature Review Conclusion**

As Patrick Larkin, as quoted by Farrace (2012), stated, “The goal is to improve student learning.” I found my interests and enthusiasm for this topic grounded in a comment of a student who said that “[teachers] shouldn’t be afraid of technology. [They should] understand that is how
we live our lives. So don't just push it out. Learn to cope with us and how we work” (“What screenagers say about,” 2011, p. 46). This comment, coming directly from students, which in technology terms, is the end-user, made it more than worthwhile to dig deeper into this topic, specifically looking at what it takes from a school leader, like myself, to help make this happen.

To that end, a number of authors, including Barkhuus (2005) and Hill (2011) suggested a blended approach where classrooms that allow students to use technology are used in parallel with traditional learning techniques. Although as I certainly am interested in learning more about the benefits that technology usage might have for our students in the classroom, I will also be the first to stress that even the best technology is not the “be-all end-all” or silver bullet. Furthermore, as an educational leader, I know that even the best of things “just don’t happen,” but rather it takes skillful leadership to move initiatives, especially those rooted in technology forward within schools.

The literature on this topic made clear that there are a number of benefits in considering allowing our students the usage of technology in schools. The literature also pointed out that the best way to lead that initiative could very well be through transformational leadership. To that point, and in looking at areas of potential future work, Bass (1999) called for more research to be conducted on the correlation between transformational leadership and innovativeness and quality improvement (p.22). This specifically speaks to how leadership affects the success of a technology initiative in schools. To help accomplish this additional research, he also suggested that new methods of measuring transformational and transactional leadership need to be developed (p.23). Whereas some of the literature may point to some tools that might be available for this task, this study will look at how leaders sustained their technology-based change initiative, which will involve how they measured their success. In reflecting upon the literature, I
believed that there is a specific need for further research on what other leadership styles and strategies have been successful in moving technologically-based initiatives forward within a school. Perhaps through this research we will see trends that emerge based upon specific contexts in which the initiative was being led.

This study will undoubtedly help to uncover the leadership involved in ensuring the successful implementation and sustaining of an innovative technological change within a school. More importantly, this study will help me to move forward in addressing the problem of practice that I outlined above, specifically in how through their leadership, school leaders are successful in overcoming stakeholder ambivalence in leading a successful and sustained technology initiative within their schools and districts. The information from this study will not only address any voids found in the literature, but also serve to support educational leaders moving forward in making the type of changes that as the literature explains could positively impact student success. Regardless, the fact that we are on the cutting edge of so many possible movements in education that can and will be supported by technology, there are a vast array of exciting places where the future research on this topic may go beyond this study.
Chapter Three: Research Design

Introduction

The purpose of this qualitative study was to explore the strategies that public school and/or district leaders took to successfully implement and sustain a technology-based change initiative within their schools and/or districts. The research question that guided this study is as follows: What is the nature of technological change ambivalence as perceived by school district leaders, and more specifically; how do leaders overcome ambivalence to lead a successful and sustained technology initiative within their school district? This study was a qualitative research study due to the fact that the researcher, through participants’ voices and shared stories, focused on creating a new solution to a single, specific problem (Creswell, 2013). The goal of this study was to address a specific problem of practice through a method that sought to share and make meaning of the experiences of the research participants (Denzin & Lincoln, 2007). Creswell (2013) explained that the goal of qualitative research was to produce a final report that added to the existing literature on a problem; through this process, it is hoped there will be a contribution to the growing literature of school-based change, specifically in regards to leading a technology-based initiative.

Creswell (2013) explained that qualitative research should focus on a specific research question. In this study the central research question was: What is the nature of technological change ambivalence as perceived by school district leaders, and more specifically; how do leaders overcome ambivalence to lead a successful and sustained technology initiative within their school district? Additionally, qualitative research works in collaboration with an identified theoretical framework, whose purpose is to help inform and give meaning to the problem being researched (Creswell, 2013). This study used Piderit’s (2000) change ambivalence theoretical
framework as a lens to explore how school and district leaders overcame resistance as they were leading their change initiative.

**Research Paradigm**

Ponterotto (2005) explained that a research paradigm establishes the context for the researcher’s study. Furthermore, a research paradigm helps to guide the researcher in establishing the motivation, purpose, and expectations for the research, as well as assisting the researcher with the selection of participants and methods used in the study (Denzin and Lincoln, as cited in Ponterotto, 2005; Mackenzie & Knipe, 2006). For this study, I had chosen to use a constructivist-interpretivist research paradigm.

Creswell (2013), Ponterotto (2005), and Mackenzie and Knipe (2006) explained that the constructivist-interpretivist research paradigm helps individuals seek a clearer understanding of the context in which they live and work, and that it is through the lived experiences and views of the individuals that we are able to create a reality. Ponterotto (2005) further explained that there was no way within the constructivist-interpretivist paradigm for researchers to separate these lived experiences from the research process. This most closely aligned with my view that through the lived experiences of school and school district leaders, we will be able to construct specific strategies aimed at better supporting the implementation of technology-based initiatives. Creswell (2013) also explained that participant’s interactions with one another is an important aspect of a constructivist-interpretivist paradigm. Therefore, through school and school district leader’s interactions with others, specifically those whom they lead, including those who are resisting and/or ambivalent to the change, impacted the study.

Within a constructivist-interpretivist paradigm, the researcher does not try to work to discover one single reality from all of the experiences of the participants or try to validate his or
her own analysis, but rather acknowledges his or her own positionality and works with the participants to collaboratively construct an understanding and a reality (Creswell, 2013; Ponterotto, 2005; Thanh & Thanh, 2015). This aligned to my study as acknowledged in my own positionality; at the time of this writing I was a school leader who was charged to implement school-based changes. I, along with the individuals that participated in the study, had lived our experiences. The fact that there will be participants who had lived different experiences also aligns with the constructivist-interpretivist paradigm, as the constructivist-interpretivist researcher believes that there may exists multiple subjective realities to a situation that are influenced by such things as context, experiences, perceptions, etc. (Ponterotto, 2005; Thanh & Thanh, 2015). Although Stewart (2010) acknowledged that it is researcher that is central to the constructivist-interpretivist paradigm, it is through the interactive relationship between a researcher and a participant that a deeper solution to the problem of practice can be discovered (Ponterotto, 2005).

The constructivist-interpretivist research paradigm helped establish this study as one where through the participants’ experiences and knowledge I was able to co-construct the reality of what strategies they found had worked. Specific to the research question, I was able to dive further into their work with those resistant to the change, seeking a constructed knowledge of how to best leaders of technology-based change initiatives can best mitigate these challenges.

**Research Tradition and Rationale for Narrative Design**

Narrative studies are becoming more popular and used more widely in educational research (Connelly & Clandinin, 1990; Ollerenshaw & Creswell, 2002). Through a narrative research study the researcher is able to work with participants through the sharing of their own experiences in addressing a specific phenomenon (Carless & Douglas, 2017; Connelly &
Clandinin, 1990; Polkinghorne, 2007). In this study, it was the participants’ experiences in implementing a successful technology-based change within their educational contexts that helped to address the specific research question and/or phenomena of what the nature is of technological change ambivalence as perceived by school leaders. Furthermore, this study focused on the specifics of what school leaders had done to address this type of resistance through the lens of Piderit’s (2000) change ambivalence theory, which was the theoretical framework of this study.

Creswell (2013) explained that narrative research is not a lockstep method, therefore allowing the type of flexibility that will be needed to fully address the problem of practice. The interaction that occurred between the researcher and the participants during this narrative study helped to co-construct this new knowledge around this problem of practice (Carless & Douglas, 2017). This relationship of collaboration was woven throughout a number of steps of the research process, including refining the phenomena to be studied, the types of information that will be helpful in addressing the research question, etc., all of which are outlined in greater detail in this chapter (Ollerenshaw & Creswell, 2002).

A major aspect of this methodology of qualitative research is the focus on stories (Creswell, 2013). Connelly and Clandinin (1990) pointed out that the stories, which are constructed and reconstructed during narrative research is an important aspect of educational research. These stories can be gathered from individuals, groups, documents, observations, etc. and help to recount specific moments within situations that demonstrate how various individuals responded to specific situations (Carless & Douglas, 2017; Creswell, 2013). These stories that are collected are done so usually through the researcher’s conducting open interviews and/or informal conversations with the participants (Carless & Douglas, 2017; Creswell, 2013; Ollerenshaw & Creswell, 2002). These interviews and/or conversations are aimed at engaging
participants in a first-person sharing of their own personal experiences as it relates to the topic being investigated, as well as giving the participants the opportunity to raise issues that are of importance to them (Carless & Douglas, 2017; Ollerenshaw & Creswell, 2002). Analogous to stories found in a traditional novel, the stories of narrative research also contain a beginning, middle, and end, as well as the presence of characters, protagonists, conflict, struggles, scene, plot, setting, etc. (Connelly & Clandinin, 1990; Ollerenshaw & Creswell, 2002). Polkinghorne (2007) explained that these stories that are shared and co-created should be revealing enough into the lived experiences of the participants, which should provide the help needed to address the research question and ultimately the problem of practice.

Once the stories are recorded, a second major aspect of a narrative research study is the development of a “restory” (Connelly & Clandinin, 1990; Creswell, 2013; Ollerenshaw & Creswell, 2002). Restorying is where the researcher reorganizes the stories of the participants into a specific framework as to help make them more clear (i.e. for chronological purposes) and to help to be able to set up the story in order to extrapolate further meaning (Connelly & Clandinin, 1990; Creswell, 2013; Ollerenshaw & Creswell, 2002). Ollerenshaw and Creswell (2002) further explained that this process includes the researcher, after having gathered the stories, analyze those stories for certain specific and important elements such as time, place, plot, etc. They went on to explain that this restorying of the participant’s stories also helps to provide logic to the sequence of events, as well as to help establish a causal link among key elements. As I worked with educational leaders, having captured their stories around successfully leading the implementation of technology-based initiatives, the stories were then organized in a way that made sense to the readers who may have been using the results of this study to help positively impact their work.
As narrative research relies so heavily on the participants’ stories and subsequent restories, Connelly and Clandinin (1990) and Polkinghorne (2007) stressed the importance that the researcher listen to the participants and work to ensure that it is the participants’ voices and experiences that are coming through the stories, rather than the researcher’s own creations. In this particular study, it was important for me to ensure that the very positionality that strengthens a constructivist-interpretivist study did not negatively impact the stories of this narrative study. Threats and limitations such as these will be discussed in greater detail later in this chapter.

As we can see, narrative research is a process based on a strong collaboration between the researcher and participants, whose shared goal is to work together to share stories and organize restories as the research process unfolds (Connelly & Clandinin, 1990). Even though the researcher may be serving as the narrator of the stories, it is important to understand that this is an ongoing process, in which continued collaboration with participants is important even after the stories and restories are developed (Connelly & Clandinin, 1990; Ollerenshaw & Creswell, 2002). With all of that said, I believed that the narrative research tradition was best suited to answer the research question posed in this study. I sought to collaboratively work with the change leaders within schools that had undergone successful implementations of technology initiatives in hopes to share their stories of the innovative best practices that had helped them to achieve that success. Together with the participants, I shared the stories that will help to shine a light on what the best innovative practices for this type of change are for future leaders of technology innovations.

**Participants**

A stratified sample of four to six educational leaders, within different schools and/or school districts, who have directly been involved with leading the implementation of a
technology-based change initiative, were selected. The criteria for the selection of the participants included an educational leader who, in working with teachers, a) was involved since the onset of the implementation; b) was part of the original development of the implementation plan of the initiative; c) believed that the implementation plan had been completed and sustained for a period of at least one year; d) and who, at the time of this writing, was currently employed or who had been recently employed in a public school district setting. Additionally, as the type of leadership being investigated through this study was happening in schools across the nations, the participants for this study could have been from any school/school district, providing that they met all of the above criteria. In order to ensure opportunities for face-to-face conversations and engagement of and with the participants within their contexts, participants who were recruited worked within a 75-mile radius.

Participants for this study were recruited through a snowballing strategy of direct professional contacts and referral from participants, which helped to ensure that those participants being studied had cases to share that have a high level of detail and impact (Creswell, 2013). In order to ensure quality assurance, there was criterion sampling of those individuals interested in participating, using the aforementioned criteria (Creswell, 2013). The use of four educational leaders for this study helped to ensure that there was an identification of emergent themes in regards to how school leaders had successfully implemented and sustained their technology-based initiative; including ways in which they had mitigated the impact of teacher ambivalence in relationship to the change.

**Recruitment and Access**

The method of recruiting participants for this research study was through a multi-staged snowballing strategy. This type of strategy helped to enlist participants through the contacts that
various professionals may have had with other professionals, allowing for rich information to be collected (Creswell, 2013). I began by first reaching out to school leaders across the state of Rhode Island and Massachusetts with whom I had an established professional relationship. This initial contact was made via email (Appendix A). This email included an overview outlining the study, as well as the criteria for being a participant in the study and the incentive for participating (Creswell, 2013). If individuals were interested in participating, they were asked to fill out a short screening survey (Appendix B), which helped to determine if they met the criteria listed above. This survey was conducted through a Google Form and captured the potential participant’s contact information. I then followed up with the potential participants via a telephone conversation (Appendix C) to confirm their willingness to participate, as well as to answer any outstanding questions that they may have had.

Should the need have arisen for more participants beyond the snowballing of my own professional contacts, I was prepared to seek potential interested participants through reaching out to the professional networks within Rhode Island, such as the Rhode Island Association of School Principals (RIASP), the Rhode Island Middle Level Educators (RIMLE), and the Rhode Island School Superintendents Association (RISSA). This contact would have been made via an email to the executive director of the organization (Appendix D), which again included a description of the study, including the criteria to be considered as a participant, as well as the incentive for participating. This letter asked the executive directors to please share the information about the study, including the link to the screening survey with their membership. These executive directors, through virtue of their positions within their organizations would have had the professional contacts needed to ensure a complete sample. Individuals who completed the screening survey and had met the established criteria were contacted via an email (Appendix
thanking them for their interest, and explaining that I would be following up with a phone call (Appendix F) to discuss the study in further detail, also addressing any outstanding questions that they may have. Individuals who may have filled out the screening survey who did not meet the criteria and/or complete the screening survey after participants have been selected would have received an email communication (Appendix G) thanking them for their interest and explaining why they were not selected.

The participants who had been selected for the study were followed up with a telephone call (Appendix H), where I set up the logistics surrounding the next steps, which included setting up a specific time and location for our first meeting. The meetings were all confirmed with the participants using an email, which also included my contact information should the participant need to cancel or reschedule our meeting.

Creswell (2013) explained the importance of a researcher gaining the approval for a research study from the university’s Institutional Review Board (IRB). To that end, this research proposal was sent to the Institutional Review Board of Northeastern University. A major component of that application that is germane to the recruitment of participants is the completion of the required training for Human Subject Research Protections. This training was completed on November 17, 2013 (See Appendix L). This course reviewed all of the university, state, and federal criteria having to do with protecting human subjects during the research process. In following those policies and protocols, the participants were informed that all participation is completely voluntary. Additionally, all participants were given an overview of the purpose of the study. All participants were also given informed consent documents, which explained how their information, including names, schools, and school districts, as well as the data collected from their participation in the study will be kept in strict confidence (Rubin & Rubin, 2012). All
participants were provided with documents that outlined the Health and Human Services regulations for Protecting Human Subjects, as well as the relevant procedures and protections outlined by the Northeastern University Institutional Review Board.

**Data Collection**

Narrative research involves the collaborative collection and analysis of data between the researcher and the participants (Ollershaw & Creswell, 2002; Polkinghorne, 2007). Creswell (2013) explained that there exist many various ways in which the researcher can collect data for a narrative study. The data collected can be in the form of field notes, interview transcripts, document review, etc. (Connelly & Clandinin, 1990). This study included ten phases; however, as Creswell (2013) points out, the initial plan for narrative research may change as the research is being conducted.

The first phase of the data collection process included the steps for identifying and recruiting the purposeful sample of participants that were used for the study. This phase also included the initial communications with the participants. The second phase was aimed at piloting the first of two rounds of interview questions, prior to using them with the participants. Phase three was the initial meeting with the participants and outlined the process that had taken place during the first interviews, as well as the transcription process that immediately followed. The fourth phase of the data collection process explained how the transcriptions were reviewed for accuracy, and the fifth phase talked about the initial coding that took place. The sixth phase of the data collection process explained how the initial restories of the participant narratives were created and shared back to the participants for accuracy. Phases seven and eight explained the creation and piloting of the second-round interview protocol, as well as the second round of interviews with participants. The ninth phase talked about the transcriptions of the second round
of interviews, as well as the potential need for additional restories. The tenth and final stage described the analysis of the data that had been collected.

**Phase one.** During this phase of the data collection process, I identified a purposeful sample through a snowballing strategy of four participants, which allowed me, the researcher, to determine who would be studied (Creswell, 2013). This was completed through the aforementioned participant recruitment strategy. Once the participants had been identified I contacted them via telephone call (Appendix H) where I reviewed the specifics of the study, answered questions, and setup the first interview meeting (Rubin & Rubin, 2012). At this initial meeting, I provided the participants with a copy of the informed consent document (Appendix I), which they signed, which allowed me to collect information from them (Creswell, 2013; Rubin & Rubin, 2012).

**Phase two.** During the second phase of the data collection process, I piloted the first-round interview protocol (Appendix J) that I had developed for the participants with a colleague in my own school that had been involved with leadership involving some aspect of a technological change initiative. Once the pilot interview was completed, I moved on to the next phase, which was the first round of interviews with participants.

**Phase three.** During the third phase of the data collection process, I conducted the first-round interviews with the participants. According to Marguerite, Dean, and Katherine (as cited in Thanh & Thanh, 2015) and Rubin and Rubin (2012) the research for this type of study should be conducted in a natural, comfortable, and uninterrupting setting, where the researcher asks questions designed to explore, interpret and understand a topic. These interviews were all conducted face-to-face (Creswell, 2013) using the first-round interview protocol (Appendix J), which contained semi-structured open-ended questions designed to give the researcher a high
level of control to be able to explore and understand the phenomenon being studied (Creswell, 2013; Rubin & Rubin, 2012). The open-endedness of the questions also allowed the participants to feel more comfortable in identifying what they deemed as the critical aspects of their stories (Stewart, 2010). In addition to the answers to the interview questions, Creswell (2013) and Rubin and Rubin (2012) suggested that certain documents, including but not limited to letters from participants, memos written or received by participants, minutes of meetings, records, presentations, speeches, budgets, blogs, diaries, and anything else that appears in writing can be useful in the collection of information. Participants were asked in advance to ready any documents that are germane to their work in leading a technology-based change initiative. Time during this first meeting was used to review any of these documents with participants. This first round of interviews was audio recorded and transcriptions of the audio recorded interviews were completed as soon as possible after the interviews had finished (Rubin & Rubin, 2012). The transcriptions offered a more accurate account of the interview than using memory and/or note taking, while allowing the researcher to be able to analyze the interviews in future phases of the data collection process (Fraser, 2004). The first-round - interviews were reflected on and used to help inform the next phases of the data collection process (Rubin & Rubin, 2012).

Phase four. During this phase of the data collection process, I worked to ensure that the transcriptions that were completed from the audio recorded interviews were accurate. This phase included sharing the transcriptions of the interviews back with the participants. Participants, after having been explained to that this step is voluntary, were sent a copy of their transcripts and asked to return amended copies (Creswell, 2013; Fraser, 2004).

Phase five. During this phase of the data collection process, I began the process of initially coding the data (Creswell, 2013). This initial coding was conducted using a computer
assisted qualitative data analysis software (CAQDAS) program (Rubin & Rubin, 2012; Saldaña, 2013).

**Phase six.** During this phase of the data collection process I developed the restories of the narratives gathered during the first round of the participant interviews (Connelly & Clandinin, 1990; Creswell, 2013). These restories were shared back to the participants to ensure accuracy (Creswell, 2013).

**Phase seven.** During this phase of the data collection process I worked with the second-round interview process (Appendix K). The second-round interview questions were designed to follow up with participants specifically using Piderit’s (2000) change ambivalence theoretical framework. As I did with the first-round interview protocol, I piloted it with a colleague prior to using it with participants in the second round of interviews. Once reviewed, I contacted the participants to set up the second round of interviews.

**Phase eight.** During this phase of the data collection process, I traveled out to sites to conduct the second round of interviews with participants. Just as in the first round of interviews, I digitally recorded these interviews with a recording device.

**Phase nine.** During this phase of the data collection process, the interviews were transcribed and sent back to the participants for verification of accuracy. I also created additional restories, which were again be sent back to participants to ensure accuracy.

