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Principals' Perspectives regarding their Leadership Roles in Smart Board Technology Integration

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Smart Board Technologies (SBTs) are prevalent in K–6 schools and teachers are expected to use them to enhance student learning. The Smart Board (SB) may not be used effectively in the classroom. The effective use of the SB increases student engagement and performance. To ensure the effective use of the SB, the principal's role is crucial. While the teachers' perspectives about SBT use in pedagogy have often been researched, the literature concerning principals' perspectives in SBT integration is scarce. The purpose of this basic qualitative study was to understand principals' perspectives regarding their leadership roles in SBT integration. Bass's theory of transformational leadership and the learning and technology policy framework were the conceptual frameworks for this study. The research questions focused on the perspectives of the principals regarding their leadership roles in the integration of SBTs, and how they develop policies and practices that support the effective use and integration of SBTs in their schools. The purposeful sample included seven K–6 principals. Data were collected using telephone interviews, and follow-up interviews were used to triangulate the data. NVivo12 software was used to find emergent themes from the data. The results revealed the perspectives of the principals that the SBTs were used majority of the time by teachers and were based on the teacher's attitude toward the technologies; and how SBTs were used varied from classroom to classroom. The results may lead to positive social change as it may provide insight on the importance of providing ongoing technology training and support for teachers and insight on policy implementation to ensure the effective use of SBTs to enhance student engagement and performance.

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Dedication

I dedicate this dissertation to my children, Mischel Sr., Yuri, my grandson, Mischel Jr., my mother Salome, my DIL Odisha, my dear Venessa and Pastor Joel.

My sons Mischel Sr. and Yuri, thank you for your love, support, understanding and care throughout this entire journey. I am so glad that God gave me two exceptional children. I always told you both to dream big, stay focused, work hard and follow your dreams. So far you both have made me proud. I dreamt from an early age that one day I would pursue doctoral studies and my dreams came through. I know you are proud of me. I have now set the bar high for you both and I pray that you will follow in my footsteps.

My 11 months old grandbaby Mischel Jr, you are the newest addition to my family and my only grandchild. I thank God for bringing you into our lives. You are a ray of sunshine in our family and I love you endlessly. I hope that you will read my research study and assess it with the educational technologies that will emerge when you grow up. I hope you will follow in my footsteps.

My mother Salome, thank you for teaching me resilience and for constantly praying for me throughout this journey and the prayers when I attended my residencies.

Odisha, you are the daughter-in-law God gave me because He knew how much I wanted a daughter. Thanks for your constant encouragement and prayers and for cheering me on as the days went by.

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Finally, thank you Pastor Joel for your prayers, support and for cheering me on.

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Table of Contents

List of Tables

Table of Figures

Chapter 1: Introduction to the Study

Introduction

Technology has revolutionized the world and has greatly impacted the educational system (Dehqan et al., 2017; Riaz, 2018; Stump et al., 2016). The 21st century is now considered the age of technology and new methods and requirements have been introduced in pedagogy (Alejandro et al., 2019; Dogan, 2018). Governments worldwide have invested heavily in instructional technologies in classrooms (Suratno & Aydawati, 2016). With the technology revolution, the approaches to teaching have also been transformed (Dogan, 2018). The traditional "chalk and talk" way of teaching in the classroom is now being replaced by classrooms filled with instructional technologies (Dehqan et al., 2017). Students described as digital natives represent 21st century learners and are avid users of digital technology (De Silva et al., 2016).

Because of the importance of preparing students with 21st century skills, it is imperative for principals to develop competence and become skillful users of technology (Chance, 2017) and hence be able to support teachers in effectively using technologies in the classroom. According to Yieng and Daud (2017), principals are in charge of the day-to-day operations of their schools, including the mandate of technology leadership. Principals must be seen not only as managers in their schools but also as instructional leaders supporting technology innovation in pedagogy (Alejandro et al., 2019).

Globally, one current piece of instructional technology visible in almost every K–6 classroom is the SB (Gurbuzturk, 2018; Riaz, 2018). The SB, also known as interactive whiteboard (IWB), is a powerful, collaborative, and interactive tool that offers many

options in the classroom (De Silva et al., 2016) and allows instructional delivery to students in a manner that is more accommodating and relaxed (Riaz, 2018). The proper use of SBT fosters ingenuity and originality among students (Davidovitch & Yavich, 2017) and empowers students to be creative, design their work, and make discoveries through the SB's numerous smart touch features and learning tools (Almajali et al., 2016). When SBT is used in the classroom, students understand the lesson better and are inclined to participate actively (Davidovitch & Yavich, 2017). İstifçi et al. (2018) suggested that the use of the SB helps students allay inhibition and build self-confidence especially students learning a foreign language. The SB is versatile, offering many choices on a variety of topics which helps students understand the lesson (Momani et al., 2016). The effective use of the SB aids in student knowledge development, increased communication between students and teachers, improves organization of information, promotes self-efficacy in doing class work in a convivial atmosphere, encourages happiness among students, and adds to more ingenuity and greater standard of learning (Hebing, 2017; Worden, 2017).

Although SBTs can improve the teaching and learning process and makes the lesson more effectual in terms of clearness, attentiveness, and organization (Davidivitch & Yavich, 2016), implementing SBTs in classrooms does not improve the pedagogical process unless teachers understand how to use it and are inspired to use the technology. Dogan (2018) and Momani et al. (2016) expressed that teachers are important to the successful technology integration process to maximize students' learning. Moreover, special education teachers can generate a supportive and inclusive classroom

environment, allowing equal access for all students to learn (Baglama et al., 2017). Nevertheless, principals must provide training and support for teachers in order for them to develop more confidence and feel supported to integrate SBTs in the classroom in effective ways.