**Phase 10.** During this phase of the data collection process, I analyzed all of the data that had been collected. Second cycle coding was conducted that helped to discover concepts and eventually themes, which generally emerged from two or more concepts (Rubin & Rubin, 2012; Saldaña, 2013). Once the concepts and themes had been identified the data was summarized and those summaries were compared to the initial research question (Rubin & Rubin, 2012).
Data Analysis

Creswell (2013) explained that data analysis for a research study should be both inductive, where the researcher works to build the themes and patterns from the bottom-up, and deductive, where the researcher confirms specific theories and hypotheses. It is important to mention that although presented linearly, the data analysis process is a reflexive process and may change as it is being conducted (Fereday & Muir-Cochrane, 2006). This includes a process aimed at identifying both similarities and differences within and among the stories of the participants (Fraser, 2004). In order to accomplish this, codes were developed (Creswell, 2013) and the data from the first round of interviews were analyzed using a first cycle initial coding process using CAQDAS (Rubin & Rubin, 2012; Saldaña, 2013). This step helped the researcher better be able to retrieve what was said on each topic, setting the stage for further data analysis; as well as to identify early on the common topics and concepts that exist within the narratives (Rubin & Rubin, 2012).

Once the first cycle of coding had been completed, in order to organize the data that has been collected for a second cycle of coding, code maps, which categorizes the initial codes used in the first cycle, were developed (Saldaña, 2013). The process of code mapping occurred more than once in order to move from categories of initial codes into concepts to be explored further. Once the code maps had been developed, a second cycle coding strategy was used as an advanced way of organizing and analyzing the data again in order to develop organized themes (Saldaña, 2013).

Whereas coding events and specific items may be more straightforward, the discovery of concepts and themes, which is often constructing the relationship between two or more concepts, may be more difficult (Rubin & Rubin, 2012). In order to develop conceptual and thematic
similarities within the data that has been collected, the second cycle method of Focused Coding was used (Saldaña, 2013). Once the second round of interviews had been transcribed, those transcripts were deductively coded using the Focused Coding second cycle coding method, which again used both themes arrived at through the first cycle of coding, as well as theories aligned with Piderit’s (2000) change ambivalence theoretical framework. Additionally, as Creswell (2013) had stressed the importance of document review in narrative research, all of the documents collected from the participants were read into the transcript and also coded and analyzed.

In order to construct the narratives, Creswell (2013) (in citing Polkinghorn) suggested that the researcher, once having collected all of the details and information from the interviews, organize that information into story that includes traditional features such as a plot and storyline. In following the suggestions of Creswell (2013), once the initial stories were developed, I reorganized those stories into restories that followed an organized sequence based on the key details of the stories. Once all of the narratives had been constructed, I conducted another layer of analysis, using again the second cycle method of Focused Coding (Saldaña, 2013) across the narratives, which helped to determine any thematic commonalities and/or differences that existed across the participants’ narratives.

Although, as mentioned above, the CAQDAS program aided me tremendously in the data analysis process, it is also important to note the limitations of the computerized program. It is important for the researcher to review the coding carefully, as the shades of meanings, variations, emphasis, etc. that the researcher had experienced while interviewing the participant should impact the coding (Rubin & Rubin, 2012). The limitations of the software were that it cannot tell the researcher which data are important, what the data mean, or extrapolate words or ideas that
have not been coded (Rubin & Rubin, 2012). In essence, the software program cannot do the entire data analysis for the researcher (Rubin & Rubin, 2012). Therefore, with all of that said, care was taken in the analysis of the data.

**Data Storage**

Data, which included the documents that were reviewed, as well as the transcripts, audio recordings, field notes, memos, data analysis notes, etc., were secured in a locked file cabinet throughout the entire period of the study (Rubin & Rubin, 2012). This locked file cabinet was only be accessible to me. Any and all electronic files were kept in an encrypted folder on an external hard-drive, which was also password-protected and secured in the aforementioned locked file cabinet, again only accessible by me (Rubin & Rubin, 2012). Throughout the study, both the principal investigator and I had access to the information and/or data stored within the locked file cabinet. Upon the conclusion of the study, all documents and/or audio files generated by and/or with the participants were returned to the participants or destroyed. Any notes, memos, etc. were destroyed upon the conclusion of the study. All electronic files were deleted.

**Trustworthiness**

Narrative studies are dependent upon participants sharing their stories. As Rubin and Rubin (2012) and Creswell (2013) suggested, researchers have an ethical responsibility to always show respect to the participants, honor promises made to participants, as well as to be sure to never pressure or harm participants in any way. That said, by the virtue of the type of study, validation of the trustworthiness of the participants’ stories may not be possible. In consideration of this, measures were put into place and clearly described that helped to ensure the highest level of truthfulness of the participants’ stories. Even in working to best ensure trustworthiness, there still may have existed potential threats to internal validity, as well as limitations within the study.
These threats and limitations may have included preconceived perceptions of the participants as to the effectiveness of their own leadership initiatives. Specifically, participants might have a higher view of success of their own leadership than others may have thought about it. Connelly and Clandinin (1990) warned of the possibility that as participants are sharing their stories they may substitute falsehoods for narrative truths, not only in an attempt to be deceitful, but in an attempt to create a story where everything worked out perfectly in the end, which is referred to as the “Hollywood Plot.” The sharing of the transcripts back to the researchers served as a method of member-checking in an attempt to address this.

Also, the duration of the study combined with the type of study may have had an impact, as the research was retrospective on an initiative that had already occurred, rather than including pre-testing and baselining which would help to determine any effects of the initiative. Additionally, other limitations included the limited number of participants in the study, the subjectivity of the responses of the participants, and researcher bias. Researcher bias could have been the result of the researcher’s being a school leader responsible for various change initiative, including leading technology change initiatives. This bias could have impacted the researcher’s interpretation and analysis of the data collected during the study. It is important for researchers to be careful to not make their own interpretations of the participants’ stories simply to support their own claims (Polkinghorne, 2007).

**Chapter Summary**

This chapter explained the rationale for developing a qualitative study aimed at exploring the best practices that school leaders employ while leading a technology-based change initiative. This chapter also explained the reasons why the constructivist-interpretivist paradigm was selected for this study, as well as the rationale behind selecting the narrative approach for this
study. This chapter also outlined the strategy that was used to select participants, as well as how the participants were recruited for the study. Additionally, this chapter outlined the steps that were taken to collect the data, as well as store and analyze the data. Lastly, this chapter outlined the various limitations and threats that could have impacted this study.
Chapter Four: Research Findings

Introduction

This narrative study was guided by a central question: What is the nature of technological change ambivalence as perceived by school district leaders, and more specifically; how do leaders overcome ambivalence to lead a successful and sustained technology initiative within their schools district? In an attempt to answer this question, it was imperative to garner the perspective from school and/or district leaders. The four participants, each referred to by a pseudonym, are all employed or recently employed by a public school district in Rhode Island or Massachusetts, which is also referred to with a pseudonym. Each of the four participants has or had a central office role within their school district, therefore placing them in a capacity of being involved with the various leadership aspects of a technology-based change initiative. Table 4.1 overviews some statistical information as it relates to the participants and their school districts.

Table 4.1

Overview of participants

<table>
<thead>
<tr>
<th>Participant</th>
<th>Role</th>
<th>Years in Education</th>
<th>District Population</th>
<th>Free and Reduced</th>
<th>IEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rob</td>
<td>District Director</td>
<td>13</td>
<td>8,800</td>
<td>28.8%</td>
<td>15.4%</td>
</tr>
<tr>
<td>Samantha</td>
<td>Assistant Superintendent</td>
<td>19</td>
<td>2,413</td>
<td>13.9%</td>
<td>14%</td>
</tr>
<tr>
<td>Kay</td>
<td>District Director</td>
<td>27</td>
<td>2,476</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td>John</td>
<td>District Director</td>
<td>~30</td>
<td>3,580</td>
<td>49.7%</td>
<td>21%</td>
</tr>
</tbody>
</table>

As would be expected, each of the participants had their his or her individual experiences with both technology and with leadership. As such, narratives will begin with a description of participants’ backgrounds including an overview of the district in which they work. Following the review of the participants’ background and the participants’ district overview, the narratives will describe the technology initiative, including the planning and implementation, as well as the
participants’ plans to measure the success of the initiative. The narratives will also describe the participants’ experiences with resistance and resistors, and how they worked to overcome resistance. The narratives conclude with the participants’ next steps, which include a retrospective review looking back and a section on advice they may have for others.

Rob

**Background.** Rob had started in education in 2006 as a math teacher, serving in that capacity for 5 years when an opportunity came along to serve at the district level within the same school district. He was appointed to a district level supervisor position, supervising both math and science. In that capacity, he was in charge of instruction, curriculum and assessment for those two subject areas. As those two subjects are key components of STEM, he would also be involved in various STEM related issues within the district.

Rob classified himself as a “digital native,” as he has been immersed in technology from a very young age. He considers that an advantage to others who may not have had the same exposure to and experience with technology. This experience and comfort with technology immediately made him the “go to” person for technology-related questions that would arise in the schools. This led to his becoming a technology leader and helping other teachers with their technology and various learning management and assessment software programs. Rob cites that “working in departments that were open to new ideas and that were willing to take risks in their classrooms was a big advantage.” He explains that he found his initial years of teaching as a time to experiment with technology applications with his students, which gave him the opportunities to gain new technology abilities himself.

Rob explained that when he was promoted to the district-level position that “he had a larger sphere of influence over more teachers and grade levels, and as a result was able to push
some of the new research-based ideas and strategies that were beginning to enter education and that would that would have a positive impact on student learning.” Some of these new strategies that he had mentioned included blended learning strategies; flipped classrooms, which is the use of web-based videos in the classroom as well as at home; and online assessment tools. That said, Rob stressed the importance that educators always be lifelong learners, especially always staying current with ever-changing technology. As an example, he explained that the Chromebook did not even exist when he began teaching, but that with a device such as this, educators are able to do so much more from a scale standpoint.

School district background. Rob worked in a New England public school. This is considered an urban ring school district, with approximately 8,800 students in the 2018–2019 school year, making this one of the largest in the state. Approximately 15.4% of the students have an Individualized Educational Plan (IEP); approximately 1.8% are designated as Limited English Proficiency (LEP) students; and approximately 28.8% are on free or reduced lunch. The operating budget in 2017–2018 school year was over $176 million with a per pupil expenditure of approximately $20,500.

Technology initiative. Rob explained that he has been involved with rolling out many technology initiatives, both software and hardware. Among them have been the IXL program, Explore Learning programs, Engage NY programs, Khan Academy, learning management systems, etc. For the purposes of this study, we focused on the implementation of Chromebooks into all of the secondary math classrooms, from Grades 7–12. Rob explained that the momentum for technology-based instruction within the district was already heading in a positive direction, as “there were already teachers that were attending conferences on various topics such as blended and personalized learning and who were looking for more support for this within the district.”
The specific technology initiative was to place a classroom set (approximately 26) of Chromebooks into each of the math classrooms in Grades 6–12. In addition to the infusion of the hardware, the initiative also involved engaging all of the math teachers in a series of professional development around best practices in using the devices in the classrooms, as well as in the use of the various online resources that were available to them to use with their students. Rob explained that he was always watching other districts throughout the state, keeping his eye on what types of innovative initiatives they were embarking upon and what types of successful implementations could help support the students of his district.

Need for the change. Prior to the implementation of the Chromebook initiative, his school district was predominantly a Microsoft Windows district, which combined with the district’s size, as Rob explained, made it unrealistic to create a one-to-one or blended learning environment. Rob also explained that the district had only provided the faculty and students printed textbooks, which although aligned to the common core state standards, “were very low in the coverage of content,” citing approximately 70–90% coverage of math topics. His third year of serving in the district-level position happened to coincide with the planned purchase of new math textbooks. It was this opportunity and in an attempt to address the aforementioned need that he, as well as other administrators and teacher leaders, had thought perhaps they could invest these funds differently. Rather than purchasing a new round of textbooks, they explored the idea of introducing digital resources into the classrooms. With all of that said, Rob explained that next came the work of convincing other leaders about the need for such an initiative, especially those leaders who control the budget.

In addition to the need to update the resources that the teachers currently had was “the need to push teaching and learning into the 21st century.” Rob viewed this initiative as a way to
do this. He believed that this would also support the blended learning initiative that was already taking shape within the district. He also thought that this would help to keep the resources needed to implement the written curriculum “nimble enough to withstand the frequently changing standards and focus, especially as online digital resources are always being constantly updated and aligned.” This would also help to ensure that the students and teachers always had the most up-to-date resources that were aligned to the common core state standards, but at a level of rigor that is expected by the state assessments. Rob saw a future classroom where a math teacher could deliver an exceptional lesson, via blended learning, that incorporated online resources and formative assessment, where the students were all engaged and were having a positive reaction to the lesson.

**Planning.** Rob began by engaging the small group of administrators and teachers to begin to explore how his idea might look like in all of the district’s math classrooms. He found that many of those in the core group were immediately onboard and excited to explore this opportunity further. A key piece to the planning process was securing the funding for the initiative. This involved Rob selling the idea for the Chromebook to other district leaders, including the superintendent and school committee. He had leveraged the fact that the district had already allocated funding for new math textbooks with the idea that digital resources would be more up-to-date with changes in standards and curriculum that were bound to happen prior to the funding for new resources, thus helping to save the district money in the future.

**Goal of the initiative.** Rob explained that the goal of the initiative was centered on instruction. He said that they wanted to “improve the level of the instructional strategies that were being used in the classrooms, assisting a shift from a teacher-centered classroom to a student-centered classroom.” He wanted to support the teachers that were already partaking in
various professional development opportunities on topics such as blended learning, while using that enthusiasm to springboard a new larger initiative. These teachers, who would likely be the early adopters of the initiative could use the blended learning strategies that they were already learning about, while incorporating some new and innovative resources for their students. A goal of this initiative was to give teachers the tools that they needed to make that level of engagement happen within their classroom. Once the initiative was rolling, the goal would be to support teachers’ continued professional growth through various seminars and workshops where ideas would be shared that teachers could go back and immediately implement.

**Stakeholder readiness.** Once Rob had sold the idea to the district leadership, another stakeholder group that he thought needed convincing was the technology department, but he had found that they were quick to be on board, as the “initiative was going to increase the technology within the district.” There was some concern about the shift from the traditional more expensive Windows-based machines to less expensive Chromebooks, but the fact that this meant that there would be more devices purchased helped to overcome that concern.

Rob explained that not all teachers may not have been ready for such an initiative, but he believed that as the initiative rolled out, that “a number of educators were becoming curious about the buzz that was occurring in other classrooms and were beginning to inquire as to how they could become involved themselves.” He also stressed the importance of meeting educators where they were at with the initiative and helping them grow through professional development.

Another stakeholder group that Rob considered was the students and their readiness for such a change. He explained that he had thought that students and their families would be happy about the access to the digital curriculum at home through their own devices and computers.
Implementation. Rob explained that his implementation plan was inspired by watching neighboring school districts embark on similar initiatives that specifically utilized devices to promote positive learning outcomes. He would speak to leaders in those districts in hopes to learn from their successes and mistakes. Once Rob had received the green light from the district leadership, it was time to plan for the implementation of the initiative. He had gathered the small group mentioned above, which included both administrators and teachers and they began to develop the implementation plan.

Implementation plan. The plan called for the implementation of 26 Chromebooks into each of the math classes in grades 6–12, all over one summer. Rob says that this number was chosen by the team, as in review of the class sizes, it appeared as though 26 students was the maximum number that any teacher had in any teaching period. In selecting the exact number of Chromebooks, it allowed them to maximize the allotted monies that they were given.

One of the first steps of the implementation plan included making a point to, as Rob put it, “give personal attention to individuals who they had thought might be naysayers of the plan.” The team felt that the reason for the perceived resistance would not be due to increasing technology within the math classrooms, but rather having no new print materials due to the funding shifting away from the new textbooks. A major step in their plan was to identify an educator in each grade within each school to begin with, someone who would help them to acquire a foothold within the grade. Rob believed that it is “important to have people who are in the classrooms, on the frontlines within the schools, to take risks, experiment, and share their experiences.”

It was Rob’s plan that through this model of showcasing teachers that it would help in the convincing of other teachers. Rob said that:
allowing those early adopters to be their best selves; giving them the tools that they need; letting them experiment within their own classrooms; letting them call audibles that work for them; encouraging them to have conversations about how the technology can be better leveraged to help all students succeed would help drive the initiative.

With that said, Rob had expected all of the math teachers to fall within three groups: those who were already piloting strategies within their classrooms; those who might be holding onto the strategies that have always gotten them through, who might go back to those strategies at the first feeling of uncomfortableness; and those who would be negative about the change. Knowing about these potential groups allowed the implementation team to develop a plan to best support them through professional development.

*Professional development.* Rob believed that continuously supporting professional development was of the utmost importance to the success of the initiative. More specifically, he said, “Professional development must be delivered properly to the teachers.” Therefore, he developed a professional development plan. He felt that this plan complemented the professional development opportunities on blended and personalized learning strategies that teachers were already engaging in. The plan also included the tiering of the professional development based on where the teachers were at with technology usage. There was a higher-level group that moved faster, as well as a slower-paced group for those that needed more time and support. In all of the various groups, he worked to ensure that there was a mix from different schools, in hopes that it would help to foster collaboration across the district, as well as to ensure that no one school compromised the professional development session.
In order to facilitate the delivery of the professional development, he explained how he had worked to embed the professional development into various meetings that occurred throughout the year. Every couple of months he would take a scheduled meeting to reinforce some of professional development that had occurred in the formal sessions. Throughout the course of the first year, Rob said that the middle school teachers received about three to five days of professional development, while the high school teachers ended up getting about six to ten days.

During those professional development sessions the teachers received training on five key components. The first component was software, which was specifically chosen to combat the concerns over not having a textbook. This component included training with both paid and open-source software resources. The second component was focused on the hardware—the Chromebooks themselves, which included both tips and tricks. The third component was on assessment, which was aligned with the district’s push toward increasing opportunities for formative assessment. The fourth component was a focus on blended learning strategies, such as station rotation. The fifth component was focused on using all of these new tools and resources to plan a technology enriched lesson.

One strategy that he would use throughout the professional development sessions was to model a blended learning lesson for the teachers. He said that “the feedback that he had received from this was positive.” Additionally, he would encourage regular sharing of good ideas and resources both within schools, as well as across different buildings, as well as support teachers’ request to attend various professional development opportunities that occurred outside of the building.
**Monitoring implementation.** Rob explained that “once the professional development was planned and delivered that it was then the responsibility of the district to monitor the success of the initiative.” He explained that in year two of the implementation there was a series of informal walkthroughs that occurred within the math classrooms. These walkthroughs were in addition to the anecdotal monitoring that would occur from department chairs and school administrators. All of this monitoring was aimed at assessing the level of success that the teachers were having with the new technology and with what they had learned in their professional development.

It is Rob’s opinion that the assessment of the initiative that occurred the year after the implementation showed that approximately three quarters of the teachers were using elements that were presented in the professional developments. That said, he explained that this “occurs primarily at the substitution level, where teachers were taking a print worksheet that they would have handed out and placed it online; or had taken a formative assessment that was on paper and placed it into a Google Form.” Although they were not initially seeing the higher-level blended learning strategies that they were hoping for, it did get better.

Rob explained that in year three (two years after the initial implementation), that there was a shift in the monitoring that occurred. There was a specific protocol for the walkthroughs that included administrators and teacher leaders looking for specific strategies of blended learning and technology use. This was formalized into a checklist of items that the observer was looking for, which helped to provide a more specific focus. One of the focus points was ensuring that the technology usage was at a high level and identifying the strategies that the teachers were using to actively engaging the students through this technology access.

**Resistance.** As was mentioned, the implementation team had planned professional development with different groups of teachers in mind, which included those who may have
been uncomfortable with the change and those who did not believe in the change. In reflecting on the resistance that he received, Rob thinks that the team had quite accurately identified those who would have ended up falling into each category. He also explained that there were more educators to convince at the high school, than at the middle school; saying that the middle school got the most out of the initiative the quickest. He was not surprised with this, as he could tell that the high school teachers were amongst the most uncomfortable in those professional development sessions. These teachers began to utilize the professional development sessions to air their concerns and questions about the initiative.

**Overview of resistors.** Rob explained that there were no teachers who resisted the implementation of the technology. As he said, no one rejected the delivery of 26 Chromebooks at their door. He believed that nobody did not understand the initiative and/or the goals of the initiative. The question was more about whether or not the teachers would implement them into their instruction and assessment.

Rob did explain that there were some resistors who did not believe that the initiative was for the best. These resistors were concerned, not because the district was implementing something new (technology), but rather that they were doing it at the expense of something that they valued (new textbooks). He said that these resistors “were not willing to embrace the 21st century learning piece of the initiative.”