Teachers who are adept in using technology will feel confident to integrate technology in their teaching and learning (Lewis, 2016). On the other hand, teachers who are novices in using technology will be resistant to integrate technology in their instruction. Hebing (2017) stressed that if teachers are not properly trained on how to best use the SB as a smart device to improve student engagement and learning, the prospective benefits of the SB can be lost. Teachers are expected to use technology to improve their instructional practice (Stump et al., 2016), but for technology to be successfully used in the classroom, teachers should be involved and trained prior to the integration process (Worden, 2017). Failing to provide training will lead to teachers using the SB improperly or rejecting to use the technology (Worden, 2017). According to Chance (2017), in this digital era teachers must be equipped to effectively use instructional technology in their daily delivery of instruction. Instructional technologies support student centered learning and the effective use of the technologies will prepare students to meet 21st century demands within a diversified society (Alberta Education, 2016; U. S. Department of Education, 2017). Carver (2016) added that integrating instructional technologies in the curricula is an increased requirement to prepare students with technology skills by endorsing student centered teaching methodologies. The principals' focus should be on strategies and skills that will equip teachers to become

skillful at using SBs (Momani et al., 2016). Hence, in this basic qualitative study I explored the perspectives of K–6 principals regarding their roles and responsibilities in the integration of SBTs, as well as how principals develop policies and practices that support the effective use and integrating of SBTs in their schools. This chapter includes the background for this study, which brings to the fore some peer reviewed studies that support the gap and the need for more research on this topic. Included in Chapter 1 are the problem statement, purpose of the study, research questions, conceptual framework, nature of the study, definitions, assumptions, scope and delimitations, and significance.

Background to the Study

In many K–6 classrooms, educational technologies are being implemented at a rapid pace and the anticipation is that teachers will use them in their instruction to enhance student learning (Gashan & Alshumaimeri, 2015). Such technologies have become indispensable in almost every sphere of education (İstifçi et al., 2018), and the SB, in particular, is an innovative device that has become one of the most rapidly implemented educational technologies around the world (Gashan & Alshumaimeri, 2015). But even though SBTs are deemed beneficial, the responsibility lies within teachers to effectively integrate them in their instructional practices (Gashan & Alshumaimeri, 2015).

Numerous researchers have established the benefits of SBT for student learning. According to Almajali et al., (2016), incorporating SBTs has a powerful influence in the classroom and supports a student-centered approach. Research has shown that when SBTs are omitted, teachers use a lecture style approach that may result in less student

engagement (Julius et al., 2018). Julius et al. (2018) expressed that keeping students engaged is crucial to their learning and an effective way to do so is by teaching with technology, especially SBTs. Almajali et al. (2016) found that the interactive feature of the SB allows for more student engagement and participation that may not be offered by other methods of presentation.

Therefore, the results of this study may help principals implement policies that will support the effective use of the technology to enhance learning and thereby increasing student engagement and performance (Dehqan et al., 2017). The increased and effective use of digital devices is of great importance in the teaching and learning process (Mustafa & Zulhafizh, 2018). Geladze's study suggests that the proper and appropriate use of digital devices by teachers can make the lessons more interesting and engaging, thereby accomplishing learning goals (Geladze, 2015). To ensure the successful integration of SBTs in teaching and learning, I explored the role of the principal in this study.

Several factors can impact SBT integration process. The way principals carry out their role as technology leaders will determine how successful the integration process will be for student learning (Brown & Jacobsen, 2016). In a mixed method case study, Brown and Jacobsen used an online survey and interviews to explore leadership skills of principals within three school districts in Alberta. In their analysis of the data, they found that principals must be technologically fluent and prepared to carry out technology leadership roles and supporting technology rich education; in so doing they take care to implement policies to ensure technology enhanced pedagogy in the classrooms (Brown &

Jacobsen, 2016). The results also revealed that the leadership style of the K–12 principal will determine the successful integration process.

Chance (2017), in a mixed method study, used focus groups, surveys, and interviews on mostly female participants who were principals, teachers, and paraprofessionals from all grades to determine whether purposeful professional learning created an impact on instructional technology integration in classroom instruction daily. The findings from this study indicated that transformational leaders were integral to the successful technology integration process (Chance, 2017). Chance further pointed out that schools should not just be equipped with digital devices in classrooms, but should provide purposeful training for educators who are involved in the integration of instructional technology as part of the pedagogic process (Chance, 2017). This revelation gives insight in formulating standards to overcome problems that hinder educators from effectively carrying out instructional technology practices, therefore I will use this revelation from Chance as a platform to generate interview questions for this research. In light of this, I explored Bass's (1985) theory of transformational leadership.

Stump et al. (2016) examined digital instruction used by teachers and the impact of transformational leadership behavior by school principals on their teachers' use of digital instruction. The data collection involved 1387 teachers from 124 German schools (Stump et al., 2016). The results revealed that the principals' transformational leadership approach had an increased significant positive effect on teachers' various uses of digital instruction (Stump et al., 2016). Stump et al addressed the role of school principals in

helping teachers to improve their pedagogical practices and also addressed components of the transformational leader.

To investigate how teachers and students in a rural high school use iPads in class; and to highlight the challenges and problems teachers and students faced with the use of the iPad, Kalonde (2017) used an exploratory mixed method case study. The researcher used classroom observations and follow up interviews with nine high school teacher who had iPad carts in their classroom (Kalonde, 2017). The findings revealed that both teachers and students used the iPad infrequently during the pedagogic process due to lack of professional development training and insufficient learning activities (Kalonde, 2017). The results also revealed that principals and educators should examine the barriers that hinder the successful integration of such technologies in teaching and student learning (Kalonde, 2017). The results from this study provide principals with awareness into ways to overcome difficulties surrounding technology integration in schools.

Thannimalai and Raman (2018) used a quantitative study to find out the level of technology leadership of principals based on a number of constructs, which included technological knowledge to model and support technology integration in schools and visionary leadership. The researchers also investigated the relationship between the technology leadership of principals and teachers' integration of technology (Thannimalai & Raman, 2018). The results revealed that a significant relationship existed between technology leadership of principals and teachers' integration of technology (Thannimalai & Raman, 2018). The results also revealed that professional development training significantly impacted the relationship between technology leadership of principals and

teachers' integration of technology (Thannimalai & Raman, 2018). Additional results from the study emphasized the need for professional development for principals to prepare them for technology leadership roles so that they can inspire teachers to integrate technology in education to enhance 21st century learners (Thannimalai & Raman, 2018). These findings give insight into possible strategies to remove barriers affecting the integration of technology.

Similarly, McKnight et al. (2016) used interviews, surveys, classroom observations, and focus groups in a mixed method multisite case study to gather data to bring to light technology teaching approaches used by educators to improve and transform students' learning and also to highlight how the strategies align with research in pedagogy. The outcomes revealed that professional development for teachers was necessary and teachers who were technology savvy were able to adjust and tailor the way they impart knowledge (McKnight et al., 2016). The results also revealed that school districts must pay special attention to the leadership roles in the schools and ensure that principals are competent to carry out the integration of technology in schools (McKnight et al., 2016). The results provided insights to address challenges with the effective integration of technology in the classroom.

Similarly, Momani et al. (2016) conducted a quantitative study to investigate the problems and obstacles teachers face while using the SB during English instruction. Momani et al. (2016) used questionnaire instruments to collect data from 30 English as a foreign language teachers. The results indicated that teachers lacked knowledge and needed training to use the SB (Momani et al., 2016) and training the teachers would

allow them to use the technology effectively in their daily instruction. The results also revealed that teachers only use the SB to project materials for students to visualize and to make drawings (Momani et al., 2016). Part of the revelation was that principals did not have clear goals regarding SBs (Momani et al., 2016). This study provided insights into approaches that will eradicate challenges and barriers to SBT integration.

In order to find out the effectiveness of using SB to teach Social Studies, Almajali et al., (2016) conducted a quantitative study in which they used a pre-/posttest two group design on students' achievement in Jordanian public schools. To collect data, a sample of 258 eighth grade students, 120 boys and 138 girls from two schools in Jordan, was chosen (Almajali et al., 2016). The results from the study revealed that the students who were taught using the SB performed much better on the posttest than the students who were taught the traditional way (Almajali et al., 2016).

In a similar study, Davidovitch and Yavich (2017) used quantitative methods to examine the effects of SB on the cognition and motivation of students in schools in Jerusalem. Davidovitch & Yavich (2017) collected data using a questionnaire on 130 fifth and sixth graders of two K–6 schools in the region. Davidovitch and Yavich stated that SBs were implemented in the schools in recent years. The findings from this study revealed that teaching with the SB provided clarity, kept students engaged, and was a major criterion of excellent teaching which enhanced the teaching and learning process (Davidovitch & Yavich, 2017). The findings were important since they suggested that teaching with SBTs enhance students' learning.

İstifçi et al. (2018) studied the effect of SB use in teaching and language learning at a Foreign Languages school in a university in Turkey. İstifçi et al. (2018) collected data by way of convenience sampling and, using surveys, questionnaires, and semistructured interviews from six volunteer teachers and 266 students who were taught using SBs. An analysis of the data found that the teachers and students felt that the SBs were effective in their teaching and learning (İstifçi et al., 2018).

In order to examine the use of technology in the classroom, Mustafa and Zulhafizh (2018) conducted a quantitative study to find out the quality of teaching and learning, using the perspective of 108 senior high school teachers. The results revealed that the heightened and effective use of technology increases teaching and learning standards thereby achieving learning goals (Mustafa & Zulhafizh, 2018). The results from this study helped to bring about understanding of the importance of teaching with technology.

Önal (2017) used qualitative methods to find out how students perceive the use of the IWB in their mathematics classroom. Önal (2017) used semistructured interviews to collect data from 58 high school students. The results from the study revealed that students were optimistic with the use of IWB in the teaching of mathematics as it enabled them to have a better understanding of the content, maximized their attentiveness and kept them engaged in the learning; thereby increasing their performance (Önal, 2017).

Conversely, Dehqan et al. (2017) sought to inspect the existing state of the integration of information and communication technology (ICT) in secondary schools in Iran, and the obstacles perceived by the teachers when integrating technology in their

teaching and learning. The findings revealed that most Iranian teachers were reluctant to integrate ICT in their teaching and the obstacles were classified under a number of themes that included lack of training and technical support (Dehqan et al., 2017). The results impacted the role of the principal in the technology integration process.

Liu et al. (2017), in their explanation of technology integration in K–12 pedagogy, used a multilevel path analysis model to identify several factors that influence a teacher's use of technology in the classroom. The results revealed that experience, self-confidence, and comfort level influenced a teacher's attitude toward the integration of technology in the classroom; and onsite expert technology support is a major criterion for teachers to appropriately teach with technology (Liu et al., 2017). According to Carver (2016), limited technology training is a barrier to the effective use of technology in the classroom by teachers.

Gürfidan and Koç (2016) completed a study to propose and test a structural design to explain the integration of technology by teachers through school culture, school support services, and digitally skilled leaders. Gürfidan and Koç (2016) collected data through a convenience sample from secondary school teachers in the southwestern region of Turkey. The findings from their study revealed that the climate within school has an indirect influence on the integration of technology through the intervention of digitally skilled leaders and support services (Gürfidan & Koç, 2016). The results were important because they suggested that if principals create a positive school environment, provide support for teachers and put strategies in place will encourage effective technology integration.

For this research, I used the basic qualitative approach to investigate the leadership role of the principal in the SBT integration process in K–6 schools. The main purpose was to explore principals' perspectives about their leadership roles to support teachers in the integration of SBTs in K–6 schools and to understand how principals develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools in an urban setting in Canada. There is a paucity in the literature on this topic. Hebing (2017) mentioned that the main phrase for the use of the SB is that "when implemented effectively," (p. 25) the SB increases student learning and performance. The SBs are visible in almost every classroom, and the appropriate use is a motivating factor for students in every area of the teaching and learning process (Liu, 2016). Understanding the perspective of the K–6 principals' role in ensuring that teachers are supported to use the technology effectively in their instructional practice and implementing policies to ensure the appropriate use of the SBT may effect positive social change and thereby promote increased student engagement and achievement.