Another group of resistors that Rob described were those who were anxious about the change, specifically those who relied heavily on the textbooks for their instruction, and were not comfortable parting from that. He did show empathy to these resistors, acknowledging that it is difficult to shift away from something that has brought teachers comfort for years, and perhaps even decades. That said, he believes that “when educators rely solely on a textbook, it can lead to
inflexibility and beholden to a book that may not be aligned to the standards and/or at the appropriate level of rigor.” He also found that resistors who fell into this group “may have had classroom guidelines and/or expectations that aligned more with a traditional classroom,” rather than those for a 21st century classroom.

**Overcoming resistance and supporting resistors.** It was during the professional development sessions at the onset of the implementation that the high school teachers appeared to be the most resistant. In response to that resistance, the implementation team had scheduled those individuals for additional rounds of professional development. This was of particular importance as they did not receive all of the planned content, as they had used that time to share their concerns. Additionally, after the first few professional development sessions, especially with those teachers who had been in the lower-tiered group, the implementation team decided to allow time in each session for the teachers to voice any questions or concerns. They found that this “helped to dispel any myths and address any concerns that the teachers had.”

In regards to those educators who were resistant due to not having textbooks anymore, Rob explained that it took lots of conversations and demonstrations of the advantages of the technology, taking the time that was needed to help them become more comfortable with the new resources, and showing them how they could do everything that they normally would (i.e. assigning homework, monitoring progress, analyzing data, etc.) but in a more efficient way. That said, he does know of one teacher in the district who is still working to get the printed textbooks back. A specific strategy of showing these teachers one small piece at a time was utilized, where once they were shown something, they could implement it and return for another piece.

Overall, a theme that arose throughout our discussion for overcoming the different types of resistance was empathetically listening to their concerns, while remaining focused and
unbending on the goals of the initiative. Another strategy that Rob used throughout the implementation was to be the sole target for anyone’s frustrations and concerns; leaving the other members of the implementation team to always be in a positive position to help and support where and when needed.

**Next steps.** This initiative actually laid the groundwork for a much bigger initiative in which the school district went one-to-one for all students in Grades 7–12. Not only were a number of more devices required, but this scaling of the initial initiative also included the hiring of four Technology Integrationists. This new initiative also brought with it a much more robust and specific monitoring aspect, as well as new district-level policies and protocols for students, families, teachers, etc.

**Looking back.** In looking back at the initiative, Rob “wished he had a better system for tracking the initiative's success in some formalized assessment form.” He wished he could have been able to state how students were becoming more successful due to the technology that had been implemented. He explained that a number of factors had hindered this, which included the changing state assessment. Although he was happy that he had a system in place to track the percentage of teachers who were using the technology for the purposes that the initiative had set out to do, he said that “having a handle on the impact to student success would have been a nice piece to have.” In hindsight, he wished that he had designed an assessment to go along with the implementation, such as a pre-assessment and post-assessment to see where the students were at pre-technology versus where they were at post-technology.

Another reflection that Rob had on the implementation of this initiative was the impact that a second round of professional development may have had on the initiative. He wonders whether or not that may have helped to ramp up the teacher usage of the technology and
increased their comfort level to engage students in more rigorous ways. Although there were a few items that he wished that he had done differently, Rob believed that the “implementation of the Chromebooks into the math classrooms and the shift to digital content was a solid step in the right direction,” one that he is happy to have seen inspire a much larger district-wide initiative.

**Final advice.** When asked what his advice would be to other leaders who were moving forward with a technology-based change initiative, Rob explained that he believed “that it is important to always keep up with the newest software and hardware, as it is often the technology that enables us to do great things.” As for the leadership of the initiative, he believes that “if you want the initiative to be successful, then you must surround yourself with people who are talented, willing to share, and willing to collaborate.” He also stressed the importance of having good relationships with all stakeholders. He said that “the reason why this specific initiative was successful was not the management or the design, but the people.” The teachers who would spend hours developing lesson plans and just working to make it work in their classrooms. He believes that “it is about picking the right team and that any initiative is only as strong as the people who believe in it.”

**Lessons learned from Rob.** Rob’s narrative presented us with a number of takeaways that are important to implementing a successful technology-based change initiative. One of these strategies was ensuring that there existed a clear purpose for the initiative, which in this case was the need to provide students with 21st century learning opportunities and resources. Additionally, Rob spoke to the importance of assembling a key group of stakeholders to help plan and implement the initiative, as well as a strategic way to implement the initiative within schools. He also detailed a very well thought out implementation plan, which included professional development, as well as a way to measure the success of the initiative. Rob also shared
reflections on what he had wished he had done differently to help make the initiative even more of a success. Lastly, Rob explained the importance of the people that are involved in the initiative and the relationships that he had with those people.

Additionally, his narrative also helps to address the research question, as he speaks to the ambivalence that stakeholders had in regards to his technology change. Specifically he had described that there existed mixed feelings among some of the stakeholders. He explained that this caused some of the resistance as some teachers felt that the way that they were already doing things was adequate enough and did not want to change. Also aligned to the research question were the strategies that Rob employed to overcome that resistance, which included listening to the questions and concerns of the resistors and providing professional development in small more manageable pieces. These strategies helped to make Rob’s initiative a success.

**Samantha**

**Background.** Samantha had started in education in 2000 as a fourth-grade teacher in a school district in Massachusetts, which she really did not care for, leading her to come to a different New England state as a special education teacher in 2002. She served as a special educator for eight years and then became a reading specialist in the same district for approximately three years. During that time, she completed her doctorate from Northeastern University. It was at that time that Samantha had an opportunity for a promotional position in another school district and became a district level coordinator, responsible for Response to Intervention (RTI) and Federal Programs. She later became the Director of Curriculum, Instruction, and Assessment in the same school district. Another promotional opportunity to the position of assistant superintendent arose that would bring her back to the district in which she
had spent a number of years as a teacher, which is a position that she has held now for over two years.

In regard to Samantha’s experience with technology, she has seen a number of initiatives that have been implemented throughout the years. Among these are the implementation of various assessment tools that give teachers and students immediate feedback; wi-fi access points throughout whole buildings; various programs that support students in math and reading; student information systems, webquests; etc. Although there have been major strides in the implementation of technology in schools, Samantha said that she “has seen this used at mostly the substitution level,” which she described as teachers using technology in place of a non-technological resources, as opposed to a new application to engage students.

**School district background.** Samantha works in a New England Public School District. This is a rural school district, with approximately 2413 students in the 2018–2019 school year, making this one of the smaller districts in the state. Approximately 14% of the students have an Individualized Educational Plan (IEP), approximately 0.5% are designated as Limited English Proficiency (LEP) students, and approximately 13.9% are on free or reduced lunch. The operating budget in 2017-2018 school year was slightly over $41 million with a per pupil expenditure of approximately $16,935.

**Technology initiative.** Samantha has been involved in the leadership of a number of technology-based initiatives; however, for the purpose of this study I focused on her involvement with the implementation of the software program called Naviance, which is used to support a district’s work with helping students generate Individual Learning Plans (ILPs).

**Need for the change.** Prior to the implementation of the new ILP program, the guidance counselors were the sole educators in the schools who were responsible for the management of
the ILPs, which they completed via paper forms and records. It was around 2016 when the state’s department of education stepped in and gave school districts the directive that they had to choose one of three vendors of programs to complete the ILP process. This directive actually coincided with requests that she was beginning to receive from both teachers and administrators for a digital program that they could use to complete student ILPs. Additionally, educators were also asking for ideas and/or programs that could perform other features such as Alumni Tracking and Student Interest Surveys, both of which could be done in Naviance.

Another document that pointed to the need for change was the district’s strategic plan, which specifically called for an emphasis on career education. Samantha explained that “their theory of action was if they provide and engaged students with career readiness information, than students would be better prepared to make choices regarding prospective career opportunities.” It was her hope that adopting a program such as Naviance would support career exploration and planning, as well as ILP development.

**Planning.** Although the strategic plan called for some work in this area, Samantha explained that the first major step was to “ensure that this specific initiative aligned with more aspects of the district’s strategic plan.” She explained that both she and the superintendent were hired around the same time, which made this a perfect time to utilize and refine the strategic plan. She also explained that through the virtue of her position as the assistant superintendent and the fact that her district was small meant that she was involved with almost all of the initiatives that were being rolled out. Fortunately, she had had some experience from her prior district with another software program used to complete ILPs, which helped her to introduce this initiative within the district. When asked if the strategic plan prompted a program such as Naviance or if
Naviance prompted a change in the strategic plan, Samantha explained that “the two happened simultaneously, fitting nicely together.”

Once the need as outlined in the strategic plan aligned with the state’s directive, it was time to explore options for an ILP program. The state, in having directed the school districts to choose a program, arranged a cohort process called the Individual Learning Plan-Professional Learning Group (ILP-PLG), where districts could send teams to explore one or more of the three approved vendors that the state was having districts choose from. Prior to participating in this process, she had asked the two individuals from the state who were running these sessions to meet with her to review the work that they were going to be engaging in with these groups. Samantha explained that she had created a team, which contained educators from both the middle school and high school, and had begun sending them to the cohort meetings so that they could begin exploring Naviance. Once the team had learned more about the benefits and features of the program, Samantha began setting up meetings where representatives from Naviance, who would visit the team within their school district. This gave them the chance to vet the program even more, ensuring that it was going to best meet the needs of the schools and students within the district.

Once all of the information was gathered and the team felt as though the program would meet the needs of the district, the decision was made to go with the Naviance program. Samantha’s main question for the team was “Does this do what we want it to do with all of the features that we are looking for it to have and are we technologically compatible as a district for the program?” The next step in the planning process included the team laying out the logistics for the implementation. It is in Samantha’s experience that “if anything is going to get in the way of a smooth implementation, it will more than likely be the logistics.”
Once the decision was reached, Samantha had to find a funding source. She explained that although she had to utilize the local budget and that the school committee had to approve the line item change, because the cost was over $10,000, that it was both she and the superintendent that made the ultimate decision on funding and therefore included the item into the budget. It also worked out that Samantha was able to apply for a small grant that supported districts who were looking to engage students with resources for career exploration, which ended up defraying some of the cost of the program.

**Goal of the initiative.** As was mentioned above, the goal of the initiative was to improve and streamline the ILP process, as well as to share with students career resources that help to promote career readiness. This program would specifically help the students in their goal setting, which is a major component in the ILP process. The district wanted a streamlined process that would have both an ILP process and a career exploration tool where everything was stored digitally in one place; rather than using paper forms that needed to be physically maintained over the course of six years.

**Stakeholder readiness.** Samantha explained that there were a number of stakeholders, including school counselors, teachers, administrators, and students who would end up being engaged through this initiative. She also made clear that this initiative would include every single teacher at the secondary level, as the time used by students to access the new program was their advisory period, of which all teachers had as part of their schedule.

Samantha’s perception was that the school counselors appeared to be “gung ho about the initiative prior to the implementation, especially as they were the group that was asking for a more up-to-date approach and process for the completion of the ILPs.” They specifically liked the fact that students could fill in different forms online and then their parents could see what
they had written about and comment on it. They believed this was much more efficient than showing the parents what the students were doing in their ILPs once a year at an event such as the open house or a parent/teacher conference.

As for other stakeholders, Samantha explained that the readiness of the administrators was mixed, the high school administrators were excited about it, as the program had some new and specific features that they were interested in; whereas the middle school administrators may not have been as ready due to a change and feeling as though she had a lack of knowledge about the program. Samantha explained that prior to the implementation, most teachers really did not know about the program, even though there were some preliminary announcements made about the program at various school level meetings. “The program was not yet on their radar.” As for the students’ readiness, Samantha explained that although she did not have any data on that, she assumed that they would be ready to embrace a technology-based change, as up until that point they were filling out paper forms, which were being kept in manila folders with stickers on them.

Overall, Samantha explained that her perception was that “this community was going to love it, especially as they are very college oriented and she thinks that they will like all of the various aspects of the program such as goal setting that will help them get ready for that.” She used herself as an example, especially as she also lives in the district. She explained that she has a high schooler, who currently utilizes the Naviance Program, and that she has completed some of the various inventory assignments together with her, which was a good experience.

**Implementation.** Samantha explained that implement the Naviance program would occur in Grades 6–12, which was primarily based on the state’s regulations that require ILPs for students in Grades 6 and up. She does believe that there is a module for the younger grades, but
that it was not a priority for the district at this time. Once the decision was made to implement
the specific ILP program, there we a number of logistical steps that had to be taken.

*Implementation plan.* The first step in the implementation process was to schedule
implementation meetings with the educators who were involved in the state’s ILP-PLG process.
This was the working group that would begin to implement the program into the schools, as well
as to work to ensure that the program was meeting the needs of the district with the features that
they had thought were important. Samantha explained that the existence of this group was of the
utmost importance, as she recognized that she, herself, did not have expertise in the development
and management of ILPs. Therefore, she needed to rely on those educators who have had such
experiences. Samantha also strategically tried to have at least one representative from each
school on the implementation team, who would be able to serve as a point person within the
various buildings.

The next phase of the implementation plan involved working to ready the various
stakeholder groups, which as Samantha explained was the responsibility of both her and her
technology director, especially as sometimes that work required preparing individuals for the
educational side and/or the technology side. Her goal was to help get the different educators into
the program so that they could begin to explore and learn what the program had to offer. This
required logistics that would sometimes get in the way, especially as the initiative within the
early stages was very dependent on the technology piece required to give educators their access
to the program. Although these hands-on opportunities were important, as with any initiative,
Samantha felt as though a professional development plan was an essential aspect to prepare
teachers for the change.
**Professional development.** Samantha had organized an entire professional development program that included professional development provided by the district, as well as professional development provided by the vendor. The district-led professional development occurred on a professional development day in August. The training was geared to introduce a revised advisory curriculum to all of the secondary teachers, which included how the new program would support it. It was also on this day that teachers received their login information to the program. As for the vendor-led professional development, this included a set number of hours where teachers would have access to support and/or training. These hours were bought in what were called bundles, which were of five hours at a time. Samantha had scheduled these hours equally among the middle and high schools and would work to attend as many as she could.

In addition to the formal professional development that was purchased and scheduled, Samantha explained that often additional professional development would happen in the most informal of ways. She gave examples of “being able to walk into schools and being able to answer any questions and/or address any concerns that the educators had right there on the spot.” If it sounded as though their question or concern required more time than was available in the moment, she would schedule an impromptu meeting, which she found easy due to the school administrator’s flexibility and support. If it was the administrators who needed the support, she would be able to address that almost immediately due to the flexibility in their schedules.

**Monitoring implementation.** Samantha explained that she was able to monitor the initiative through the various student usage reports within the system. It was actually through this monitoring that they were able to see that some of the components that were contained within the system were being accessed and utilized more than others. This also led to them being better able
to compare various aspects between the new system and those from the old paper-based ILP process.

Although there is no formal or written process for monitoring the initiative, there is a walkthrough process that had been developed. This involves Samantha joining with the building administration to walk through classrooms to observe the program being used by the teacher and the students. These walkthroughs help to immediately address concerns that arise, as well as inform next steps that the school and/or the district can take to support the initiative.

**Resistance.** Samantha explained that “although we are getting to a point where technology is enhancing education, there has been some resistance to it.” She attributes some of this overarching resistance to the various technology initiatives over the years to frustration with the different aspects of the change. In regards to this initiative, she classified much of the resistance that she saw as resistance due to difficulties that educators were having with the program. One such aspect with this initiative included the frustration that educators were having with not having the old forms that they had used within the new system. They were having some trouble understanding that the new ILP program contained a workflow-type process that would point students to specific next steps and/or resources, rather than a series of forms that it was simply storing. Also, if there was some aspect that the educators thought that was better covered in the old forms that was not covered in the system, there was a way to customize the program so that piece was part of the workflow.

**Overview of resistors.** Samantha explained that there were no individuals who were actively resisting in an attempt to try to undermine the initiative. However, there were different groups of resistors that surfaced throughout the implementation of the initiative. Among them were those who initially did not like the program as it was a deviation from a process that they
were comfortable with, which specifically in this initiative was the use of paper forms. These individuals were not happy that there was a change in the way that they had always done something. They were so used to the forms that they were trying to use the software program to substitute for the forms that they were comfortable with. There were also some resistors who did not believe in the new program, as they had access to another program that they had previously used in which although they had a great deal of comfort, the state unfortunately no longer supported.

Another group of resistors included those who were developing a dislike for the program because they did not believe the program was performing as they thought it should. This included both the school counselors and the technology director who were both having trouble uploading students and assigning certain things within the program to those students. She said that this “definitely led to the development of some resistance, as at the beginning of the year, those individuals were excited and now they were saying that they did not like the program.”

Samantha also explained that there was a group of resistors who were resisting this initiative due to reasons of anxiety with the technology. They were concerned that their lack of knowledge in how the program worked would cause them to inadvertently make an error that could have a lasting impact. These individuals were also nervous about implementing the program until they felt as though they had a complete understanding of all aspects, including what the students would be seeing on their side. Samantha explained that “it is sometimes hard to discern what comes first with this type of resistance, whether it is the anxiety of not knowing how to use the tools that leads to resistance or where it was resistance to the change that caused the anxiety.”
Overcoming resistance and supporting resistors. Samantha explained that much like any change initiative, she did expect an implementation dip. She also said that the state’s directive to select a specific program did help to address some of the resistance that they encountered. There were also a number of strategies that Samantha employed to help overcome the resistance that various stakeholders had. A specific strategy that proved to be most successful in overcoming resistance from those who were growing frustrated with the implementation of the program was to be extremely empathetic to their concerns. She explained how she had let them see her demand an appropriate response from the company, when she was not satisfied with their response to their concerns. She had threatened to walk from the company altogether, which showed her teachers that she heard and cared about their concerns.

This move actually led to an immediate call back from a leader of the company who was able to arrange his schedule so that he could facilitate a conference call with the whole implementation team. He also offered to visit them personally the next time that he was in the area. This conference call also allowed for those who were resisting with specific issues with the program to voice those concerns directly to the company. In many cases the company was able to reply with specific answers, which often included that they already knew about the concern and had developed a fix and/or were working on the issue.

In response to those stakeholders who were resisting the initiative due to being anxious, Samantha scheduled a support session with a representative from the company, who told them that “anything that they could do in the program could easily be undone and that there is no way that they could break anything.” In Samantha’s opinion, this ruled out much anxiety immediately. Another strategy that Samantha used to help support those who were anxious was to “bring the initiative up in small increments and frequently.” She would keep circling back
with them to ask how they were doing and to see if they had any questions. “This allowed them not to be overwhelmed by the change, while not giving them the time to sweep what they had learned under the rug.”

A strategy that Samantha explained that seemed to work well in helping support those who were not ready for the change was to develop a relationship with them. She said that this may have been easier for her to do in her context, as her district is small. This also allowed her to be more present to support stakeholders in the buildings than she may have been if there had been more buildings in the district. Although there were some specific steps that Samantha used to overcome resistance, she explained that much of it was reacting to concerns on the spot rather than sitting in a room trying to assume what might be potential issues.

Next steps. Samantha clearly conveyed the importance of successfully sustaining this initiative. She explained that “this was done through a lot of contact with all of the people who were involved with the initiative, which included the guidance counselors, teachers, and administrators.” She also explained that due to the fact that her district is smaller, she is able to connect with the stakeholders on a personal level. She gave an example of the meeting with the guidance department chair. Although it was about something else at the high school, they started talking about an issue, actually a glitch, that she was having with Naviance. The guidance department head said that the company was not being responsive, to which Samantha was able to reply that “if they don't respond, send it to me,” which the department chair did. Samantha has not yet had a chance to follow up with the company, but she explained that “it is this level of attention to the concerns that the educators are having that will help to sustain the initiative.”

Samantha also explained that she will continue to make goals and continue to move the initiative forward. One such goal that she described was that soon, parents will be able to access
the portal. She said that will be their next big push, which will include another whole stakeholder group. Once the parents are up and running in the program, she will be able to see from the various usage reports what resources and tools they are accessing, which will help the district to be better able to support them and their children. A second goal is to create a detailed curriculum for the guidance department that will guide them into specific uses of the program.

Another goal is to develop a plan that continues with the professional development. Specifically, she would like to see the same cohort of districts that implemented the same program come together for regular cohort meetings. She would offer to host these meetings in the district, which would bring this free professional development opportunity to them. This strategy would also help to overcome some of the resistance, as those who were struggling with the paradigm shift, especially from the paper forms to the computerized platform, would have the opportunity to network with educators in other districts who were going through the same change.

When asked about how far ahead she sets these various goals, she said, “Just through the end of the year, as I find more success with short term goals, as it allows me to better be able to pivot with the needs of the stakeholders.” When she has planned out goals longer than that, various things can occur to derail the plan. Although Samantha believes in the importance of an overall vision, she likes to plan shorter term goals that build off of the success of the previous goals.

Looking back. When asked if the implementation of the plan had gone as planned, Samantha had said “no.” In looking back at the initiative, she stated that she “did not think that it was a good implementation and had wished that it had rolled out a bit smoother.” She explained that there were both logistical and technical issues that ensued, which caused both student and
teacher accounts to not be set up as quickly as she had hoped. This impacted the usage reports, as not everyone had the ability to access the program. This lack of initial access caused her to have to make some changes on how much all of the students would be required to have completed within the program during that first year.

Another aspect that she had wished had gone better was the professional development that she had received from the company. As was mentioned above, Samantha had purchased a certain number of hours to support her educators as they learned the various aspects of the program. Unfortunately, she did not believe these hours had helped as much as she had thought they would. It appears as though there was quite a bit of confusion around what counted as an hour and what did not, as well as what would be covered during that time. It was her experience that the company said that they would help, but then would charge for some of the time, while not charging for other times, all when there were prepaid minutes still available. There was even a situation that Samantha described where the company had provided the district with the wrong number to access a virtual webinar, and those teachers of hers who were in attendance had missed about 50 minutes of the presentation. She explained that in knowing what she knows now and the cost that she paid for the professional development, “it would have made more sense to have flown the presenters out to her district to conduct the professional development in person.” This same level of in-person support could have also helped with the initial setup of the program, allowing the district to reach the level of access that they were hoping for.

As somebody who likes to do as much as she can on her own, it was difficult for Samantha to do so in this case, as this initiative required the assistance of other leaders with specific expertise, such as those in the technology and data departments. Yet that level of collaboration is what helped the initiative to ultimately be successful. Also it is important to
point out that the school district was between data managers, which impacted the start of the project.

**Final advice.** When asked what her advice would be to other leaders who were moving forward with a technology-based change initiative, Samantha explained that “there should always been coordination between the technology side of the house and the educational side of the house,” as it takes many people working together. She also explained that often “it is the logistics that create the biggest barriers and that can oftentimes get in the way.” She recommends always planning a clear path for logistics, as if something is going to get in the way of a smooth implementation, it will more than likely be in the details of the logistics. Additionally, Samantha mentioned throughout the interview how important it was for the initiative to be part of the district’s strategic plan, as it gave it the attention that it needed for it to be seen as important and ultimately successful.

**Lessons learned from Samantha.** Samantha’s narrative presented us with a number of takeaways that are important elements to implementing a successful technology-based change initiative. The first of these strategies is that Samantha had a clear purpose for the change, which was to streamline and digitize a process for students; this would also give them access to more resources that would support their readiness for college and/or career. Samantha had also explained that she formed a group of key stakeholders who were tasked at researching and selecting a program. Samantha also outlined a detailed implementation plan, which included strategies for professional development, as well as a means to monitor the success of the initiative. Samantha also shared her reflections on the implementation of the initiative that although critical, definitely served as a means to make future initiatives even better.
Additionally, her narrative also gave specific suggestions that aligned with this study’s research question, as she spoke to the ambivalence that stakeholders had in regard to her technology change. Specifically she had described that there existed mixed feelings among some of the stakeholders. She had described that some of those mixed feelings occurred when some of the educators had become frustrated with the implementation process, while others had thought that the program that they had previously used was better. These feelings led to some of the resistance that was discussed in the narrative. Also aligned to the research question were the strategies that Samantha had used to overcome that resistance, which included increasing the amount of professional development that the teachers received; increasing the response time of the vendor; and being present and available to empathetically listen to and address any questions or concerns that the teachers had. These strategies helped to make Samantha’s initiative successful.

Kay

**Background.** Kay had started in education in 1992, first as a paraprofessional, then in 1995 as a middle school classroom teacher. She taught sixth grade in one school district for five years, then fourth grade for four years, followed by teaching second grade, then fifth grade, then finally serving as a middle school technology teacher. She said that in total, she was a classroom teacher for 12 years. After receiving her master’s degree in Curriculum and Instructional Technology, she left her district for a position as a Technology Integration Specialist and then Technology Coach in another district. Her specific assignment was at an elementary school, in which she explained that she had classes where she would see the students in a computer lab setting. Part of her role would also be to work with the teachers in their implementation of technology. Eventually a schedule was developed that allowed her to teach classes for a week
and then use the following week to schedule time to work with teachers directly in their classrooms as a technology coach.

After serving in that position for seven years, a new promotional position came up in a neighboring district, which was that of Instructional Technology Director, the position in which she currently serves. She has been in this position for over six years. In addition to her master’s degrees, she also has her CAGs in Leadership and is licensed as a non-core supervisor/director, elementary teacher, middle school teacher, instructional technology specialist, and superintendent/assistant superintendent in a New England state.

In regards to technology, Kay recalls her time as a classroom teacher “having those old big Apple computers, and taking her students to the computer labs to work on programs such as AppleWorks, and to use some basic word processing programs that include WordArt.” The technology in her building eventually progressed to laptop carts, which she would help teachers to move around and setup. She also remembers using “WebQuests with the students, as well as exploring various websites on the Internet.” When she switched districts after becoming the Technology Integration Specialist and Technology Coach, she had to switch from using Macintosh computers to PCs. Although this was an adjustment, she has always had the attitude that “a computer is a computer, regardless of whether it Microsoft-based or an Apple.”

It was in that district and in that capacity that she was able to explore educational technology in new ways. She used a great deal of videos with students, where they could make their own videos, news shows, etc. using Flip Video Cameras. She also had the students using iPods to create podcasts. She recalled an assignment where first graders were using voice recording devices to record the poems that they had written. Technology allowed the students to be able to post their work on websites and wikis, which then “allowed them to share their work
with family members who lived in other states and/or engage in global connections with their work.” Just prior to leaving that district, she was beginning to have the students use 3D printers, where they would design and create their own projects. It is important to note that this all occurred approximately seven to ten years ago.

When she made the move to her current position as the Instructional Technology Director, Kay recalls walking into a classroom and asking to see the types of technology that the teachers had access to and thinking, “Oh my gosh, these poor teachers.” They had machines that were at least 10 years old and were struggling with the time it took for the machines to even boot up. That said, she did mention that fortunately the wi-fi had been recently redone, which was completely amazing. She credits her network administrator with “having the foresight to know that this was a major project that had to be completed before anything else involving instructional technology could be done.” She said that he knew that was the right place to start.

Just around the time that Kay had arrived in the district, the district had some funding to purchase some laptops/devices for teachers. However, these devices were only for the high school teachers and not any of the pre-kindergarten to Grade 8 staff, which to her appeared to be an equity in resources issue, a major concern for her.

In addition to her work within the school district, Kay is also involved with both state and national professional organizations, and has an active social media presence. She always tries to stay current with new trends in educational technology. Kay also credits her time spent in the lower grades with giving her the ability to work with teachers in those lower grades with the implementation of technology in their classrooms. She believes that experience gave her the ability to be able to tell teachers of the lower grades that their students can be successful with the technology.
**School district background.** Kay works in a public school department in New England. This is a rural school district, with approximately 2,476 students in the 2018–2019 school year, making this one of the smallest in the state. Approximately 19% of the students have an Individualized Educational Plan (IEP), approximately 1.1% are designated as Limited English Proficiency (LEP) students, and approximately 19% are on free or reduced lunch. The operating budget in 201–2018 school year was approximately $34 million dollars with a per pupil expenditure of approximately $13,230.

**Technology initiative.** Kay has had experience with a number of technology-based change initiatives throughout her years as an educational leader. For the purposes of this study we chose to focus on the implementation of one-to-one Chromebooks for all students and staff from Grades 3 through 12. The conversation around this initiative also includes the shift to a Google platform for the entire district, as that dovetails nicely with the implementation of the devices, both of which help to increase access for both faculty and staff.

**Need for the change.** Kay remembers “walking into one of the elementary schools and seeing a series of rigged wires across the ceiling,” which was for the projector cart. Her immediate perception was that “this was bad and old.” She saw how students were essentially being “tethered to their desks.” She also asked the teacher if they were a Google district, to which the reply was an astounding “no.” She explained that “gone were the days of flash drives and portable hard drives, and that the district needed access to a product such as Google or Office 365.”

Kay also explained that many teachers did not even have access to laptops, forcing them to only be able to complete their work and planning at school. She described a situation where “educators were having to spend countless hours in their dreary classrooms simply because they
had no other choice.” She immediately thought that this needed to be changed. There needed to be equity in access for all members of the staff, as well as for all of the students. That access needed to be portable, so they were no longer tied to a desk or to a machine. Kay explained that the students’ only access to devices had been limited to obsolete netbooks, which were extremely slow. She quite honestly “did not know how the students and/or teachers had the patience for this technology.”

This was the need that sparked the conversation about what the next steps were that the district should take to remedy this situation. Kay had experience and success with Google in her prior district, which she knew would also meet the needs of the district in providing students a platform for word processing and storage, without being tied to a costly Microsoft Office platform. The storage component was a huge benefit, as students could access the unlimited storage that Google provided, from any device anywhere.

**Planning.** Kay explained that after the decision was made to pursue a transition to the Google platform, one of the first steps in planning for the initiative was the process of exploring devices that could provide the equity that she wanted for all members of the staff. Once they had an idea of a suitable device for that need, they shifted their attention to trying to find a solution that would work best to provide access and equity for their students. She knew that when she would be able to “merge the Google initiative with devices for all, that the results would be magical.”

Another major component of the planning process that Kay spoke about was the need for the initiative to align with the district’s strategic plan, ensuring that it could help support both curricular and instructional goals. Another aspect was to consider the ability that students had to access the technology at home. Although most believe that everyone has Internet access,
especially in an affluent district, Kay explained that is not always the case. It was at this point that Kay explained that there was also a Technology Group, which included various stakeholders who were involved in the planning stages of the initiative. This group would meet on a regular basis and help ensure that the implementation always aligned with the district’s overarching goals and strategic plan.

The next phase of the planning process included discussions around funding the initiative. This was of particular importance, as the amount of funding would determine exactly how much of the initiative could be accomplished at this point. In initial conversations, Kay said that the superintendent was very supportive of her idea to implement devices. However, the type of devices had not yet been decided, and it had actually seemed through initial conversations that the district had been leaning towards laptop computers. In knowing that the cost was a concern for the district, Kay was leaning towards Chromebooks, as she said “they are inexpensive and are becoming more of a disposable device,” which would allow them to get more devices for their investment. Although, at first, the superintendent was concerned that funding might not be available, the district had saved some funding through unexpected retirements, which could be applied to the initiative.

Kay explained that the superintendent went with her recommendation right away. She believes that they hired her because they trusted that she knew what she was talking about, especially as she was always able to speak from her own experiences, and she knew what other districts in the area were doing. She wanted to conduct a pilot with a sector of the students in a particular grade to see if this initiative would work for all of the students and teachers.

Goal of the initiative. The goal of the initiative was multifaceted. Kay explained that in addition to providing students with unlimited storage and access to all of their work from any
location, having devices would also allow the students to have access to resources that could continuously support their learning. Another benefit of providing devices to students and engaging them in their use, is that it also helped to better prepare the students for success on their annual assessment, which is completed entirely through an online program. She believes that “giving them a device just on the day of testing, would not help them to meet with success.”

Another goal of the initiative is that students, through their devices and their online Google classrooms, would now be able to share with their families the work that they were completing in school, which she hoped might lead to increased parent curiosity and the desire to learn more about the initiative. Additionally, students would have the ability to complete their assignments in a more timely fashion, as no longer would they have to compete with computer access time at home with their parents and/or siblings. Providing these devices to the students allows the schools to know that the students will always have a consistent device that works. This also meant that students no longer would have to wait for obsolete devices to boot up, which would lead to less student and teacher frustration.

In addition to access, another goal of the initiative was the level of rigor in the type of work that students would be able to complete. Kay also explained that through the use of their devices, students would now be able to collaborate with other students within their classes, across their grade, and even across schools and beyond. This level of collaboration was one of Kay’s overarching goals of the initiative. Ultimately, Kay was very optimistic at the onset that this initiative would “help both students and staff feel more comfortable taking risks,” especially as they were working to “remove the barriers that hinder exploration.”

**Stakeholder readiness.** The superintendent was quite supportive of the initiative, right from its inception. It appeared as though the school committee was also of the same mind. Kay
said that “they are an extremely supportive group, who was happy to help in any way that they could.” She said that she “had the full support of the school committee, as they knew that our schools were not living in the modern world, and were excited to see what our kids could do and what they were capable of using technology as a tool.”

Now that Kay had the support of the district leadership, she was able to assess the readiness of other stakeholder groups. She explained that a number of teachers, especially the early adopter teacher leaders, were excited to test out the technology, which was helpful when it was time to select the type of devices that the district would ultimately choose. These teachers were also excited for a change in moving in what they had thought was a very positive direction. The same held true for school administrators, some of whom had already served in one-to-one districts, and all of whom were excited about what this level of technology access would mean for students and their success. However, there were and still are administrators across the district who are in different places regarding their proficiency with technology.

Kay explained that they did conduct some surveying of parents prior to the implementation, in which they had found that the parents, for the most part, were in favor of the change. “They were supportive of an initiative that would continue to make them a strong district.” There were also a number of parent trainings that took place, which sought to explain what the Chromebooks and the access to Google could do for the students and mean for their learning. This was very helpful for parents who may not have been all that tech savvy.

She also felt “the community would be happy that funding was being used responsibly, as the devices were economical.” In regard to the students, Kay explained that although there was enthusiasm from them when the wi-fi project was implemented, they had become increasingly frustrated with having limited access to various websites. Kay made sure to take a look at those
student concerns and worked to address them. Additionally, Kay believed that “the students would think that receiving devices would be cool,” as well as be happy with the speed, ease of use, and functionality.

**Implementation.** Kay explained that this initiative sought to implement laptops for all teachers, as well as a one-to-one Chromebook initiative for all students in Grades 3 through 12. This would complement the Google Apps for Education and wireless initiatives that had already occurred. Kay worked off of her experience with Google and Chromebooks, as well as her knowledge of best practices for 21st century schools and classrooms.

**Implementation plan.** The implementation plan called for first acquiring laptops for all of the teachers, Pre-K–12. This ensured that the concerns that she had about equity in access for all teachers were immediately addressed. The next phase of the implementation plan included rolling out Chromebooks to the students. Kay explained that this initial phase served as a pilot program, which was purposely started at the middle school. The middle school was chosen to implement this into first due to the team structure that is already in place as a result of middle-level best practices. This initial pilot also occurred in phases, with the first being the use of Chromebook Carts, with each grade level at the middle school having been assigned a cart. The plan for this phase also entailed tracking the usage of the devices so that specific plans for the next steps of the implementation could be developed.

The next phase of the implementation plan, which occurred in the fall of 2016, was to go one-to-one with Chromebooks for all students in Grade 8. Although it was thought that the Grade 8 teachers may not have been the most innovative, the decision to go with this grade was made as they thought that the oldest students in the building would perhaps mean that they could handle the responsibility of the devices the most. The initiative quickly ratcheted up to include
students in Grades 6 and 7 in December/January of the same school year. At this point, the entire middle school was one-to-one. When asked why she had chosen to start at full implementation at the middle school, Kay explained that she thought that the initiative could more easily push up into the upper grades from there and that she was not comfortable with starting at the elementary school, due to concerns of responsibility. Kay said, “There were some pretty innovative teachers at the middle school who I thought would do some great work;” she added that they did. The final phase of the implementation included the initiative expanding both up and down grade levels.

**Professional development.** Kay explained that there was much training that was provided to the teachers in the early stages of the implementation. Due to the fact that there is not a great deal of professional development time built into the teacher’s schedules, she explained that she had to get creative on how she offered professional development. She had offered Saturday Sessions, as well as sessions in the summertime for teachers. She also provided floating substitutes that could cover classes, which would allow time for teachers to meet and plan with one another. There was also a training session that lasted a couple of hours that focused on how to manage Chromebooks in the classroom. This also gave the teachers ideas that were specific to their content areas on how to best utilize Google Apps. They followed this up with time where the teachers could work on ideas together. In addition to working with teachers, Kay would also meet with students to talk about appropriate behaviors and to make sure that students were appropriately using their devices, which served as an important aspect of development for this specific stakeholder group.

She explained that although they have tried to differentiate the professional development for teachers who were at different places in regards to the technology, they have not done a good
enough job with that. Part of this she said could be due to the fact that they had teachers self-evaluate where they were, which sometimes they do not do all that accurately. However, she did explain that there are teachers within the various buildings that serve in a stipended position called who help teachers with questions that they may have on the implementation of technology within the classroom.

*Monitoring implementation.* Kay explained that there were a number of ways in which the rollout of the initiative was being monitored, one of which was the analysis of the data that were available within their Google’s administrative console. She recalled preparing for a presentation to the school committee and having pulled various data, all of which showed that there were a very large number of Google documents and presentations that were being generated. This demonstrated exactly how much the students were saving to their drives and using the devices and the Google platforms. Kay also said that the network administrator was able to use data from the servers to compare the middle school students to high school students and see how much the various grade levels were saving via the network drives. He could also see the quantity in which teachers were saving content to their Google drives. Those initial comparisons showed that students in middle level, where the implementation of the initiative began, had a significant amount more content being generated and stored.

Kay said that all of this data was very eye-opening and that everyone was happy with the usage, especially as it was evident that the students and the teachers were generating and storing this content outside of the school, which meant that they truly were utilizing their devices as intended. However, she did find it difficult to measure if there was more sharing occurring within the family in regards to student work and assignments. In order to garner more feedback from this stakeholder group, her team developed a “Let’s Talk” system where parents or
members of the community can reach out to the district electronically with any questions or concerns. The feedback from parents and the community have been overwhelmingly positive.

**Resistance.** Kay explained that as with many technology initiatives that there are oftentimes those individuals who resist, which she refers to as “laggards.” Although there was some initial concern from parents about what students would have online access too, she does not recall any resistance coming from any of the students, as they were mostly all excited to be getting a device.

**Overview of resisters.** Although Kay was quick to explain that there were no stakeholders who were actively trying to undermine and or sabotage the initiative, she did explain that there was a group of teachers that “were being super negative and electing to not participate in the initiative,” which also included the professional development. She explained that some teachers would actually “tune me out and not read emails. They do not know what they do not know.”

Additionally, there was also some slight resistance from teachers who had been used to doing things the way in which they always have, and felt as though they did not need any help in changing the way that they were teaching their classes. They believed the way that they were doing things worked for them. A specific example of this that Kay shared was printing, in which teachers would continue to do what they had previously done and provide hard copies to the students. They did not realize or understand that the Chromebook initiative existed to help implement a paperless environment. For some who were using the devices and the Google Apps, they were doing so in a substitutive way, where they were not using the devices to push student learning, but rather using technology in place of what they traditionally did.

Another example of this type of resistance included those teachers who were not happy that the Chromebook initiative was moving them away from the Microsoft programs that they
were comfortable with. In addition to teachers’ not understanding the benefits of the initiative, there were also some parents that did not understand as well. They did not know why their children needed a device in the first place and/or know that their children were not going to be sitting in front of the device every day all day.

Kay also described a group of resistors who were uncomfortable with the initiative because in many cases the students knew more about the technology than the teachers. This “fear of the unknown” created a sense of anxiety among those teachers that grew as the students figured out how to do more with both the devices and Google. This same anxiety surfaced a bit with parents who did not know of what the district’s legal obligations were in regards to filtering device access both in and out of school.

**Overcoming resistance and supporting resistors.** In response to some of the resistors Kay explained that there is sometimes a point where a leader has to say, “Too bad, we are moving in this direction” and provide them with a mandated training at an event such as a faculty meeting. This is particularly true in working with other educators, such as those who were not taking advantage of the voluntary opportunities. The same is true when working with other educational leaders, as it is important that they be willing to model what the initiative should look like to their staffs. Even if something were to go wrong as they use technology, it is important to show the teachers that there is no need to panic and that they must be able to adapt. She also stressed the importance of conveying to resistors that it is not a specific product that they should be focusing on with the students, but rather a set of skills. Often, as Kay explained, “Peer pressure helps a lot with this too.”

Kay explained that she was able to help a number of resistors come around by showing them the specific benefits and ease of the new technology. She described a type of “aha” moment
when they began to realize that they no longer needed to save things on flash drives and that their content would be accessible wherever there was a computer. The same type of understanding would also come from honest conversations that Kay had with parents about what the district would restrict and how the devices were going to be used in the classrooms. She explained that sometimes these resistors just need the chance to work in small, like-minded groups to bounce ideas off of one another, which is often a very comfortable way to grow. She also had the stipended teacher leaders offer office hours where people with questions or concerns could stop in for some personalized assistance.