Problem Statement

The problem that I addressed in this study was that teachers in a urban school setting in Canada needed support to help them integrate SBT into the teaching and learning process to improve student engagement and performance, (Canada's Centre for Digital and Media Literacy, 2016). The effectiveness of SBTs is dependent on the wise use by the teacher (Davidovitch & Yavich, 2017; De Silva et al., 2016). Teachers are expected to utilize the technologies to enhance their teaching in the classroom (Brown & Jacobsen, 2016). Dehqan et al. (2017) mentioned that some teachers are not interested in

using the technologies. Francis (2017) stated that some teachers are reluctant to incorporate the technology in their instructional practices. Momani et al. (2016) added that even though SBTs are implemented in the classrooms, they are not being adequately used by teachers. If the SB is used frequently and appropriately it can transform teaching and learning which can immensely enhance learner experience (De Silva et al., 2016). Some of the factors that can cause ineffective use of the SB are a lack of training, the absence of a technology coach, and the lack of time to prepare lessons using the SB (Alfaki & Khamis, 2018; Hsu, 2016; Momani et al., 2016). Moreover, support and collaboration from principals may be considered one of the major factors for the effective use of the SB by teachers to increase student engagement and performance. Banoğlu et al. (2016) and McKnight et al. (2016) argued that for technology to be integrated in teaching and learning, principals must be involved to ensure its effective and continuous use in the classroom. Yieng and Daud (2017) mentioned that the effective and meaningful use of technology in learning spaces starts with school principals. The perspectives of the principals regarding their leadership roles and responsibilities in the integration of SBTs and how principals develop policies and practices that support the effective use and integration of SBTs in their schools is not known. Hence, not knowing the leadership role the principals' play as it relates to the integration of SBTs points to a gap in the literature. Chance (2017) expressed that the role of the principal is crucial for the SBTs to be effectively integrated in the teaching and learning process. According to Brown and Jacobsen (2016), principals must develop policies and support to guide the utilization of educational technologies.

Research has shown that the effective use of SBT increases student engagement and performance and thereby promotes student learning (Almajali et al., 2016; Davidovitch & Yavich, 2017; Luo & Yang, 2016). In my review of the literature, I found that very little research has been done regarding the perspectives of principals about their leadership roles and responsibilities to support teachers in the integration of SBTs in K–6 schools. In this current study, I addressed this gap in the research.

Purpose of the Study

The purpose of this study was to explore principals' perspectives about their leadership roles and responsibilities to support teachers in the integration of SBTs in K–6 schools and to understand how principals develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools in an urban setting in Canada. To address the gap in the literature of the perspectives of principals' leadership roles and responsibilities as they relate to the integration of SBTs, I used a basic qualitative study with telephone interviews of K–6 principals in an urban district in Canada to develop an understanding of principals' leadership roles and responsibilities to support teachers in the integration of SBTs and policies and practices that support teachers to effectively use and integrate SBTs in their schools.

Research Question

I developed the following research questions to guide this study:

Research Question 1 (RQ1): What are the perspectives of the K-6 principals regarding their leadership roles and responsibilities to support teachers in the integration of SBTs?

Research Question 2 (RQ2): How do principals develop policies and practices that support teachers in the effective use and integration of SBTs in their schools?

Conceptual Framework

I established the conceptual framework for this study using two frameworks. The first framework was drawn from Bass's (1985) theory of transformational leadership. I used this framework to provide a basis for the analysis of the data. Because this theory addresses the way leaders are able to inspire followers to change their perceptions toward a shared objective, the theoretical work of Bass has been used widely in various leadership roles in education. This theory is recognized globally as a concept and gives much information on how a leader can make positive influence in his or her followers (Bass, 1999). Recent studies have shown that transformational leadership theory is still a viable theory as indicated by (Akcil et al., 2018; Brinia & Papantoniou, 2016).

Using Bass's (1985) theory, the principal can move the teachers to utilize the SBTs through charismatic guidance and motivation. Hence the teachers will be able to identify with such intellectual encouragement and technology guidance and will ultimately provide an effective teaching and learning experience to enhance students' learning. The transformational leader listens and considers the opinions and requirements of the teachers, using a "bottom-up participation" resulting in pedagogical changes (Day et al., 2001, p. 33); and as such collaborative learning is achieved (Leitner, 1994). According to Emmanouuil et al. (2014) there is the potential for transformational leaders to enable teachers' effectiveness in the teaching and learning process. Esplin (2017) concurred that transformational leaders are essential and play a key role in the integration

of technologies and for digital devices being used effectively in schools. In addition, Smith (2016) expressed that transformational leaders enable teachers to become agents of change which greatly affects the climate of the school. Smith attested that under the transformational leadership approach followers are encouraged to be innovative and adventurous (Smith, 2016). In essence, the transformational leader allows the teacher to think creatively and provide them with rewarding prospects to excel and change which ultimately gives rise to enhanced student learning and maximum success (Smith, 2016).

The second framework attributed to Alberta Education, (2004a) is the learning and technology policy framework. Alberta Education developed this framework to guide the technology integration process using five policy directions. Hence, literature about the use of technology within the K–6 classroom and the principals' leadership style regarding technology integration in instructional practices in the classroom is guided by the learning and technology policy framework. Using the learning and technology policy framework set the foundation for a successful SBT integration process in order to promote a student centered approach to learning (Alberta Education, 2013). The learning and technology policy framework was implemented to guide Alberta Education's vision to provide strategic guidelines for the successful implementation of technology in Alberta schools (Brooks, 2008). The learning and technology policy framework sets out goals to enhance students learning and specify technology as limitless possibility and promise (Brooks, 2008). Principals are expected to establish policy to ensure that technology is used effectively and proficiently in the K–6 classroom to enhance the teaching and learning process (Alberta Education, 2013).

Using Bass's (1985) theory of transformational leadership and the learning and technology policy framework for this study, I examined the theme of leadership approach from the literature as well as guidance in implementing technology focusing on the role of principals in the integration of SBT in K–6 schools. Both frameworks were chosen because they will support the analysis of the data and will ground the results of the study in research based framework.

Nature of the Study

The nature of the study was a basic qualitative design. Merriam (2009) emphasized that the basic qualitative methodology is used to investigate how participants make sense of their experiences; create their worlds and the way they embody their experiences with the main goal being to discover, and interpret the meanings of the question being investigated. I used this basic qualitative research to help gain insights into how principals carry out their leadership role to support teachers in the integration of SBTs to enhance students learning and to understand how principals' develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools and will contribute to the field of education. Merriam (2009) informed that an important feature of research using qualitative methodology is to offer a rich and thick account of the phenomena being researched allowing the reader to move the results to their particular setting.