A final strategy that Kay explained helps to overcome resistance is “simply celebrating in the success.” She has used social media to do just that, which allows her to paint the picture and set the narrative. She has been able to showcase the great things that teachers and students are doing with the technology, which is both seen by parents and helps to apply some of the peer pressure mentioned above. Kay even gave some examples where some of those individuals who were considered resistors early on have stepped up into leadership roles that directly support the initiative moving forward.

Next steps. Kay explained that she wants to continue to be supportive of teacher’s growth through professional development, in hopes that “they continue to take risks in their classrooms.” As for another aspect that she mentioned that the district was not at the point yet, but may be at some time, was the creation of their own content, thus allowing them to be able to move away from textbooks, and allowing them to reinvest those dollars into other initiatives. She does believe that she had teachers who would do some excellent work in utilizing open source educational resources and creating their own curriculum. This created content would enhance the usage of the Chromebooks even more.
In regards to monitoring this initiative and its impact in the future, Kay said that she will continue to use and analyze usage reports. There are some new features coming out of the Google administrative console that she is excited about. In addition to monitoring the use of Google, Kay explained that the district will continue to use GoGuardian, which is a program that can monitor any of the content that students are accessing on their Chromebooks. This will help to ensure that students are using the devices for the correct purposes.

*Looking back.* Kay explained that “in looking back at any initiative that there is always room for improvement; that there are always things that could have been done better.” In regard to this initiative, although she did feel that the implementation was a success, that “it moved so fast that it is mostly a blur.” However, she did say that she had wished that she had considered that when providing all of the students with a Chromebook there would often be instances where they would forget their device or the power cord needed to charge their device. Had she considered this, she would have either planned for extra devices and power cords, and/or instituted expectations that the students are the ones responsible for coming to school with a charged device, which is what they do now.

Another aspect of the rollout of the initiative that Kay reflected upon was the plan that she had for rolling out the devices. She explained how it would have made more sense to have issued the Chromebooks to students in Grade 6, then collect them upon their completion of middle school. Another aspect of the rollout that Kay mentioned was how the devices were initially handed out to the students. In the initial implementation, the district held a parent’s meeting and tried to hand out all of the devices at that one event. Unfortunately, having too many devices to hand out and not enough staff caused for a “very busy and chaotic event.” The following year, they tried to set up multiple evenings to hand out the devices based on the
student’s last name, which was not much of an improvement. It was only in this past year, that they had decided to hold a parent evening for paperwork collection and explained that the students would be receiving their devices on the first day of school. This new process engaged many more educators in the process of staging the devices in the classrooms and in handing the devices out, which created a much smoother distribution. In hindsight, she wishes that she had worked to engage those educators sooner, which she thought could have been done by leveraging the need that they had to get the students onto the devices with their help to make that happen more quickly.

Kay also believes that teachers would have incorporated and engaged student more quickly had she been able to provide more support within the building. She thinks that “moving forward if [she] wants to get staff and students to be utilizing technology in a more meaningful way, more creatively, then they need support to be able to move in that direction.” She ultimately believes that the district should conduct more professional development for its teachers. However, she did explain that for some of the resources it takes to issue, manage, and collect the devices which cuts into their ability to conduct more frequent professional development. Although she has the stipended teacher leaders within the schools, she wished that she had more staff such as digital learning coaches and/or specialists that would be readily available to help teachers on a more regular basis.

**Final advice.** Kay’s advice for other leaders is “to always be super transparent and to share the vision and the plan with all stakeholders.” She also advises leaders to not be fearful, stressing the importance of making a decision. Kay also advises “to ensure that you involve people in the initiative and allow them to get their hands on the devices.” Another piece of advice that Kay shares is to be sure to “share the praise with those around you that have
supported the initiative.” A final piece of advice is the importance of “developing relationships with people.” Without those relationships, it is possible that stakeholders could begin with a negative perception of the project. With all of that said, Kay explained that “change is hard for people and can be scary at the beginning, messy in the middle, but amazing in the end.”

**Lessons learned from Kay.** Kay’s narrative presented us with a number of important points that leaders can draw from to help make a technology-based change initiative successful. The first of these is how Kay grounded her initiative in a specific purpose or goal. In this case it was very much about addressing the concerns of equity in access for both teachers and students, as well as providing students with increased educational opportunities through technology. Kay explained that she had engaged a small group of stakeholders who helped to plan the initiative. She also outlines a specific implementation plan, which included professional development, as well as mechanisms for monitoring the success of the initiative. Kay also shared her reflections of the implementation of the initiative, pointing out specific places where she would have done things differently. Throughout the narrative, Kay spoke about the importance of sharing praise to those around you and frequently celebrating success.

Additionally, Kay’s narrative also gave specific suggestions that aligned with the research question. She explained that she did have some stakeholders who were ambivalent, and therefore had mixed feelings about the change. These individuals were concerned about moving away from tools and strategies that they had previously used. She also had a group of resistors who were actively not participating in the initiative, as well as a group of individuals who were anxious about the change that was happening. In response to those resistors, Kay shared the strategies that she used to help address their concerns. Specifically, she modeled the purpose and benefits of the technology for resistors, as well as provided them with open office hours where
they could receive additional support and professional development in smaller portions.

Additionally, Kay made a point to be available to listen to the questions and concerns about the initiative of not only teachers, but also of parents and students. These strategies helped to make Kay’s initiative successful.

John

**Background.** John currently serves as a district level director in a New England public school. In that role, he gets to work closely with the curriculum, professional development, and technology departments. He explained that his position has morphed from his initial position of Technology Coach. Prior to serving in that role, John was a fourth grade elementary school teacher. Although he was not quite ready to leave the classroom, he knew that it was time to explore a change; therefore he had actually applied for a lateral position at another school. His superintendent had contacted him to tell him the bad news that he was not going to approve the transfer, but the good news that he was offering him a new position altogether. The technology coach position began in the early 2000s.

What John was quick to learn is that his position ended up being “the backdoor into talking to teachers about practice.” It was a way to be able to “co-learn with colleagues through thoughtful conversations with people” and to “be able to push them in a positive way, without being seen as judgmental.” An example of this was being brought into a classroom to help with a specific technology tool that helped the class talk to people halfway around the world, but in reality it was the best practice of collaborative learning that was making the biggest impact on students. He believed that he would certainly not have had the same success if he had gone into a classroom and directed what the teacher needed to do to increase collaborative learning.
John has applied this same thinking throughout all of his work. His goal has always been in supporting instructional best practices, while working to ensure equity in the opportunities that students have to access “rich learning opportunities” rather than simply just technology tools. This is the very reason why it is so important that there is constant collaboration between various departments.

In regard to technology in general, John’s experience is quite vast. He has a strong knowledge of networking, various software programs for teaching and learning, database and student information system management, hardware devices, etc. In having to use the Internet even back in the late 1980s and early 1990s, John had developed an expansive knowledge of how it all worked and in how to extrapolate information from it. He also stresses that he has capable people on his staff that do exemplary work in the management of the wireless network, as well as the maintenance (“wires and pliers”) work throughout and within the school department.

**School district background.** John works in a public school district in New England. This is a suburban/urban ring school district, with approximately 3580 students in the 2018–2019 school year, making this one of the mid-range districts in the state. Approximately 21% of the students have an Individualized Educational Plan (IEP), approximately 2% are designated as Limited English Proficiency (LEP) students, and approximately 49.7% are on free or reduced lunch. The operating budget in 2017–2018 school year was just shy of $60 million dollars with a per pupil expenditure of approximately $17,545.

**Technology initiative.** The technology-based change initiative that John described was the one-to-one initiative that occurred within his school district. This involved the assigning of a Chromebook to each student in Grades kindergarten through 12. Additionally, all of the teachers
received a Chromebook as well, which complemented the document camera and projector that they already had in their classes. John said that this initiative included “every single student, every adult, every substitute, and every employee.” In addition to using the Chromebooks, he stressed that all of the offices throughout the school department also run machines on a Chrome operating system (OS). He explained that they chose Chromebooks for a reason, as he would never be able to do this with Mac OS or Windows which they would have to roll it out and support.

**Need for the change.** Prior to the change, John explained that “the district always had pockets of excellence,” where great things were happening throughout the district, often in isolation. John also always says that “structure determines behavior, and how you structure things determines some of your outcomes sometimes.” John felt that it was time to formalize that structure and make those pockets of excellence the norm.

One of the precursors that led to the need for the change was a decision that was made to move from a server-based system throughout the district to cloud storage, which required the need for ubiquitous wireless throughout the district. This conversation was hurried and in turn, helped to move the initiative quicker due to the crashing of the district’s servers in 2009. Repairing the existing technology would have cost in excess of $40,000, and quite honestly, John had thought that this was not a good investment of money. He communicated this to both the superintendent and business manager. They were able to put together enough funding to place access points in almost all of the classrooms throughout the district. This transition occurred over the holiday break in the 2009–2010 school year.

**Planning.** The initial step in planning for the initiative was to try to determine where the funding for the devices would come from. John had explained that the district had applied for a
grant through the state’s department of education, for which they were the runners up. Yet the commissioner at the time was impressed with their idea to implement devices that she had promised funding for the project, should funding become available. Much to their surprise, funding did become available, and with a reminder to the commissioner, they had received enough funding to make one of their elementary schools one-to-one with student devices at the start of the next school year. Wanting to begin the initiative at least within that school a bit sooner, John explained that they were able to find enough funding in the current year’s school budget to be able to go one-to-one in one of that school’s classrooms. This would serve as a pilot to help them better prepare for when the larger initiative came to that school.

John explained that after these initial waves of funding that helped to start the initiative, which was usually budget surpluses, that the fiscal commitment to sustaining the initiative is approximately $185,000 annually, which breaks down to $170,000 for devices and $15,000 for supplies. This also involves a replacement cycle that outlines when the devices will be replaced. He explained that students in kindergarten receive brand new devices, as it gives these new students and their families “a positive first impression.” This also ensures that the teachers can rely on new devices that will work, rather than old handed down devices. From there, students are usually issued new devices in Grades 5 and 9. Seniors who have a device that breaks are issues recycled teacher machines, which end up being decent machines, as the teachers are usually outfitted with a device that can support what they need in the classroom. John explained that sometimes when the district has a budget surplus, they will use that to implement a replacement phase sooner than planned. At this point the district outright buys all of the devices, and therefore owns them all.
**Goal of the initiative.** John explained that the goal of the initiative was always about targeted solutions that would help move towards experiential learning opportunities for students within the district. It was about “the need to give students concrete examples and connections as a means to help reduce gaps in their learning.” John had given examples of how this technology could impact all grade levels and subject areas. With tools such as Screencastify on the Chromebooks, students can record interviews that they are having with people for the classes. Once collected, they would have the tools right in front of them to organize and analyze that data. He gave an example of students in kindergarten students collecting data from one another on the number of times that a student helps someone. Even though the technology that they might be using is pencils, paper, and a clipboard; they could take that back and use their Chromebooks and apps that allow students to video chat or create podcasts so that they can engage with other kindergarten classes across the district.

All of these tasks are examples of allowing students to communicate, collaborate and create understanding together, which as John explained research shows that is the point at which the “most successful school districts see student achievement fly.” Since communicating, collaborating, and creating has always served as a beacon call for the district, the conversation shifted to the question of who gets to do that, which made this a conversation about equity among and between students and teachers.

In addition to providing students with devices, the school district also provided each of the teachers with a device. The Chromebook that was given to them was a flip model with a stylus. The goal in doing that was to equip them with a device that allowed them to more easily perform tasks such as taking notes, cast to the projector wirelessly, etc. Teachers also used these
devices to develop the various units of studies for different grade levels and subject areas. Oftentimes, pieces of these units are developed by teachers in lab classrooms.

**Stakeholder readiness.** John explained that teachers appeared ready for the initiative. When the decision was made to implement the Chromebooks, he had acquired a few different models and sent out a message asking who might be interested in checking them out. He received a number of volunteers who were interested. In the application process for teachers to be the first classroom that these devices were going to be implemented into, 18 out of 20 teachers in the school had applied, which is evidence of an overwhelming readiness.

In regard to the school committee and central administration, John explained that because the conversation was always about “providing the tools that students need to be able to communicate, collaborate, and create content” that everyone was on board with the initiative. In the early stages, they wanted to know “how they could get more of this technology, so that everyone could have the same opportunities.” There was no stakeholder group that John felt was not on board with the initiative.

Undergirding all of this stakeholder readiness was the fact that the district had the culture needed to embrace this type of large scale change. This, as John explained, this did not happen overnight or by chance. He pinpoints a specific superintendent about 15–20 years ago who had done a great deal of work on improving the culture within and throughout the district. He had laid the groundwork for a school department that came to understand that when “you talk and collaborate, you actually get really incredible results.” He explained that this is a culture on which they could build future change initiatives.

In regard to other stakeholders, John did describe a tale of two communities in one. In one respect, there is a portion of the community that is under-resourced, in which parents and
guardians might not always have been successful in a school setting themselves. As a matter of fact, “they may even be a bit suspicious of authority in some regards,” whereas in another area of the town there are families who are on the wealthier part of the socioeconomic scale. All of this needs to be taken into account when planning for an initiative.

**Implementation.** John explained that initially, the initiative was originally called “one-to-one, one classroom at a time.” This is exactly how they strategically moved through the implementation of the initiative, which ended up placing a device into the hands of all students from kindergarten to Grade 12. This also involved ensuring that every adult within the school district, including teachers, teacher assistants, substitute teachers, etc. had a device as well.

**Implementation plan.** Once the planning around the initiative had occurred, it was time to develop an implementation plan for the initiative. The first phase of the implementation included a single classroom in one of the district’s elementary schools. John explained that the decision for which classroom to choose was given to the school’s school improvement team. He told them that it was their responsibility to make this decision, to which they had decided to implement a lottery system. Teachers who were interested in having their classroom selected had to submit their name along with an application that included a description of how they would utilize the devices with their students.

The only non-negotiable piece that John directed was that a teachers whose classroom that was given the devices “had to ensure that the devices were to go home with the students.” He said that the district was committed to supporting teachers with that, but he explained that they felt as though this piece was an important aspect to the district’s vision. He did not feel like it was “fair to give a kid a tool, and then take it back from them.” Other than that, they did not really care about what the teachers were going to use the devices for, they were just looking for
someone who was “going to turn them on, use them, muck around with them and let them go home.” The first classroom that was selected was the kindergarten classroom, which John felt was ideal, because if the initiative was successful there, then it could be successful anywhere. This also gave them the chance to be thoughtful about such things as the configuration of the machines, passwords, etc.

Once that initial classroom was selected, the funding from the state that had been previously promised had become available, which allowed them to implement devices into all of the classrooms within that elementary school. Once that school had devices in all of its classrooms, the next phase of the plan included the purchase and implementation of approximately 1000 more devices. The district was able to allocate funding from Title 1 to make this happen.

The same process with the schools’ school improvement teams occurred, and at this point in the implementation, there was increasing pressure from various stakeholders to go one-to-one for everyone. It was becoming hard to “justify that this classroom gets this great opportunity, but this classroom doesn’t.” John explained that this pressure came from parents, either in conversing with one another or in talking with their school’s PTA. Once the students started having access to these devices and got to bring them home, the families were concerned about the following year and whether the students would have the same access and opportunities. John explained that they “had created a system that forced them into action, and that once you're in an opportunity where the kids are co-learning and where kids are in really magical classrooms; who wants to give that up?.”

As schools were added more questions about how best to implement these devices kept arising. One such example that John gave was at the high school when the teachers in initially
developing a distribution plan, wanted to place the new devices on carts. He was able to utilize the school improvement process to come up with a specific plan for how that would be managed within each of the departments. Similar conversations occurred in different schools, and John would ensure that their school improvement teams were always anchoring the conversation back into the important goal of communicating, collaborating, and creating content. He said that although they were thoughtful in their process and owned their decision, schools did not receive any devices until that had a clear plan.

Professional development. John explained that the teachers receive a tremendous amount of support not only from the district, but also from one another. In order to prepare them for the types of tasks that the units of studies will be asking the students to complete, teachers provide help sessions for and with each other. If teachers need additional help, then other teachers will come in to their classrooms and model something for them. Additionally, the district has learning coaches who help teachers in planning lessons that align to the various units of study. These conversations with the coaches happen both virtually and face-to-face. Also, it is important to mention that the unit of studies are very rich in technology, so the teachers do need to seek support if they need it to deliver the unit as planned.

The district is always willing to provide whatever support that teachers need in order to be successful with implementing the technology. John explained that many of the professional development presenters, whether it be for technology, curriculum, pedagogy, etc. are also very skilled in technology tools. He also explained that teachers are always visiting each other’s classrooms to see what they are doing, to help co-teach a lesson, to show how to integrate a specific tech tool, etc. School administrators are also very supportive in facilitating this, either
through freeing people up to do this and/or pointing out who is doing some great work in their classrooms. Throughout the district, everyone is very comfortable in supporting one another.

In regard to supporting teachers with their devices, at times John will call his sales rep and tell him that he needs him to conduct a review on a specific topic for the staff, in hopes that they will not only remain up to date on new things, but also to address any concerns that they may have. John also explained that many of the schools would conduct their own unconferences as their faculty meetings, which “helped teachers to learn from one another in a really low stake, low key way.” He explained that their goal was to develop a strong capacity within the district. He prefers this strategy over bringing in outside professional development.

*Monitoring implementation.* John explained that it is important to monitor the implementation of this initiative, especially as it is rooted in such strong beliefs of the school department, which again is to communicate, collaborate, and create content. He explained that it is important to have “pedagogical, structural, and infrastructural proof of the value of the initiative,” especially as they have spent millions of dollars on this initiative throughout the last six or seven years. Helping with that are the data that he can pull directly from Google, which can show him real-time usage data, such as the number of emails that have been sent, the number of documents that have been created, the number of documents that have been externally shared, and the number of Google Hangout meetings that have been held. Each time he has looked at this data, he had seen increases, which he said occurred as soon as the devices were initially implemented. They report this type of information to the school committee on a monthly basis.

John explained that school leaders do have a pulse on what is going on in the classrooms within their schools. He also said that the school improvement teams are also the ones in the schools that help to monitor the initiative’s implementation and push each other. He said that
they had seen “very big usage right away,” especially in Grades 2 through 12, both with the
digital content that was being created and collaborated on, as well as with the apps, such as
Screencastify, Google Draw, Read and Write, etc. that the teachers were using with their
students. John also explained that district leaders are visible in the schools and in the classrooms,
and that the teachers are very receptive to that. This allows the leadership to recognize and
celebrate the successes that occurring throughout the schools.

**Resistance.** John has seen some resistance, not only to this initiative, but in general. He explains that “there are all kinds of obstacles that get in the way.” He believes overall that people resist either because their plates are full, due to life events or that they simply do not have the necessary content knowledge to be successful.

**Overview of resistors.** Overall, although there were some questions and concerns, John explained that there did not appear to be anybody who resisted the initiative due to not understanding and/or believing in what the initiative was all about, especially not among the teachers and students. John did explain that there were some parents who may have had some concerns about the initiative and who may not have understood why the students were going to receiving devices. He said that these individuals specifically had concerns about the school intruding into their home lives, as well as the amount of screen time that students were going to be having.

John explained that he had a group of resistors, specifically at the high school who, for a variety of reasons, did not believe that students should be taking the devices home. There was also one educator within the district who did not like the initiative, as they were concerned about the health effects of the devices and their wireless radio waves. John said that they asked this individual to provide information to the district, which was read and discussed.
John also explained that there were some teachers who were anxious about the initiative. He explained that “there is quite a bit of anxiety that exists in teaching and within the work that we all do.” Sometimes he attributes this to people having a lot on their plate and not being able to participate fully in the work that is occurring. John explained that there were also cases of teachers being anxious about “not knowing what to do, how to use the technology, and/or not being skilled with it.”

**Overcoming resistance and supporting resistors.** John believes that “there's a lot that gets in the way of being successful, and that there are days that we are not our best selves.” With that said, he also explained that “it is our job is to help unpack that for people.” He explained that understanding why people resist an initiative is an important step in better supporting them, as perhaps the circumstances call for more patience and empathy as to what is causing the response that you are getting from them. If the resistance is due to not having the content or pedagogical knowledge, then John explained that they are more than happy to support the teacher with that. His expectation for all educators in the district is to know their colleagues and to be able to recognize when someone is not on their game, and then using “relational trust, pick one another up.”

In response to the parent’s concerns about screen time and the amount of work that students would be completing at home, John said that he had held meetings with parents and explained to them that “they were still the boss at home.” If they felt that there was too much time on the device, then they could simply write a note to the teacher explaining that they had to limit the amount of screen time at home and that the homework assignment could not be completed. He also explained that at these meetings they would often show the parents what these devices and apps could do for students, as well as assure them that many of the traditional
activities that occur within the classrooms would still continue. Often, addressing these concerns directly yielded positive results with those who may have initially resisted due to not completely understanding the initiative. This type of preventive work helped to alleviate some of the resistance that could have arisen.

In response to the group of high school teachers who did not believe, and therefore declared, that students should not bring their devices home, John explained that he told them that he could no longer support the wireless within the school. When they quickly responded with concerns of fairness over his comments, John used the opportunity to explain that rather than an ultimatum from this group, that a conversation was a better direction to go in. He took the time to understand their reasoning and to ensure that the school improvement team was involved in the conversation. He was able to reiterate the non-negotiable district expectation that everyone was going to have equity in access and opportunity. In taking the time to understand their concerns, he was open to developing policies and procedures that could address and ultimately alleviate them. They were able to explain safeguards that were put in place regarding the devices.

In response to those teachers who were anxious about the initiative, John said that there were a number of things that the district had done well. First, the district had strategically planned to ensure that all teachers received their devices at the same time, which helped to foster the idea that everyone was learning together. He also explained that there is always “quite a bit of small learning that takes place among everyone in very informal ways,” where they are able to deliver small amounts of professional development and support that can help teachers significantly. As for the people who are obstinate to change, John explained that although they will work with them forever to get them to open up, but ultimately it will get uncomfortable working there. He explained that it is not the administrators that are breathing down the necks of
resistant teachers, but rather their colleagues who them to collaborate and participate with them. John explained that “this is where it can get uncomfortable for them,” and ultimately these types of resistors end up “self-selecting out.”

**Next steps.** John explained that any of the next steps that the district takes will always continue to focus on tools and strategies that allow teachers and students to continuously communicate, collaborate, and create content all in an authentic way. He also explained that he would want to continue to expand the collection and use of data to continue to ask questions about what they are doing, what is missing, and what support they need to continue to keep pushing forward.

**Looking back.** In talking with John about his overall reflections on the initiative, he believed that it went well. He knew that they would get there at some point, especially as they “were dealing with an access, opportunity, and equity issue.” He did wish that he had gotten the students more involved earlier on with caring for their devices. He explained that they noticed that students, especially middle school students, would not always take care of their devices they way that they should have. Early on in the initiative, students would have to pay for their repairs, which was done on a sliding scale based upon the free and reduced lunch status, which he said was not fair to many. One strategy that was implemented recently was a community service program, in which students needing repairs to their device will help the technology department with some of the work that they need to do. They will issue the student as many old devices as they need to, but if the student wants the repairs made to his or her device, then they have to owe 10 hours of community service working with the technicians fixing and/or distributing machines. John thinks that had they started this earlier, then students would have taken more ownership, and therefore care better for their devices. He also said that this may have increased a sense of
shared responsibility amongst students, teachers, administrators, etc. rather than just placing it all on the IT Department’s help desk.

**Final advice.** When reflecting on all of his experiences, John believes that no student or adult comes to school and/or work and says “I can’t wait to suck today.” He truly believes that everyone wants to do their very best. That said, he advises that it is important for the leader to “engage a lot of people in the work” and ensure that the right people are always working together. Another piece of advice that John gave was ensuring that leaders give praise and applause to where it belongs, which he says in this case is “to him is to everybody, but himself.” He stressed that this initiative was not just his vision or plan, but rather the shared vision of everyone within the school department. John explained that although it is important to recognize the benefits of technology and to be thoughtful about your decisions that “the minute [that technology] is your focus, you're dead; never make that the focus.” The irony that he shared was that this initiative was never actually about the technology, but rather about communicating, collaborating, and creating together. I had asked him that I imagined that if technology had ceased to exist that they would continue to be collaborating, communicating, and creating, to which he replied that “they would, it would just be a little harder.”

**Lessons learned from John.** John’s narrative presented us with a number takeaways that are important elements to implementing a successful technology-based change initiative. One of these strategies was ensuring that there existed a clear purpose for the initiative, which in this case was providing equity and access to students to be able to communicate, collaborate, and create content. Through the discussion of the initiative, John explained how he began with a planning process that carefully considered the funding for the initiative, as well as the selection of the school in which the initiative would begin. John also explained a very detailed
implementation plan, which included a process where he ensured there was professional
development, as well as a way to assess and monitor the implementation of the initiative. In his
reflections of the initiative, although John felt as though the initiative went well, he still offered
some areas in which there could be some improvement. Lastly, John explained the importance of
engaging people in the work and recognizing their efforts through praise. He also stressed that
you should never make the initiative about the technology, but rather about the outcomes that
you hope to see.

Additionally, John’s narrative also addresses the research question, as it speaks to the
ambivalence that stakeholders had in regards to his technology change. Specifically he had
described that some of the stakeholders had not believed in one particular aspect of the initiative,
which had created some resistance. Additionally, John spoke about those individuals who were
resisting due to anxiety with the change. Also aligning to the research question were the
strategies that John used to overcome that resistance, which included empathetically listening to
the questions and concerns of the resistors and providing support to those who needed it in the
form of smaller pieces of professional development. John also spoke about how the culture
within the school district created an atmosphere where everyone supported one another. These
are some of the strategies that helped to make John’s initiative a success.

**Chapter Summary.**

This chapter summarized the narratives and findings of the interviews that were
conducted with four school district leaders serving in school districts located in New England.
Each shared their experiences surrounding a specific technology-based change initiative, in
which they had a role in planning, implementing, and monitoring. Their backgrounds in
education and with technology, along with a detailed overview of initiative, including the need
for change, readiness of stakeholders, planning, implementation; as well as an overview of the resistance and types of resistors that they faced throughout the implementation of the initiative. Additionally, each narrative includes an overview of their reflection on the implementation of the initiative, as well as advice they may have for other leaders embarking upon similar change initiatives.

Through these findings, three major themes emerged relating to how school district leaders overcome ambivalence to lead a successful and sustained technology initiative within their schools and/or districts. The first theme was the clear undergirding of the change initiative in a “reason why,” which can be a core belief, purpose, and/or vision. The second theme was the importance of leaders having a specific implementation plan that includes strategies that proactively address potential stakeholder concerns. The third theme was the realization that people are the most important resource in implementing a technology-based change initiative. Each of the overarching themes also had a number of sub-themes that surfaced through the comparison of the individual participant narratives. Also in reviewing the findings, there are a number of similarities and differences that occurred across the participant narratives. These major themes, sub-themes, similarities, and differences will be discussed in Chapter Five.
Chapter Five: Discussions of the Findings

Introduction

The purpose of this narrative study was to explore a technology-based change initiative that involved the leadership of a school or school district leader in hopes to understand what successful leaders do to lead and sustain a successful technology-based change initiative. Four school district leaders, serving in different positions within their respective districts and involved with different initiatives, participated in this study.

The central question for this research study was: What is the nature of technological change ambivalence as perceived by school district leaders, and more specifically; how do leaders overcome ambivalence to lead a successful and sustained technology initiative within their school district? Specifically, this study looked at the types of resistance that exists when leading a technology-based change initiatives and the strategies that successful leaders employed to navigate through and overcome that resistance.

In Chapter Four, the findings from the interviews that were conducted with the four school district leaders were examined in an attempt to adequately address the research question of this study. From these findings, three major themes emerged: (a) the reason why (b) an implementation plan, and (c) the importance of people. Each of the overarching aforementioned themes also had a number of sub-themes that surfaced in the individual participant narratives.
Table 5.1

Summary of Themes and Sub-themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-theme 1</th>
<th>Sub-theme 2</th>
<th>Sub-theme 3</th>
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<tbody>
<tr>
<td>The reason why</td>
<td>Convincing stakeholders</td>
<td>Strategic planning</td>
<td></td>
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<tr>
<td>Implementation plan</td>
<td>Professional development</td>
<td>Monitoring implementation</td>
<td>Lessons Learned</td>
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<tr>
<td>It's about the people</td>
<td>Inspiring and motivating</td>
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This chapter is organized into the following sections: findings as they relate to the literature; findings as they relate to the research question and theoretical framework; reflections; implications for practice; implications for research; limitations of the study; and a conclusion.

Findings As They Relate to the Literature

In examining the findings as they relate to the literature, this section will review the themes and sub-themes that had emerged from the school district leaders’ narratives. This section will also review how the findings from school district leaders’ implementation of a technology-based change initiative relate and align to the literature. Furthermore, this section will not only talk about where the literature aligned with the findings, but also some areas where the literature and the findings differ.

Theme one: The reason why. The four participants all had shared a very specific reason as to why they wanted to implement their technology-based change initiative. This reason not only served as the basis for the initiative, but it also served as a way to orient stakeholders as the initiative was being implemented. Rob had explained that his reason for the initiative was to have an economical way in which the school district could ensure that the resources that the teachers were using with the students were always the most up-to-date, rigorous, and aligned to current standards. His vision was to move away from paper-based resources and to provide students with
21st century learning opportunities. This reason was also consistent with what John was looking to accomplish in his school district. As was mentioned throughout his narrative, the focus in his district was always to communicate, collaborate, and create content, which are all important 21st century learning skills. John had pointed out numerous times that the initiative was never about the technology, and that no initiative ever should be. He made the point that if the technology had ceased to exist, then the students would still be communicating, collaborating, and creating content, albeit admittedly a bit slower. Kay had a very similar purpose in mind, as she explained that the goal of her initiative was to provide students with increased opportunities for collaboration. Additionally, Kay also explained that her initiative would also give teachers the opportunity to engage students in learning activities that were of a higher level of rigor. Both Kay and John explained that another main reason for the initiative was to provide access and equity to students and teachers. In regard to Samantha’s initiative, she too had a very clear reason why she was implementing her initiative, which was to use technology to streamline a process that they were already completing in a less efficient way. Additionally, her initiative was also designed to give her students increased access through a software program to 21st century tools that would help them to be better prepared for college and/or career.

In all of these cases, the leaders had a clear and specific reason for their initiative. Fullan (2002) talked about the importance of leaders having a moral purpose for their initiatives, especially if they are to make a positive difference for their students. The participants’ reasons not only helped them to strategically plan for their initiatives implementation, but also helped to address any concerns that would surface during implementation. The participants’ specific reasons for their specific initiatives were also consistent with the literature. Levine (2011) talked specifically about the shift that is going on in present-day education that includes moving from
traditional textbooks to more online rich resources and activities, citing that major states are moving away from traditional textbooks. These findings are also aligned with literature on engaging students in 21st century learning opportunities as a way to help students be competitive and better prepared for success in their career (Hill, 2011; Hayes, 2012; Kolb, 2011; Pautz & Sadera, 2017). Ertmer and Ottenbreit-Leftwich (2010) explained how teachers need to actively engage students in 21st century learning experiences that help students develop the knowledge and skills that they need to best handle real-world problems.

Additionally, the participants’ whose focus was on providing students with opportunities for increased rigor, was consistent with Jonassen’s (1995) claim that technology can help students develop the skills necessary to solve complex, real-world problems. Those participants who cited access and equity as an aspect of their reason for the initiative are consistent with the literature such as from Hew and Bush (2007), who stress the importance of providing students with an adequate level of access to technology. It is the job of the school leader to create an environment which provides teachers with the resources that helps them to foster this type of learning (Pautz & Sadera, 2017). Those participants whose goal was to increase collaboration is also grounded in literature. Not only do students working collaboratively with one another increase psychological health (Holland & Muilenburg, 2011), but it also allows students to perform at higher levels (Webb, 1993) and has a positive impact on student understanding (Fall, Webb, & Chudowsky, 2000). This also aligns with research conducted by Lazonder (2005), which demonstrated that students were able to perform better in a specific use of technology when working together.

In addition to the participants’ reasons about technology implementation in schools aligning with literature, they also align with literature on transformational leadership. The fact
that all of the participants had a reason for their initiatives aligns with Bass (1999) who explained that transformational leaders move beyond their self-interests and align both their personal interests and the interests of the other members of the organization to the values and interests of the organization. Specifically a leader having and communicating a clear vision for technology usage within their schools is an important aspect of transformational leadership (Afshari et al., 2012).

**Convincing stakeholders.** School leaders must develop a culture where stakeholders feel that there is a team effort and opportunities for growth (Pautz & Sadera, 2017). Prior to even planning for the implementation of the initiative, each of the participants spoke to the readiness of their stakeholders, as well as the work that they needed to do to ensure that their stakeholders were on board with the proposed change. Armenakis, Harris, and Mossholder (1993) explained that readiness for an initiative is the belief, behavior, and intention that the specific change is necessary and that the organization can actually implement the change successfully. Rob had explained that he needed to spend some time selling the idea to the district leadership, which included the superintendent, school committee, and business manager. Once that was complete he was able to assess the readiness of other stakeholder groups. He had explained that although he had believed that the students and families would be supportive, he did think that not all of the teachers would be ready for the initiative. Samantha, by virtue of her role, did not have the same task in convincing district leadership; however, she did have the same perception of the readiness of the students and families, feeling that both groups would embrace the initiative. She, too, had felt that the readiness of the faculty and staff would be mixed, as some had been asking for such a change, while others did not yet have it on their radar. Kay also had explained that she had the support of the superintendent and school committee, and had felt that for the most part, the
parents and the community would be supportive of the initiative, and the students would think that receiving a device “would be cool.” Kay did explain that she organized and conducted a number of parent trainings that had explained what the access to devices could mean for students and their learning opportunities. She had also explained that teachers, especially the early adopters, which is a term used by Porter and Graham (2016) in citing Rogers, would be excited for the initiative. John had explained that his district leadership had always been supportive of the initiative. He too had believed that the parents, community, and students would all be on board with the initiative. John also spoke about how he had conducted parent meetings to help ease their concerns.

It is no surprise that the participants had all thought that their students were ready for the change. This is consistent with the literature that explains that students are coming to us, ready to learn, with a unique set of abilities, preferences and attitudes that we have not seen before in our classrooms (Thompson, 2015). Prensky (2001) explained that students today are “digital natives,” having grown up surrounded by and immersed in technology from the day they were born and Siemens (2013) explains how over the last two decades, technology has changed the way students learn.

Also consistent with these findings is the literature on the importance of addressing parent concerns, which both Kay and John explained they did. Farrace (2012), in interviewing NASSP’s Technology Principal of the Year, Patrick Larkin, explained how important it was to have a conversation with parents about the importance of technology integration in their child’s school. Communicating the benefits of the new technology is an important step in understanding the concerns and beliefs of all stakeholders (Farrace, 2012). This communication that the
participants described was proactive to the change and through it they were able to create a shared sense of purpose (Gold, Evans, Earley, Halpin, & Collarbone, 2003).

**Strategic planning.** It is important that school leaders have a shared vision as part of their technology integration plan (Hew & Brush, 2007). All of the participants described how they had carefully planned for the implementation of their initiative. All four participants spoke to their plans to fund the initiative, which all had explained was a key aspect to their planning process. This consideration is consistent with the literature, such as Santos (2013), Scott (2012), Hill (2011), and Scherer (2011), who have discussed how technology initiatives have been funded in schools.

All four participants had discussed the importance of planning with some assembly of a group of individuals. Rob had explained that he began his planning with a small group of administrators and teacher leaders and Kay had described a meeting with a similar group that was called the Technology Group. Samantha had also assembled a representative team that would help with planning, and John had explained that school improvement teams, which contained various stakeholders were already in place in all of the schools and were very much engaged with the work around planning. The participants also explained how these teams were involved in the selection of devices, or in the case of Samantha’s initiative, the selection of the software program.

This involvement of teacher leaders in a planning group is consistent with the literature, as Gold et.al (2003) and Marks and Printy (2003) provided evidence that teachers have both the desire and ability to lead, and that engaging them helps to cultivate and develop the leadership capacity within the school. Ng Wee (2008) explained that if school leaders were more transformative in their leadership, then they could better promote technology integration.
Additionally, Samantha, Kay, and John spoke to the importance of formalizing the initiative in some type of district and/or school strategic planning. The time that the participants took to strategically plan for their initiative is consistent with the literature. King-Sears (2011) stresses that implementing technology to support student learning is something that takes careful planning and we should never implement technology just simply to implement it, but rather use technology in the regular context of learning.

**Theme two: Implementation Plan.** It is important that school leaders have a shared vision as part of their technology integration plan (Hew & Brush, 2007). All four participants had a very detailed implementation plan that guided the implementation of the technology-based change initiative. Rob had explained that his plan began with anticipating who might have had concerns and working to figure out ways in which they could be supported. Another aspect to Rob’s plan involved him identifying a teacher in each grade who could serve as an example for others and who could be someone in each grade who he could build the implementation off of. Kay followed a similar approach in selecting a specific grade level in which to implement the one-to-one devices. Just as with Rob, her choice of where to implement was very purposeful. She had chosen to implement in a specific grade in which she thought would bring the best success to the early stages of the initiative. John explained that his process for implementation also began in a specific classroom, in a specific school. Although the selection process for that classroom appeared random, the application that teachers had to submit to be considered included a description of how they would utilize the devices with their students, which allowed them to be purposeful in their selection. In regards to Samantha’s initiative, she too was purposeful in the software program that she selected, as she engaged her planning team in the process of exploring different options and selecting the one that met the needs and goals of the district the best.
The participants’ implementation plans as outlined above, do align with literature such as is found in Hew and Brush (2007) and King-Sears (2011) who stressed the importance of leaders having a technology implementation plan that is designed to address the need for resources, professional development, beliefs about the change, etc. that may stand in the way of a school achieving success. However, the type of strategic entry point into the implementation that all of the participants described is not something that was found in the literature.

**Professional development.** All four participants stressed the importance of professional development for their teachers and all four participants had a detailed plan of how they supported teachers. Rob described a tiered professional development plan in which teachers were organized into groups by ability, with each group being strategically mixed with teachers from different schools. Rob also worked to embed the professional development into various meetings throughout the year. His plan for professional development was organized around five specific topics. In addition to the formalized plan, Rob also encouraged teachers to frequently share and collaborate with one another, which has a very powerful impact on teacher learning (Meirink, Meijer & Verloop, 2007). Samantha also described a professional development plan that offered professional development both within the district, as well as by the vendor. These professional developments also had a specific focus. In addition to her formalized plan, Samantha had also stressed the importance of continually supporting teachers and administrators informally. Kay also described a professional development process in which there were formal sessions that she had set up with a specific topic, as well as supports in place within the schools that could assist teachers in a less formal way. John also had explained that there were formal professional development sessions in technology, curriculum, and pedagogy that have been offered by in-district presenters, as well as presentations in specific topics presented by the vendors. He too
explained that in addition to the formal sessions, there are a number of less formal mechanisms that are in place, such as unconferences, peer supports, etc. to support teachers who need help.

Rooney (2010) explained that it is the job of the leader to "meet teachers where they are" helping to guide them, one step at a time, toward improvement. All four of the participants explained how they did just that, especially in regard to their professional development needs. Additionally, all of the participants had specific professional development plans in place to help support teachers. Each of their plans included some combination of traditional professional development, as well as other opportunities for sharing and/or learning together. This is aligned with Morris, Chrispeel, & Burke’s (2003) findings that suggest that effective professional development plans should include both an internal and external network for teachers. Also in regards to their professional development plans, only Rob had worked to develop a tiered system of supporting teacher, while Kay had said that although she had tried this, she had found that oftentimes teachers do not correctly self-identify where they are at in their own proficiency.

The participants’ focus on and planning for professional development is very much supported in the literature. Scherer (2011), Farrace (2012), Hew and Brush (2007), and Pautz and Sadera (2017) explained the importance that leaders consider professional development for teachers so that they are more comfortable and able to best utilize this technology in the classroom and develop lesson plans that are interactive. The literature also points to examples where students believe that their teachers should have more professional development on technology so that they are more comfortable with its use in class (“What screenagers say about,” 2012). Although not addressed by the participants, there is quite a bit of literature that calls for incorporating more experiences and professional development for teachers right within
Monitoring implementation. All four participants explained their plans to monitor the implementation of their technology-based change initiative. Rob’s plan for monitoring the initiative hinged primarily on the data collected through informal walkthroughs. These walkthroughs were designed to look for specific strategies that were being implemented through the use of the technology that was provided. Samantha and John also had explained that there was a walkthrough process that they had used to monitor the implementation of the initiative. They both described that in addition to the school leaders, district leaders were also visible in the schools helping to monitor the implementation. Additionally, Samantha, John, and Kay spoke to their use of a wide variety of digital supports that showed them the usage that was being generated by the access to the technologies that were implemented. Both John and Kay explained how they used the data from those usage reports to develop presentations to various stakeholder groups, such as their school committees. The usage of data to monitor school improvements and initiatives is supported in the literature. Parsley, Dean, and Miller (2006) explained that when leaders use data, they can garner the feedback needed to help inform changes in practice that can positively impact student learning.