Qualitative research aligns well with understanding how principals carry out their roles to support teachers in the integration of SBTs in K–6 schools and whether and how principals' develop policies and practices that support teachers in the effective use and

integration of SBT in K–6 schools and served as the primary focus of this dissertation. Qualitative approach was the preferred method because I was able to understand and describe what the participants do on a daily basis. According to Ravitch and Carl (2016), the use of qualitative methods makes it easier for researchers to gain understanding and describe what the participants do each day. Qualitative method provides the avenue to explore and comprehend the meanings the principals attribute to the integration of SBTs (see Creswell, 2018). Using qualitative methodologies enabled the data to be analyzed inductively, generating themes and interpreting the meaning of the data (Creswell, 2018). Keeping the focus on principals' leadership roles in ensuring that teachers within the K–6 schools are using the SBTs effectively in the teaching and learning process is consistent with Bass's (1985) theory of transformational leadership providing adequate information on how a leader can be positively influential to the people they lead (see Bass, 1999). Data may be collected using "interviews, observations or document analysis" (Merriam, 2009, p. 23). However, I used semistructured interviews with open ended questions to collect the data. Using semistructured interviews provided an understanding of the principals' perspectives of their leadership roles to support teachers in the integration of the SBTs. The use of semistructured interviews shed light on each principal's viewpoint and experience in their role to support teachers in the SBT integration process. Johnson and Christensen (2017) concurred that semistructured interviews can be used to get detailed information concerning participants views, opinions and knowledge regarding a particular topic. The criteria for inclusion was that the participants must serve as a

principal in K–6 schools. The participant must have SBTs implemented in their K–6 classrooms. The participants must be current principals in the K–6 schools.

Qualitative methodology provided a means to discover and comprehend the meaning a person or groups of persons assign "to a social or human problem" (Creswell, 2018, p. 4.). Hence, this qualitative study enhanced understanding of principals' perspectives about their leadership roles and responsibilities to support teachers in the integration of SBTs in K–6 schools and how principals implement policies to ensure that teachers are using SBTs to support students' learning. The participants consisted of seven K–6 principals in an urban district in Canada. The method of data collection was telephone interviews. I used the responses from the participants to code the data. I was able to identify patterns, categorize the data, and generate themes based on the codes (see Saldana, 2016). Saldana (2016) expressed that pattern is a form of constant indicator of the lives of people and provides authentic proof of outcomes. I used member checking to arrange for participants to evaluate the conclusions, as well as a rich, thick description was used to provide detail of the context of the study (see Creswell, 2018; Merriam, 2009). In order to triangulate the data, I conducted a follow up interview. Denzin (1978) expressed that triangulation can be achieved by conducting follow up interviews. The triangulation of data ensured cohesion and clearly justified the themes by examining evidence from the data sources (Creswell, 2018; Johnson & Christensen, 2017). The justification of the themes based on the perspectives of the participants added to the validity of the study (Creswell, 2018).

Definitions

Digital natives: 21st century learners who spend most of their time with using modern day technologies such as iPads, tablets, digital games , ICT Smartphones, laptops, Smart TVs, computers (De Silva et al., 2016).

Educational technology: is the study and moral practice of enabling learning and improving students' performance with the creation, use and managing technological processes and resources (McManis & Gunnewig, 2012).

Effective: The proper and appropriate use of instructional technologies (Geladze, 2015).

Enhanced student learning: students are more engaged in their learning which maximizes students' learning (Downes & Bishop, 2015).

Policies: are rules that are intended to assist schools to teach students proficiently, impartially and safely: determining how and what learners are taught (Williams, n.d.).

Smart Board (SB)/Interactive Whiteboard (IWB) technology: is an interactive whiteboard that is connected to a computer that allows images to be projected and manipulated with other activities with the use of touch screen technologies (Smart Board Technologies, 2015).

Technology integration: is the proper use of technology in the teaching and learning process (Machado & Chung, 2015).

Assumptions

This study was based on several assumptions. Firstly, I assumed that the participants would provide detailed and honest answers to the interview questions. This

assumption was imperative as it adds to the credibility of the study by way of accuracy in relation to the experience and knowledge of the volunteer principals in the study. Secondly, I assumed that the participants would provide accurate demographic information. Next, I assumed that the basis of the research would be appropriate for the conceptual framework drawn from Bass's (1985) theory of transformational leadership and the learning and technology policy framework. Another assumption I made was that the population sample might be unwilling to participate due to time constraints and other reasons. Finally, I assumed that all the K–6 principals had SBT integrated in their schools. These assumptions could have impacted the validity of this study.

Scope and Delimitations

The scope of this study was bounded by the topic. I used semi-structured interviews to generate themes and non-numerical information to seek answers to the research questions (see Johnson & Christensen, 2017). Additionally, I generated an interview protocol to develop and validate each of the research questions. The study was delimited to the principals within the K–6 schools in an urban setting in Canada. The sample consisted of elementary school principals who had SBTs integrated in their schools and represented the intended population.

Limitations

The research study was limited only to the school district where the data collection took place. The data collection was limited to the K–6 principals who had SBT implemented in their schools. Another limitation was the small number of participants in this study. As the chief researcher, I had to balance time and work in order to conduct the

interviews and the limitation was the three weeks I devoted to collect the data for this study. The responses to the interviews may not have been answered truthfully. My decision to select the district that I work might bias the responses from the interview. Another limitation was that the population I used for data collection was K–6 principals, therefore the results from this study was not a representation of the wider population of principals. Finally, the participants were from one particular school district in an urban area in Canada, therefore the findings could not be generalized to the larger population of principals. The findings not being able to be generalized, limits the transferability of study.

Significance

This research sought to fill a gap in understanding by focusing specifically on whether and how principals are involved in the integration of SBTs in K–6 schools. This research is unique because it addresses an under-researched area in the role the principals play to support teachers in the integration of SBTs and hence, addresses the current gap in the literature (see Dehqan et al., 2017). The results from this study provided added insight in the technology integration process in K–6 schools and the leadership role principals play to support teachers in the integration of the SBs in the classroom. Insights from this research should add to the body of knowledge that already exists in the literature about the use of SBTs in teaching and learning. In another study, Dehqan et al. (2017) studied high school teachers perceived barriers when using instructional technologies and found that teachers do not integrate technologies in their instructional practices. The findings of this study may make a positive impact within the K–6 schools

in an urban setting in Canada for the integration of educational technologies to prepare students for 21st century workforce and hence positive social change may occur at the local or community level and spiral beyond. The results from this study, if implemented, may be used by principals to develop education programs and policies that will support teachers to more competently implement the technology in their teaching and learning to ultimately increase student learning. Hence, this study has the potential for positive social change.

Summary

In Chapter 1, I introduced the topic that technology and its revolutionary effect in the world and the impact it has on the educational system. I also discussed the vast investment that governments have placed in instructional technologies. I mentioned that the traditional way of teaching is being replaced by instructional technologies and I discussed the implementation of the SBTs and its features for the enhancement of student learning. The SB if used properly will result in increased student engagement and performance and thereby maximize student learning. I also discussed the importance of teachers being knowledgeable and trained to use technologies. Providing training and involving teachers in the technology integration process will improve the pedagogical process and teachers will be inspired to use technologies. The leadership role of the principal is imperative to the effective integration of SBTs in K–6 schools.

Next, I made a summary of the research literature related to the scope of the research topic which provided the background to the study. I discussed the gap that exists in the literature on this subject in the problem statement. I discussed a description of the

research questions as well as the purpose of the study and the concept for the frameworks. I justified the use of the basic qualitative methodology. I included in the chapter a list of the definition of terms that could be misinterpreted. I also included the assumptions, scope and delimitations, and limitations of the study. Finally, I provided the significance of the study in order to effect social change.

In Chapter 2, I discussed the literature review and the search engines used to locate research sources. I recapitulated the conceptual framework and the theory, and I discussed the framework. I included in chapter 2 a review of literature related to the leadership role of principals in the integration of SBTs as well as the research methodology. I concluded the chapter with the summary.

Chapter 2: Literature Review

Introduction

The purpose of this study was to explore principals' perspectives about their leadership roles to support teachers in the integration of SBTs in K–6 schools and to understand how principals' develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools in an urban setting in Canada. This review of current and previous literature provided the foundation from which I was able to draw new ideas for this research. Many researchers have investigated the integration of technology in schools from the perspective of the teachers (e.g. Carver, 2016; Dehqan et al., 2017; İstifçi et al., 2018; Mustafa & Zulhafizh, 2018; Petersen, 2017; Pischetola & Heinsfeld, 2018; Tertemiz et al., 2015; Umugiraneza et al., 2018) and from the perspective of the student (e.g. Luo & Yang, 2016; Onal, 2017; Onder, & Aydin, 2015). In reviewing the literature, I found little or no research on the leadership role of the principal in the integration of SBTs in K–6 schools. The integration of technologies has been researched with various technology devices from the viewpoint of the teachers, but there has been scant research on the perspective of the principal in the integration of SBTs. In discussing the gap in the literature, previous researchers Almajali et al. (2016), Dehqan et al. (2017), and Machado (2015), noted that the principal is responsible for organizing and implementing the vision and plan for the school, with one of the goals being to ensure that students are learning in technologically enhanced environments. Therefore more research is needed on the role of the principal in the SBT integration process. More importantly, teachers must be supported and then given the mandate to

effectively teach with technology. SBs are commonplace in the classroom and their effective use will keep students engaged, increase interactivity, and enhance learning. Integrating SBTs in teaching and learning will prepare students to transition in a society that is highly digital. In this basic qualitative study, I examined principals' perspectives about their leadership roles to support teachers in the integration of SBTs in K–6 schools and to understand how principals develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools.

Literature Search Strategy

There is a vast amount of literature surrounding the integration of technology in schools (De Silva et al., 2016; Francis, 2017; McKnight et al., 2016; Shepley et al., 2016). I searched multiple databases, which included Education Source, ERIC and ProQuest Education Journal databases, Google Scholar, Walden University Library, the internet, Alberta Teachers Association Library, and other local libraries and to my best knowledge there has been little investigation from the point of view of principals. Research is lacking on the role of the principal in the integration of technology (Dehqan et al., 2017; Machado & Chung, 2015). For this study, I drew on numerous resources, including Walden Library, Google Scholar and Research Gate. The websites that I included in the search were Alberta Education, U.S. Department of Education, and Ontario Ministry of Education. The databases I used were ERIC, ProQuest, Education Source, ERIC and Education Source Combined Search. I also searched ProQuest Dissertations and Theses at Walden University. To find relevant information for this study, I used the following key words: *principal, principal roles, principal*

responsibilities, technology integration, smart board technology, technology in education, interactive whiteboard, smart board, elementary to junior high, K-6, secondary, teacher, and educators' barrier, technology barrier, effective, policies, educational technology, student performance, student engagement, *teaching and learning, technology leadership, technology leader, leader, technology coach, principal as technology leader,* and *administrator as technology leader.*

Conceptual Framework

Theories provide the motive for pursuing research and view phenomena in a specific way (Creswell, 2018). Theories also provide the foundation and support for the justification of the research (Grant & Osanloo, 2014). In order to conduct research effectively on the principals' perspective regarding their leadership roles in SBT integration, I used two theoretical frameworks to guide the study. According to Merriam (2009), a theoretical framework is the foundation, support, or frame of a research. In reviewing the literature related to this topic, I sought to use Bass's theory of transformational leadership and the learning and technology policy framework to explore the perspectives of the participants. The transformational leadership is a division of the complete array of leadership model that comprises transactional and laissez-faire leadership (Bass, 1999). However for this study, I focused on the transformational leadership theory model (Bass, 1985) and the learning and technology policy framework (Alberta Education, 2013).

Transformational Leadership Theory

The transformational leadership theory is an approach to leadership that is used to focus on the way leaders are able to create valuable and positive change in their followers (Smith, 2016). The primary function of transformational leadership is the proactive response in promoting positive change within the workplace (Bass, 1985). A transformational leader is a good example whose behavior is emulated by others (Stump et al., 2016). The followers develop a sense of support, trust, faithfulness, and appreciation and are respectful to the leader; that leader is endorsed with extraordinary capabilities, strength, and willpower (Stump et al., 2016). Under transformational leadership, followers are motivated to accomplish astonishing results that are not initially envisioned by the followers (Bass & Avolio, 1994). Transformational leaders allow followers to be autonomous in carrying out certain aspects of their work (Bass, 1999). Bass (1985) theorized that transformational leaders demonstrate specific conducts and qualities that can be attributed to four factors: individual consideration, intellectual stimulation, inspirational motivation, and idealized influence.