Although there is no specific mention in the literature about how best to monitor the implementation of a technology-based change initiative, there is literature that speaks the benefits of school leaders using a walkthrough process to monitor initiatives that impact student learning within their schools. Cervone and Martinez-Miller (2007) explained that a walkthrough protocol is a key part to a cycle of improvement in a school, which provides important feedback to educators that can help them to better focus on the effects of their instruction. However, it is
not enough for leaders to just do learning walks, but rather leaders must engage in learning walks for the purpose of improving instruction and in an attempt to address their own theory of practice (Lemons & Helsing 2009). Additionally, it is important for leaders to always monitor their own leadership and/or leadership style (Hendry & Woodward, 2004; Judge, Woolf, Hurst, & Livingston, 2006; Oke et al., 2009; Sarros et al., 2008).

**Lessons learned.** All four participants were extremely reflective upon their initiatives, and all had learned very valuable lessons from their implementation of their initiatives. Rob had wished that he had developed a process to have measured the impact of the initiative, such as a pre and post assessment. He felt that this would have given him some valuable insight on how the use of the devices in the math classrooms had impacted student learning. Rob also wondered what the implications would have been had he conducted another formal round of professional development with teachers. Lessing and DeWitt (2007) explained that this type of continuous professional development for teachers is beneficial in reaching the desired outcomes. Kay has also wondered what the impact would have been had she been able to offer more professional development.

Issues of logistics are vitally important; because if poorly executed, improvement efforts can be destroyed (Lemons & Helsing 2009). In reflecting upon her initiative, Samantha felt as though the implementation of the program did not go smoothly at all, citing both logistical and technical issues. She too questioned what the impact would have been had the professional development piece had gone smoother. Much like Samantha, both Kay and John had reflected upon the logistical aspects of the implementation plan. Kay specifically having mentioned the process of issuing, managing, and collecting devices, which included students missing power cords, not bringing devices, etc. She had wished that she had better planned for these issues. In a
similar vein, John had wished that he had focused more on students caring for their own devices, explaining how they eventually moved from students paying for repairs to students volunteering community service hours to get their devices repaired.

There is much literature that points to the importance that school leaders continually reflect upon their leadership and engage in self-learning (Ackerman & Maslin-Ostrowski, 2004; Wilson, 2014; Southworth, 2002). It is evident that all of the participants’ reflections were different and specific to their own individual initiative. However, there is consistency in the fact that all of the participants took time during and upon completion of their initiative to reflect on both successes, as well as on areas of improvement.

**Theme three: It’s about the people.** It is the responsibility for school leaders to identify and cultivate others into leadership roles, especially as an initiative cannot sustain and be successful on one leader alone (Fullan, 2002). All four participants spoke to the fact that people were a critical component to the success of their initiatives. Rob spoke to the importance of picking the right team of people and then giving those early adopters the tools that they need to be able to experiment in their own classrooms; and then share with one another how they are leveraging technology to help students succeed. Rob also explained the importance of surrounding yourself with people who are talented and willing to share. He said that it was the people who were the reason why his initiative was successful, “not the management or the design, but the people.” He believes that “it is about picking the right team and that any initiative is only as strong as the people who believe in it.” He also explained that it is important to have a good relationship with all stakeholders. Samantha also spoke to the importance and positive impact of collaboration, which in this case was between the technology and instructional sides of the house. Kay explained that it is important to involve people in the initiative and to let them get
their hands on the devices. She also believes that it is important to always be transparent and also believes that it is important for leaders to trust in their own abilities and not be fearful to make a decision. A study conducted by Norman, Avolio, and Luthans (2010) affirmed the importance of transparency as it relates to the positive impact on the trust that individuals had in their leaders. John also agrees that it is important that leaders ensure that the right people are working together. He believes that everyone truly wants to do their best and that it is the leader’s responsibility to ensure that everyone is coming together and being supported.

All four participants spoke to the importance of engaging others as strategy in ensuring success. This is also supported in the literature through studies such as Pautz and Sadera (2017) who posited that successful technology leaders engage their school communities through transformational and distributed leadership strategies; explaining that those leadership styles lay a strong foundation for what needs to be done in schools to ensure successful technology implementation. Additionally in alignment with the idea that relationships with stakeholders are important, Pautz and Sadera (2017) explained that school leaders must also develop strong partners, both internally within the school, as well as externally within the community in hopes to positively impact teaching and learning. Jen-Chia et al. (2011) also spoke to the impact to innovation that people’s perception of external supports have. Relationships and success are cyclical in that the success of an implementation can help to improve relationships (Fullan, 2002).

**Inspiring and motivating.** A Transformational Leader is one who “inspires, intellectually stimulates, and is individually considerate of (those they lead)” (Bass, 1999, p.9). Additionally Fullan (2002) explained that it is a responsibility of leaders to motivate others to success, especially as it impacts the climate of the organization. All four participants explained ways in
which they were able to inspire and motivate others around them. Rob explained that to him it was very important to motivate the teachers who were on the front lines to take risks, experiment, and share their experiences with one another. He gives credit to the teachers who would spend hours developing lesson plans and just working to make it work in their classrooms. John, along the same lines, explained that it was important for his teachers to be able to experiment and “muck around” with the technology and to be open to its possibilities. He also said that leaders should ensure that praise and applause should go to everyone besides himself, as it is the collaborative work that everyone put in that made the initiative a success. He explained that the initiative was not his vision alone, but rather the vision of the entire school department. Smith and Stolp (1995) and Huffman (2003) explained the importance that a shared vision, created with stakeholders, has on the success of change initiatives within schools, as well as the school culture. Kay explained that the success of the initiative was not about her, and had actually deflected much of the praise for success to other stakeholders. She explained that an important step is to celebrate the success of those around her, suggesting that her social media presence helps to accomplish that. Peterson and Deal (1998) described the positive impact that celebrating the successes of parents, students, and teachers has on school culture.

The strategies that the participants described are also supported in the literature. Pautz and Sadera (2017) identified that strong school leaders took a strategic approach and created an environment where teachers could be risk-takers and challenge themselves. Administrators should not only be proactive in their attitude to change, but also provide frequent encouragement as to help create a shared sense of purpose (Gold et.al, 2003). Additionally, leaders, in praising others place a stronger emphasis on uplifting the “morale, motivation, and morals” of their followers (Bass, 1999).
Findings as they Relate to the Research Question and Theoretical Framework

Piderit’s (2000) change ambivalence theory served as the primary lens used to guide this study, which focused on the research question: What is the nature of technological change ambivalence as perceived by school district leaders, and more specifically; how do leaders overcome ambivalence to lead a successful and sustained technology initiative within their schools district? This theory explains that employees’ reactions to an organization’s change are built upon three specific dimensions: cognitive, emotional, and intentional (Piderit, 2000).

Resistance. There are many barriers that may stand in the way of a successful technology-based organizational change (Hew & Brush, 2007). Amongst perhaps the most challenging of those barriers is the reactions of those impacted, which include support, overt and passive resistance, and/or ambivalence (Pautz & Sadera, 2017). Some of this resistance could also be a result of the many changes that have happened over the years; due to the fact that people’s plates are full due to life events; or that they simply do not have the necessary content knowledge to be successful. Table 5.2 summarizes the resistance that the participants had faced, as well as aligns the resistance to the types of resistance as outlined in the theoretical framework.

Cognitive. Piderit (2000) explained that this type of resistance can arise from participants having specific negative thoughts about the change being proposed or implemented. In some cases they had not believed in the change. In regard to these technology-based change initiatives, this could be evident if educators are resisting due to not believing in the potential positive effects of the change. In regard to his initiative, Rob had believed that there was nobody who did not understand why the change was happening. Rob did explain that there were some teachers who did not believe that this initiative was for the best. He felt that this was mainly due to the fact that the district was implementing this technology at the expense of something that they felt
was more valuable. Samantha had also found that there were some individuals who were not happy that there was a change away from a way that they had always done something. She explained that there were also some individuals who did not believe that this program was as good as another digital platform that they had had access to in the past. Kay also explained that she had a few teachers who had felt that what they were doing was working fine for them in their classes and therefore did not want to change. John had explained that there was nobody who resisted the overall change due to not understanding and/or believing in it. Yet, there was a group of educators in the district who did not believe in one aspect of the change, specifically that the student devices should be going home with them.

*Emotional.* Piderit (2000) explained that this portion of the theoretical framework could apply to participants who were involved in an organizational change resisting due to feelings of anxiety, which could sometimes lead to frustration and even negative behaviors. In regard to these technology initiatives, this could stem from the teacher's own levels of confidence with the technology. Rob definitely explained that there was a group of individuals who were quite anxious about the change. This became more and more evident in the meetings that they had with the teachers. He felt that this group relied so much on the print resources that they were using and that they classroom procedures were set up in a way that may not be conducive to technology. In her initiative, Samantha explained that there were a number of people who were beginning to resist due to feelings of frustration, specifically, frustration in the program not being set up quick enough and/or not performing the types of tasks that they had wanted it to. In addition to those resistors, Samantha had also explained that there were some individuals who were anxious about the technology and in their lack of knowledge of the program. Kay also explained that there were some teachers who were concerned about the students potentially
knowing more about technology than they did, which led to increased anxiety. John also explained that he had some teachers who were anxious about the initiative due to not knowing what to do with and/or how to use the technology. John also believes that there is a lot of anxiety that exists in education that may compound this.

**Intentional.** Piderit (2000) explained that researchers such as Abolafia (1995), plus others such as Ashforth and Mael (1998) had defined this specific resistance behavior as acts of defiance or omission. All four participants claim that there was nobody that was actively working to undermine their initiatives. This piece of the theoretical framework would also apply to those teachers who were actively making a decision to continue teaching the way that they had always been teaching rather than supporting the change. In regard to his initiative and these types of resistors, Rob said that he did anticipate that some teachers may not implement the devices as planned. Although some were not using the devices to their fullest potential, Rob said that everyone was using the devices. Kay did explain that she had a few resistors who were being negative and refusing to participate in the initiative, even opting out of the professional development and ignoring emails about the initiative.
Table 5.2

Types of resistance participants encountered leading to change ambivalence

<table>
<thead>
<tr>
<th></th>
<th>Cognitive</th>
<th>Emotional</th>
<th>Intentional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rob</td>
<td>No one did not understand; Some believed that their way was better.</td>
<td>Some were anxious about the change both due to technology and leaving what they were comfortable with.</td>
<td>No one actively undermined the initiative; Some were not using the technology to its fullest potential.</td>
</tr>
<tr>
<td>Samantha</td>
<td>Some believed that their previous program was better or what they had previously done was better.</td>
<td>Some were frustrated about the implementation; some were anxious about the technology and lack of knowledge.</td>
<td>No one actively undermined the initiative.</td>
</tr>
<tr>
<td>Kay</td>
<td>Some believed that what they were doing was better.</td>
<td>Some were anxious about the lack of technical knowledge.</td>
<td>No one actively undermined the initiative; a few were not actively participating in the initiative.</td>
</tr>
<tr>
<td>John</td>
<td>No one did not understand; Some did not want to implement aligned to district goals.</td>
<td>Some were anxious about the lack of technical knowledge.</td>
<td>No one actively undermined the initiative.</td>
</tr>
</tbody>
</table>

**Overcoming resisters.** All four participants explained the strategies that they used to overcome resistance that they had faced. These strategies are summarized in Table 5.3. Rob explained that he took the time to empathetically listen to the concerns of those who were resistant and used that time to dispel any myth that they teachers may have had. Branham (1997), in citing Stephen Covey’s fifth habit of a highly effective team, explained that empathetic listening helps leaders to better understand how a person is feeling and what that person believes. Parks (2015) explained that empathetic listening is a characteristic of a strong leader. Another strategy that Rob explained that he used was to deliver content to teachers in small manageable
pieces that they could implement one piece at a time, which is referred to a “micro-learning” allowing individuals to receive the information that they need in small pieces (Jomah, Masoud, Kishore, & Aurelia, 2016; Schmidt, 2007). This allowed him to show the teachers one step at a time that they could still do everything that they had traditionally done, but now in a more efficient way. He also explained that he would model some best practices for the teachers. In a case where the teacher had continuous concerns about the shift from paper to device, Rob explained that although he listened, he was going to continue to move forward with the initiative.

A strategy that Samantha had used to overcome resistance was also empathetically listening to stakeholder concerns. She had also actively showed these resistors that she was committed to supporting them by playing hardball with the company, even bluffing to walk away from them altogether. Additionally, in an attempt to help those who were anxious, Samantha decided to chunk the information into smaller pieces. She also explained that she was visible and available right in the building to react to concerns right on the spot.

Kay had explained that in the rare cases where teachers are being negative and obstinate, the leader might just have to say “too bad, we are moving in this direction,” as sometimes there are cases in which leaders need to be direct with teachers (Rooney, 2010). Additionally and much like Rob, Kay explained that it is important for leaders to model best practices to their staff, especially showing them that if something were to go wrong, there is no need to panic. She also explained that many resistors came around when she was able to show them exactly what the technology could do for them. She also said that peer pressure can assist in moving people along, as well, especially as it can help to reduce freeloading and lead to more positive outcomes.
(Mohnen, Pokorny, & Sliwka, 2008; Kreps, 1997). Kay also explained that a strategy that worked with many teachers was to let them work in small like-minded groups.

John explained that it is important to understand why people might be resisting an initiative so that we can help best support them. In some cases he explained that teachers would need more empathy and patience. He also said that in some cases it is about supporting teachers with more content and pedagogical knowledge. His expectation for all educators in the district is to know one another and work to pick up and support each other. In the case of those teachers who did not want to let the students take home the devices, he explained that he ultimately took the time to understand their reasoning and address their concerns, while reiterating that some aspects were non-negotiable. In response to those resisting due to anxiety, John, much like the others, explained that there was a lot of small learning that was taking place, where they were able to deliver small pieces of professional development. Lastly, John explained that it was not so much administrators that were breathing down teachers’ necks, but rather colleagues, which indicated that peer pressure was happening.
Table 5.3

Strategies that participants used to overcome resistance, and therefore ambivalence, in order to lead a successful and sustained technology initiative.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Strategy</th>
</tr>
</thead>
</table>
| Rob         | • Empathetic listening to questions and concerns  
             • Meeting teachers needs in the professional development sessions  
             • Directly show teachers the benefits  
             • Modeling of best practices  
             • Directives (if needed) |
| Samantha    | • Empathetic listening to questions and concerns  
             • Increase the amount and type of professional development  
             • Increase response time of vendor to implementation concerns  
             • Be available to those with questions and/or concerns |
| Kay         | • Model best practices for teachers (co-teach)  
             • Demonstrate the benefits of the technology  
             • Develop systems that allow teachers to work in small, like-minded groups  
             • Utilize peer pressure  
             • Directives (if needed) |
| John        | • Seek to understand nature and reasons of stakeholders’ resistance (empathy)  
             • Provide more pedagogical and/or technical knowledge through professional development opportunities  
             • Deliver professional development in smaller pieces  
             • Utilize peer pressure |

Although each of the participants had various ways in which they overcame ambivalence to lead a successful and sustained technology initiative within their districts, a number of common strategies emerged. It appears that all of the participants were empathetic to the concerns of their teachers. They listened to what their concerns were and helped them through providing support. Another common strategy that was effective, especially for those who were resisting due to anxiety and/or a lack of knowledge, was to deliver professional development support in small doses. All of the participants spoke to the fact that this strategy was helpful in
ensuring that they did not exacerbate the concerns of those who were already overwhelmed. Another strategy that the participants used especially in cases where they had to address those who did not want to participate in the initiative was to be direct and clearly explain what they were doing and that regardless of those resistor’s positions, they were moving forward anyway.

**Reflections**

One aspect of the findings that I found to be quite interesting is how many of the leaders had utilized strategies that were proactive in addressing potential future resistance. This speaks to the old adage that prior planning prevents poor performance. As one participant had put it “everything is strategic.” I think that this attitude and thoughtfulness is very impactful as the results oftentimes means far less headaches later on in the implementation. In some cases people’s concerns were addressed every prior to those concerns turning those people into resistors. As I compare this reflection to the research question, I can definitely appreciate the importance that this proactivity and preparation has on overcoming resistance. I believe that these strategies allow leaders to overcome potential resistance prior to it every happening.

Another aspect from the narratives and the findings that I thought was interesting was the importance that school culture played in not only the overall success of the initiative, but also in mitigating resistors. One of the participants describe such an impressive school district culture where the expectation is that everyone is there to do their best and that it is everyone’s responsibility to support one another and to lift them up if needed. This type of culture also helps to prevent resistance from occurring in the first place. It creates an atmosphere in which people want to work and to support and be part of any innovative change.

**Implications for Practice**
The findings from this study can help to support educational leaders as they embark upon a technology-based change initiative within their schools and/or district. Specifically this study points out real strategies that leaders can use that can help them realize the success of their initiative. Although the findings explain the major strategies that the participants used, the strategies may have been employed in varying orders based upon the need at the time.

Through the emerging themes and sub-themes, the findings show that every successful leader has a clear reason why that routed in either a core belief and/or a vision for success. If a leader is to lead a successful initiative than he or she needs to root that initiative in some purpose or reason. Doing this will also help the leader to be better prepared to confront any questions or concerns that may arise in the future. Another aspect of having a clear reason for the initiative is its use in rallying support from stakeholders. Depending on the role of the individual leading the change, there may be different levels of stakeholders that they have to convince. In all cases the findings point to the need to engage those stakeholders within the organization who hold the highest positions first before convincing subordinates. It is clear that having that clear reason for the initiative helps to convince stakeholders much more effectively than not.

A finding germane to technology-based change initiatives within schools and stakeholders is the fact that students, and for the most part families, usually tend to be supportive of the change. This is due to the fact that they are more than likely the ones that will be receiving the benefits, often tangible, of the change. That is not to say that their support will not be without concern; however, having and using the main reason for the change will help leaders to best address those concerns. Additionally, a best practice for leaders that emerged from these findings is the importance of assembling and engaging a group of stakeholders in the planning stages of
the initiative. Lastly, a piece of advice for leaders regarding the main reason why or purpose is to formalize it in the district’s strategic plan and/or the school’s school improvement plan.

The findings from the second theme suggest that an important step for school leaders it to have a clear, specific, and detailed implementation plan. A key component of the implementation plan should include a strategic entry point into the initiative; somewhere or with someone that could help give the initiative momentum through a quick win. This also serves a model for others, and can prove beneficial for supporting those who may be hesitant about the initiative. Another key aspect to the implementation plan is a specific plan for professional development. The professional development plan should include both formal opportunities for educators in which they receive information about the initiative and/or skills to help them be successful; as well as informal opportunities where they can acquire additional supports and or ask a question. Strategies that leaders used to provide this level of support included visiting schools and classrooms, as well as setting up systems where colleagues were able to support one another.

Also in regard to the implementation plan, an important implication for school leaders is to ensure a system for measuring and monitoring the success of the initiative. Suggestions for this include walkthrough protocols in which leaders can witness the implementation in action, and specific to most technology initiatives, is the analysis of various technology usage reports. Monitoring the implementation best allows the leader to keep a finger on the pulse of the initiative and best react to any concerns or questions that may arise. This monitoring and measuring of the success of the initiative also helps leaders to be reflective on what works and what does not work. We see in the findings that sometimes changes can be made on the fly that can help reorient the initiative, leading to a better outcome. If changes cannot be made during the
implementation then these reflections can help leaders to learn and grow so that they are better prepared the next time they go to implement an initiative.

The final theme of the findings that has significant implications for practice is realizing that the people whom we serve are the most valuable resource. It is not about the technology device or tool that is being implemented, but rather how that technology is supporting teachers in their support and encouragement of student success. It is important for leaders to surround themselves with the right people, and to ensure that the right people are working together on the initiative. A trend in the characteristics of these individuals is that they are willing to collaborate, share, and take risks. Another important implication for leaders, as it relates to working with the right people, is the importance of continually inspiring and motivating them. The findings make it clear that good leaders spread the praise for success to those teachers who are actively engaged in the initiative.

Another implication for practice comes from the findings as they related to the research question and theoretical framework. In a technology-based change initiative leaders can expect that the largest group of resistors come from those who are resisting due to emotional reasons. The biggest reason for this stemmed from anxiety, which was usually produced from a teacher’s concerns of not having the skills or knowledge to implement the technology correctly. The second biggest resistance that leaders can expect came from those who were resisting because of cognitive reasons. Although it appeared that none of the stakeholders resisted due to not understanding the change, some did resist due to not believing in the initiative or in aspects of the initiative. Leaders implementing a change can expect some resistance due to people feeling that their way is better than the new way. In regard to resistors who are resisting for intentional reasons, the findings would suggest that leaders need to worry about many individuals actively
working to undermine the initiative. Examples of this group included some cases of teachers who were refusing to participate and/or not using the implemented technology to its fullest potential.