Savas and Toprak (2014) noted that leaders make the effort to provide direction on the activities within an organization in order to accomplish collective goals. Based on the explanation of Savas and Toprak, the responsibility is on principals to display several leadership abilities so that they can competently and positively guide their schools toward a path of collective objectives and well-focused ideas (Smith, 2016) through collaboration and inclusion of teachers. The leadership abilities are characterized by a transformational leader, who Northouse (2001) defined as having the innate ability to

motivate individuals in a positive direction toward change; hence, workers are willing to be followers. The transformational leader is innovative and discovers new approaches to get things done and pays very little attention to the present state of affairs (Bass, 1999). The transformational leadership display by principals play an important role in the dynamics of the learning environment, where teachers are motivated and empowered to incorporate new technologies in their teaching and learning practices and students are actively participating in their learning.

According to Balyer (2012), a school principal should cultivate the attributes of a transformational leader who is dedicated and instrumental in developing a vibrant school climate. Principals must be cognizant of their style of leadership and of the level of importance in carrying out their duties in ensuring a highly effective and well-operated school (Smith, 2016). In doing so, the principal's sincere encouragement and inspiring leadership tactics motivate the teachers to use the SBTs in effective ways (Bass, 1999). Followers are intellectually stimulated when leaders provide supports allowing them to become more innovative and resourceful, hence followers are motivated to identify with such leadership (Bass, 1999).

Learning and Technology Policy Framework

Alberta Education developed the learning and technology policy framework to set up goals within Alberta's education system using a strategic guide (Brooks, 2008). The goals are relative to the improvement of learning opportunities and set technology as a basis of unlimited possibility and potential (Brooks, 2008). Instructional leaders are guided by the framework in order to integrate technology in education, making provision

for generating and imparting knowledge, which is crucial to the accomplishment of the vision to prepare students to become lifelong learners, engaged thinkers, and principled citizens with a desire to become devoted entrepreneur (Learning and Technology Policy Framework, 2013). The framework also provides principles, policy direction, results, and activities in an effort to direct administrators, principals, and other authority figures in schools to envision, make plans, and participate in the decision making relative to technology integration in schools (Alberta Education, 2013). The framework also puts into place action to inspire leaders and administrators to effect innovation and developing capabilities within the K–12 educational structure as a way to leverage the use of technology, supporting student centered learning environments (Alberta Education, 2016).

Literature Review Related to Key Variables and Concepts

Importance of Technology Integration

Francis (2017) argued that all students, including those who are gifted or talented or has learning disabilities will be motivated to learn with the integration of SBTs in pedagogy. Francis further stated that, if SBs are used appropriately in the classroom, students who are academically demotivated will become enthusiastic with their learning.

Gabby et al. (2016) expressed that as part of reforming the K–12 schools in preparing learners to develop the skills and attributes needed for the current era, it was imperative to generate a vibrant educational curriculum that included technologically equipped learning spaces. Several researchers indicated that when digital devices were efficiently integrated in the classrooms, there were improvement in the way teachers

taught, thereby enhancing students' learning (Greaves et al., 2012). In order to support technology-rich classrooms and effectively teach with technology, teachers must be willing to adjust from a teacher-centered approach to a more student-centered approach (Dori & Kurtz, 2015). Even though teachers are encouraged to integrate technology in their teaching and learning in effective ways to promote higher order thinking skills and collaboration in the classroom, Gabby et al. (2016) mentioned that the effort to do so is most often hampered by teacher concerns and their unwillingness to change.

Smart Board Technology

SB was developed in 1991 by David Martin and Nancy Knowlton, and was implemented and used in the classrooms during the same period (Riaz, 2018). Sad (2012) stated that SBTs are also referred to as IWBs. Currently, the SB is considered to be the most popular instructional technological device in classrooms (Luo & Yang, 2016). It is deemed a highly interactive and an important instructional device in the learning environment (Riaz, 2018). Due to the SB's widespread interactivity, it is fundamental to the enhancement of students learning and is vaunted as elevating the "chalk and talk" way of teaching to a highly technological teaching type (Luo & Yang, 2016). The SB empowers students to learn and discover new ideas (Mun & Abdullah, 2016). Students are thrilled and eager to learn, causing educators all over to lobby for the integration of SBT in the curriculum (Mun & Abdullah, 2016). The remarkable features of the SB include the projection of images and objects on the board, which makes it possible for users to maneuver images and different activities using touch screen mechanism (Smart Board Technologies, 2013). The SB allows for materials use to impart learning and other

stimuli to be displayed, making the content visible and accessible to many students while teachers are able to include and switch between texts easily (Shepley et al., 2016). The interactive nature of the SB makes it easy for several students to utilize the board at the same time and teachers are able to peruse websites that they can use to assist them in the reinforcement of lessons (Smart Board Technologies, 2013).

Teachers are able to present a "media-rich" (p. 11) lesson due to the remarkable features of the SB (Pourciau, 2014). According to Pourciau (2014), the reason for integrating SBT in schools is to maximize the effectiveness of pedagogic approaches and the way students learn, and set the path for improving performance. The SB being so versatile is referred to as the "outsmart technology" in education (Riaz, 2018). The SB is deemed more beneficial than computers; computers are made for single use, while the SBs are developed for collaborative and full class learning (Almajali et al., 2016). SBTs promote interactivity in the classroom and keep students engaged during teaching (Pourciau, 2014). Most importantly, it makes it possible for teachers to reach learners of every style (Riaz, 2018; Shepley et al., 2016). According to Riaz, using the SB will allow teachers to effortlessly evaluate students' attitude and their growth. With the use of the SB students with exceptional erudition technique are able to participate and support each other in their learning (Riaz, 2018). Kocak and Gulcu (2013) believed that including SBTs in the teaching and learning process improves the quality of teaching and learning and students are able to learning in a pleasurable, inspiring and interesting atmosphere. Incorporating SBT is a powerful influence in the classroom and supports a student-centered approach. Research has shown that when SBTs are missing, teachers utilize a

lecture style approach that results in monotony and less student engagement (Ling, 2014). Riaz (2018) confirmed that the use of SBs in schools positively impact the way students learn in every area of education and at all grade levels. Teachers maintain that the biggest benefit of the SB is that it stimulates more sense organs, is versatile and contributes largely to the teaching and learning process, saves time, facilitates various kinds of visuals digitally as teaching materials making the lesson easy, stimulating, and fun (Momani et al., 2016).