Once leaders understand the different types of resistance that they may receive as they lead an initiative, it is then important to understand the implications for practice that are generated by strategies that are used to overcome resistance. The first strategy that the findings suggest that leaders should use to overcome resistance due to cognitive reasons is to empathetically listening to the questions and concerns that resistors may have. This helps leaders to better understand where the resistors are coming from. Another strategy that proved successful in helping to overcome resistance due to emotional reasons, specifically anxiety, is to provide additional professional development to those who need it, and in many cases it is important to provide that professional development in smaller doses, as to not continue to overwhelm the resistor. In regard to resisters who are intentional resisting the change, it is often important for the leader to use a directed approach and to emphasize the expectations.

All of these implications for practice will help the leader of a technology-based change be better able to anticipate any potential pitfalls and be best able to help resistors overcome their resistance, all in turn will help their initiative to be successful.
Figure 5.1. Major considerations for leading a technology-based change initiative

**Implications for Research**

The findings from this study point to a number of implications for further research in this area. One of the most important implications could be for research that helps to form a specific theoretical framework designed specifically for the leadership involved in the implementation of a technology-based change initiative. Whereas this study helps to shed light on the topic by presenting findings and implications that are specific to such an initiative, there could be a great deal more research in this area. As a result of working with Piderit’s (2000) theoretical framework, there could also be more research around a common understanding of resistance as it surfaces from teachers within schools. In working with the participants of this study, I found there to be some inconsistent understandings of what it meant to be resistant.

One aspect in the findings that appeared to lack an alignment with the literature was the importance of school leaders strategically selecting an entry point for the initiative, which would...
allow them to celebrate a quick win. I would suggest that there be more research into this step of the implementation process to garner the types of entry points that leaders have chosen to use. This could help future leaders realize more success in their own initiatives.

Additionally, as the use of technology becomes more and more prevalent in schools, researchers could conduct targeted research on specific types of technology that is being implemented in schools. This is increasingly important as there are so many different technologies that are being implemented into schools. This also might make it equally as difficult to conduct this research, as technology is changing at such a rapid pace, that by the time the research is published, there is already new technologies in schools. I found this in the preparation of this dissertation, as much of the literature that I had found had referenced specific technology that was outdated and obsolete.

Additionally, I would suggest that there is more research conducted on the impact that technology has had to student success and achievement. Much of the information that is published appears to be from vendors who are biased to the benefits of their specific type of technology. Perhaps a longitudinal study comparing students who have been exposed to technology in their schools from an early age to those who have not would help to answer this question.

**Limitations**

This narrative research study was limited to four school district leaders serving in a public school district within New England. All four of the participants have had experience in leading initiatives with and without technology. A larger cross section of school leaders, may have yielded different results in the abilities of leaders to plan and implement a successful initiative, as well as identify and overcome different types of resistors and resistance.
Additionally, due to the fact that a snowball sample was used to recruit participants, most of the participants had known the interviewer in some capacity prior to this study, and therefore may have used socially appropriate responding.

Participants volunteered and were selected because they had recently implemented a successful technology-based change initiative that had sustained for a period of at least one year. As leaders of the initiative, there could be bias in their self-assessment of success. Additionally, as most of the participants had just implemented their initiatives, they may have been more cognizant of the steps that led to the overall success of the initiative, as well as the strategies that they had used to overcome resistance. It is also important to point out that this study focused on the experiences of those who were leading the initiative. A limitation to this study would be that those stakeholder’s perceptions of their leaders’ actions was not investigated.

A final limitation is the potential for researcher bias, as I am currently a school leader who has been and is responsible for various change initiatives, including those that involve technology. This potential bias could impact my interpretation and analysis of the data collected during the study. Polkinghorne (2007) explains the importance that researchers to be careful to not make their own interpretations of the participants’ stories simply to support his or her own claims.

**Conclusion**

This narrative study explored the experiences of four school district leaders related to their implementation of a technology-based change initiative in hopes to understand what successful leaders do to lead and sustain a successful initiative. Specifically, this study looked at the types of resistance that can occur when leading a technology-based change initiatives and the strategies that successful leaders employed to navigate through and overcome that resistance.
During the course of the study, I learned why stakeholders sometimes appear to resist change. Not only will I be better able to lead a technology-based change initiative, but I can certainly apply many of the tenets learned throughout this process to more successfully lead any type of initiative. Moving forward, I would like to continue my pursuit of knowledge as it pertains to educational leadership, change theory, strategies to successfully implement technology, and strategies to more efficiently work with resistors. I also hope to share my work with colleagues, through conversations and presentations. Furthermore, I also hope to have helped other educational leaders who are either in the midst of a change and/or preparing for a change.
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doi:10.3102/0028312040004807
Appendix A

Initial Email to Professional Colleagues

Dear ________,

As you may already know, I am presently a doctoral candidate at Northeastern University and I am conducting a research study on leadership strategies that school and district leaders use to implement a technology-based initiative within their school or district. The purpose of the study is to specifically investigate the strategies that school and district leaders use to mitigate resistance from stakeholders that they may receive as they implement the initiative.

My goal is to recruit 4-6 school and or school district leaders as participants. I am hoping that you would consider participating in this study. Participants will meet with me individually two to three times to discuss their role in leading the technology-based change initiative. Each participant will receive a 50 dollar gift card as a small token of appreciation for participating in the study.

I will conduct interviews individually with participants. Participant names, schools, school districts, staff names, and all identifiable information will be kept in confidence and referred to with pseudonyms. Participation will be confidential and voluntary, and at any time you can withdraw from the study.

If you are interested in participating, please answer the few short questions found at this link <link> and I will give you a call by the end of the week to discuss your participation and to answer any questions that you may have. Email me at my student email address if you have any questions, taylor.jeff@husky.neu.edu.

Thank you for your consideration. Have a nice day,
Jeff Taylor
Doctoral Candidate
Northeastern University
Appendix B

Screening Survey

(To be completed as a Google Form)

If you are interested in participating in the research study about leadership strategies for a technology-based change initiative, please complete the following survey.

Name: __________________

Date (will be auto-captured)

School (if applicable): __________________

School District: __________________

What was the Technology Change: __________________

Please answer the following questions (yes or no checkboxes):

a) Have you been the leader since the onset of the implementation?

b) Where you part of the development of the implementation plan of the initiative?

c) Did leading this change involve you working directly with teachers?

d) Do you feel that the implementation plan has been completed and sustained for a period of at least one year?

Contact Information:

Mailing Address: __________

Telephone Number: __________

Email Address: __________
Appendix C

Telephone Script after Screening Survey Had Been Completed

Hi ________,

This is Jeff Taylor, just following up on the research study that I had emailed you about and that you had filled out the short survey for. How are you? It looks like you are interested in participating. I have reviewed the results of the short screening survey and it looks like you would make a great participant. Do you have any questions that I can answer?

[Answer questions]

As I mentioned in the initial email, I just wanted to reiterate that participation is completely voluntary, and that participant names, schools, school districts, staff names, and all identifiable information will be kept in confidence and referred to with pseudonyms. Participation will be confidential, and at any time you can withdraw from the study. Also, just a reminder that participants will receive a $50 dollar gift card for participating in the study.

With all of that said, I just want to confirm that you are still willing to participate.

Yes - Perfect. Next steps are that I will send you a letter containing more information then I will follow up with another quick call to set up our first meeting.

OR

No - No worries, I certainly understand how busy everyone is and I really appreciate you taking the time to talk with me today.

Thanks again and have a good one,
Appendix D

Email to Executive Directors of Professional Organizations

Contact Information:

RISSA:  
Tom DiPaola  
2480 Post Road  
Warwick, RI 02886  
401-272-9811, Ext. 3 (Office)  
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RIASP:  
Donald Rebello - Executive Director  
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401-272-9811 Ex 2  
drebello@riasp.org or

RIMLE:  
Patricia Marcotte - Executive Director  
Rhode Island Middle Level Educators  
61 Homefield Avenue  
Providence, 02908  
rimle.execdirector@gmail.com

RISTE:  
John Bilotta - Executive Director  
69 Draper Avenue  
Warwick, RI 02889  
401-262-9002  
bilottaj@ri-iste.org

Hi ____________,

As you may already know, I am presently a doctoral candidate at Northeastern University and I am conducting a research study on leadership strategies that school and district leaders use to implement a technology-based initiative within their school or district. The purpose of the study is to specifically investigate the strategies that school and district leaders use to mitigate resistance from stakeholders that they may receive as they implement the initiative.

My goal is to recruit 4-6 school and or school district leaders as participants. I am hoping that you might have some suggestions on who might be interested in participating in the study. I am looking for school district leaders that meet the following criteria:

a) the educational leader was involved since the onset of the implementation of the change
b) the educational leader was part of the development of the implementation plan of the initiative
c) the educational leaders, as part of the implementation plan, had worked directly with teachers involved with the change
d) the educational leader feels that the implementation plan has been completed and sustained for a period of at least one year
e) the educational leader is employed in a public school district setting
Participants will meet with me individually two to three times to discuss their role in leading the technology-based change initiative. Each participant will receive a 50 dollar gift card as a small token of appreciation for participating in the study.

If you know of potential participants could you please forward this message to them? All they need to do is complete a very short screening survey at this link <link>. My student email address, taylor.jeff@husky.neu.edu, is on the survey. If you have any questions, email me at taylor.jeff@husky.neu.edu.

Thank you for your help with this. It is very much appreciated.

Jeff Taylor
Doctoral Candidate
Northeastern University
Appendix E

Email to Individuals of Professional Organizations who completed the Screening Survey

Hello ________,

I noticed that you had completed the survey for the research study taking a look at the leadership for implementing technology-based change initiatives. Thank you for your interest. Just to introduce myself, my name is Jeff Taylor and I am presently a doctoral candidate at Northeastern University. As you may have seen, the purpose of the study is to specifically investigate the strategies that school and district leaders use to mitigate resistance from stakeholders that they may receive as they implement the initiative.

My goal is to recruit 4-6 school and or school district leaders as participants. Participants will meet with me individually two to three times to discuss their role in leading the technology-based change initiative. Each participant will receive a 50 dollar gift card as a small token of appreciation for participating in the study.

I will conduct interviews individually with participants. Participant names, schools, school districts, staff names, and all identifiable information will be kept in confidence and referred to with pseudonyms. Participation will be confidential, and at any time you can withdraw from the study.

If you have any questions regarding this study, email me at taylor.jeff@husky.neu.edu. Otherwise, I will be reaching out to you in the next few days by telephone with further information and to answer any questions you might have.

Thank you and have a nice day,

Jeff Taylor
Doctoral Candidate
Northeastern University
Appendix F

Follow-up Telephone Script

Hi ________,

This is Jeff Taylor, just following up on email that I had sent you on ________ about the research study that you had filled out the short survey for. How are you? It looks like you are interested in participating. I have reviewed the results of the short screening survey and it looks like you would make a great participant. Do you have any questions that I can answer?

[Answer questions]

As I mentioned in the initial email, I just wanted to reiterate that participation is completely voluntary and that participant names, schools, school districts, staff names, and all identifiable information will be kept in confidence and referred to with pseudonyms. Participation will be confidential, and at any time you can withdraw from the study. Also, just a reminder that participants will receive a $50 dollar gift card for participating in the study.

With all of that said, I just want to confirm that you are still willing to participate.

Yes - Perfect. Next steps are that I will send you a letter containing more information then I will follow up with another quick call to set up our first meeting.

OR

No - No worries, I certainly understand how busy everyone is and I really appreciate you taking the time to talk with me today.

Thanks again and have a good one,
Appendix G

Email to those who filled out the Screening Survey but do not qualify

Hello __________,

I wanted to thank you for your time in completing the screening survey for the research study designed to take a look at the leadership for implementing technology-based change initiatives. Unfortunately from the survey, it appears as though due to ________________, your participation would not meet the criteria for participation in the study. Regardless, I did want to take a moment to thank you for your interest.

Have a nice day,

Jeff Taylor
Doctoral Candidate
Northeastern University
Appendix H

Initial Participant Conversation Telephone Script

Hi ___________,

I am just following up about your participation in my research study. Your participation will include two to three meetings of approximately one hour each and we will be discussing your leadership of a technology-based change initiative in your school/school district. Does that work for you? After we meet, I will send you transcripts from the audio recordings of the meetings, as well as any notes from meetings. This will give you a chance to review the transcripts for accuracy, as well as to elaborate as needed. Also, I wanted to remind you that your participation in the study is voluntary and you can withdraw at any time.

Do you have any questions?

So let’s set up that first meeting, when works best for you? Also, where are you most comfortable meeting?

Thank you, I look forward to seeing you on [Date] at [Place] beginning at [Time].

Have a good one.
Appendix I

Informed Consent Document

Northeastern University, Department: College Of Professional Studies
Name of Investigators:
Dr. Corliss Thompson, Principal Investigator
Jeff Taylor, Doctoral Student Researcher
Title of Project: Innovative Practices in Leading Technological Change: A Narrative
Research study exploring how school leaders understand change ambivalence on sustaining innovation.

Informed Consent to Participate in a Research Study

We are inviting you to take part in a research study. This form will tell you about the study, but the researcher will explain it to you first. You may ask this person any questions that you have. When you are ready to make a decision, you may tell the researcher if you want to participate or not. You do not have to participate if you do not want to. If you decide to participate, the researcher will ask you to sign this statement and will give you a copy to keep.

**Why is this research study being done?**
The purpose of the study is to study the leadership strategies that school and school district leaders use to implement a technology-based initiative within their school or district. Specifically this study seeks to investigate the strategies that school and district leaders use to mitigate resistance from stakeholders that they may receive as they implement the initiative.

**Why am I being asked to take part in this research study?**
You are being asked to participate in this research study because you are a school or school district leader that has led the implementation of a technology-based change initiative within your school or school district.

**What will I be asked to do?**
If you decide to take part in this study, we will ask you to answer questions about your leadership role in implementing the technology-based change initiative. There will be two semi-structured interviews that will last approximately 60 minutes each. These interviews will be audio recorded. Your name, your school’s name, your district’s name, where you reside, and any other identifiable information will not appear in the interview transcript, pseudonyms will be used.

**Where will this take place and how much of my time will it take?**
You will be interviewed in place that is convenient for you. These interviews will take approximately 60 minutes each.

**Will there be any risk or discomfort to me?**
There will be no personal or physical risk to you. All data collected will be strictly confidential. You will be assigned a pseudonym as will any person or place you mention. The information collected will be stored safely and following the completion of the study will be destroyed. You will be asked to review the transcript when it is transcribed, as well as when it is coded to check it for validity. Also, you are allowed to withdraw from the study at any time.
**Will I benefit by being in this research?**

You will receive a 50-dollar gift card for participating in the study. Additionally, the information gained may provide an opportunity for you to reflect on leadership, especially as it applies to leading technology initiatives within a school setting. Furthermore, the study may contribute to the current body of knowledge on leadership for technology-based initiatives.

**Who will see the information about me?**

Your part in this study will be confidential. Only the researchers on this study will see the information about you. No reports or publications will use information that can identify you in any way or any individual as being of this project. The data collected in the audio-recording, transcript, and interview notes will be given a pseudonym and an identification number. Your name, the name of others, and the names of places mentioned will not be used in this study. The data will be stored securely on removable digital storage. Specifically all of the information and data will be stored in a locked file cabinet. No unauthorized persons will be allowed to read the data collected or materials affiliated with it. Authorized members in the Northeastern University Institutional Review Board would be permitted to see the information, if required.

**What will happen if I suffer any harm from this research?**

There are no foreseeable reasons for you to suffer any harm. No special arrangements will be made for compensation or for payment for treatment solely because of participation in this study.

**Can I stop my participation in this study?**

Your participation in this research is completely voluntary. You do not have to participate if you do not want to and you can refuse to answer any question. You also may withdraw at anytime, even after the study has begun.

**Who can I contact if I have questions or problems?**

If you have any questions about this study, please feel free to contact

Jeff Taylor, Doctoral Student Researcher, at taylor.jeff@husky.neu.edu

Dr. Corliss Thompson, the Principal Investigator, at co.brown@husky.neu.edu.

**Who can I contact about my rights as a participant?**

If you have any questions about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, Mail Stop: 560-177, 360 Huntington Avenue, Northeastern University, Boston, MA 02115. Tel: 617.373.4588, Email: n.regina@neu.edu. You may call anonymously if you wish.

**Will I be paid for my participation?**

You will receive a $50 gift card following completion of the interviews and review of transcripts.
**I agree to take part in this research.**

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Appendix J

First Round Interview Protocol

I am a doctoral candidate at Northeastern University. The final part of my program requires that I conduct a research study and write a dissertation. The purpose of the study is to study the leadership strategies that school and school district leaders use to implement a technology-based initiative within their school or district. Specifically this study seeks to investigate the strategies that school and district leaders use to mitigate resistance from stakeholders that they may receive as they implement the initiative. As part of that study, I am conducting an interview with you today that will last approximately one hour. Before we get started, I just wanted to remind you of a few important points: a) your participation in this research is confidential, your identity, your place of employment, and all other identifiable information will be referred to using pseudonyms; b) any data that includes your identity will be stored in files only accessible to the principal researcher and myself, the doctoral student; c) your participation is completely voluntary and you can choose to withdraw at any time.

As I mentioned leading up to this interview, I would like to audio-record our conversation today, could I have your permission to do so? After our meeting today, I will have the audio recording transcribed. I will then I will give you a copy to review. Do you have any questions before we begin?

1. Tell me a little bit about yourself, and how you became a school/school district leader.
2. Could you describe for me the experiences that you have had with technology in education?
3. How did you come into this leadership role in regards to technology-based change initiatives?
4. Can you describe to me one of the technology initiatives that you have led within this school/school district?
5. What was the process in deciding why this technology initiative was to be implemented?
6. What do you see are key considerations in developing a leadership plan for a technology-based change initiative?
7. How did you include various stakeholders in the development of your implementation plan?
8. What were your perceptions of the stakeholder’s (teachers, students, etc.) readiness for the change prior to the implementation?
9. How did your implementation plan account for stakeholders who were in different places in regards to readiness (i.e. some who were not ready and others who were beyond ready)?
10. Can you describe to me how the initiative was eventually implemented? In what level was it aligned to your initial implementation plan?
11. In regards to the documents that you brought with you today, could you review each one with me and explain how they relate to the leadership of the technology-based initiative that you have outlined?
Appendix K

Second Round Interview Protocol

I am a doctoral candidate at Northeastern University. The final part of my program requires that I conduct a research study and write a dissertation. The purpose of the study is to study the leadership strategies that school and school district leaders use to implement a technology-based initiative within their school or district. Specifically this study seeks to investigate the strategies that school and district leaders use to mitigate resistance from stakeholders that they may receive as they implement the initiative. As part of that study, I am conducting an interview with you today that will last approximately one hour. Before we get started, I just wanted to remind you of a few important points: a) your participation in this research is confidential, your identity, your place of employment, and all other identifiable information will be referred to using pseudonyms; b) any data that includes your identity will be stored in files only accessible to the principal researcher and myself, the doctoral student; c) your participation is completely voluntary and you can choose to withdraw at any time.

As you know, this is the second of two interviews and as I did previously, I would like to audio-record our conversation today. Could I have your permission to do so? Also, just as last time, after our meeting today I will have the audio recording transcribed. I will then I will give you a copy to review. Do you have any questions before we begin?

1. Last time we talked about [initiative]; could you describe for me the outcome that you were anticipating when you made the initial decision to implement the [initiative].
2. Was the outcome what you had hoped it would be? What evidence did you use to assess that you had met your desired outcomes?
3. What resistance did you receive from stakeholders as you were implementing your [initiative]?
4. What do you think were the reasons for the resistance to this change?
5. How did you support/work with those stakeholders who were resistant to the change due to not believing in it and in its benefits and/or not understanding why the change was being implemented?
6. How did you support/work with those stakeholders who resistant to the change due to feeling of anxiety?
7. How did you support/work with those stakeholders had worked to actively undermine the change that you were working to implement, as well as those stakeholders who believed that their current way of doing something was better than the change being implemented?
8. What strategies have you used to sustain your [initiative]?
9. Do you still have stakeholders that are resistant to the [technology-based change initiative]? What is your plan to continue to work with them?
10. Knowing what you know now, of how the implementation of [initiative] had gone, what changes would you have made to the initial implementation plan?
11. What are the plans to continue to assess the impact of this [initiative]?
12. Is there anything else you would like to share regarding the leadership of this technology-based change initiative and/or of leadership for technology in general?
Appendix L

Completion Certificate

Protection Human Research Participants

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that Jeff Taylor successfully completed the NIH Web-based training course “Protecting Human Research Participants”.

Date of completion: 11/17/2013
Certification Number: 1328191