Advantages of Smart Board Technology

Several researchers such as Davidivitch and Yavich (2016), Dori and Kurtz (2015), Almajali et al. (2016), and Riaz (2018) believed SBT is a powerful influence in teaching and learning. The researchers are of the view that integrating SBT in the classroom supports a student-centered approach and give students a chance to learn on their own in addition to creating a knowledge building environment. The SB allows quick, effective, well-organized, and interactive classroom experiences (Almajali et al., 2016; Davidivitch & Yavich, 2016; Dori & Kurtz, 2015; Riaz, 2018). Students are given the opportunity to learn in a technologically interactive environment which provides enhanced engagement and high performance, particularly for subjects that students perceive to be challenging (Almajali et al., 2016).

According to Almajali et al. (2016) a major advantage of the SBT is the huge work area that it offers, supporting users to work in groups. The SB supports a student driven atmosphere and students are able to work collaboratively in their efforts to learn (Almajali et al., 2016; Al-Rabaani, 2018; Riaz, 2018). Riaz (2018) expressed that the use

of the SB in the classroom can positively reform the teaching learning process. Teachers expressed that the quality of their teaching improved with the integration of the SB in the classroom, and being able to combine the SB with the computer gave rise to the students' full attention and thoughts in resourceful means (Davidivitch & Yavich, 2016). Teachers reported that the SB was quite influential in that their methods of teaching and classroom atmosphere improved (Al-Rabaani, 2018).

According to Tertemiz et al. (2015) students are stimulated and are able to construct meaning, supporting a constructivist learning environment and students are able to retain the lesson with the use of the SB. Most importantly, students at every level and all style of learners (auditory, visual, tactile) benefited from the use of the smart lessons and they were motivated and engaged with the use of the SB (Momani, et al., 2016; Tertemiz et al., 2015). Almajali et al. (2016) informed that the visuals are magnified and images are seen easily due to the large interactive screen. Students are physically and visually engaged with the content in a collective learning atmosphere due to the large images displayed on the SB (Smart Board Technologies, 2015). Using the SB, children with special needs are empowered in the classroom and special needs teachers can include a wide range of teaching tools, allowing more flexibility and are able to modify learning to the individual needs of the student (Riaz, 2018).

Disadvantages of Smart Board Technology

Even though many researchers proved that the use of SBT in the classroom enhanced the teaching and learning process (Al-Rabaani, 2018; Mohammed et al. 2016; Riaz, 2018; Whitacre et al., 2015), other studies cited disadvantages with using SBT

(Hsu, 2016; Momani et al., 2016). A noted setback in using the SB is not being able to access it readily (Whitacre et al., 2015). The height poses a problem for some students and teachers to reach the top part of the board (Alfaki & Khamis, 2018). The SB is quite costly and cost more than a regular whiteboard and computer screen combined, and low funding schools may be unable to afford it (Hebing, 2017; Riaz, 2018). The SB may cost $1000 to $7000 for each board and this is dependent on the series (Smartboards.com). Another disadvantage is that the SB needs maintenance on a regular basis and the cost to maintain it might be too much for most schools to handle (Momani et al., 2016). Hebing (2017) added that because of the huge cost involve in purchasing the SB, lower income schools are at a disadvantage to procure modern electronic devices, causing these schools to be ill-prepared to provide students with strategies and means to survive in 21st century workforce. Graduates who have little knowledge with the technology age are at a disadvantage in a digitally globalized industry and they are left to struggle with the continuous technological change in a fast-moving society (Hebing, 2017). A major difficulty is the insufficient training for teachers and the lack of time to prepare lessons using the SB (Hsu, 2016; Momani et al., 2016).

Similarly, Alfaki and Khamis (2018) expressed that the SB can be difficult for teachers to maneuver without strong technical abilities or little or no SB training. Alfaki and Khamis (2018) shared that for SB to be successfully integrated in teaching and learning, technical support is needed in the schools. If the classroom was not designed for the implementation of SB, teaching with the SB may be difficult for students to see and be able to use it effectively and too much light or sunlight may pose difficulty in terms of

visuals (Alfaki & Khamis, 2018). Alfaki and Khamis (2018) explained that without technical support in schools the SB might malfunction due to a number of issues, for example:

1. need for replacement stylus pen
2. connectivity issues between the SB and computer
3. not understanding data projector operation
4. freezing of the SB, unable to handwrite or use stylus pen
5. programs and files incompatible with interactive software
6. system is slow or not loading
7. erasing more than is needed
8. breakdown in the middle of a lesson

The challenges listed, contribute to teachers' hesitancy in using the technology in the classroom (Umugiraneza et al., 2018). Dehqan et al. (2017) stated that the lack of technical support and resources to support the use of technology in the classroom are the probable barriers to teach with the technology.

Smart Board Use in Various Disciplines

There are noted differences in some of the various results for disciplines examined in the literature. For example, Onder and Aydin (2015) did a study to determine the view of students when SBs were used in their Secondary Education Biology classes in a government high school in Izmir. Onder and Aydin collected data using semistructured interview and observed 10 students at the Grade 10 level. The results revealed that the use of the SB in the Biology class caused the students to be more

successful. However, it was found that technical difficulties during the use of the SB disrupted the smooth flow of the lesson.

Then Cabus et al. (2017) examined the effects of in-class-level differentiation by incorporating the use of SB on Math proficiency. Cabus et al. (2017) conducted a field experiment on a randomized basis among 199 grade seven students in the pre-vocational group. Cabus et al. (2017) conducted the experiment over a six week period where students were taught Math and the SB was used to apply level differentiation. The teachers of the experimental group were given specialized training in technological, pedagogical, and content knowledge (TPACK) to competently use the SB in the classroom (Cabus et al., 2017). Teachers of the control group were untrained and therefore did not use the SB (Cabus et al., 2017). The results revealed that the students in the experimental group excelled due to the introduction of the SB over the students in the control group (Cabus et al., 2017).

Al-Rabaani (2018) approached the value of SB in the learning environment from a different angle in that the participants were teachers who taught Social Studies. Al-Rabaani (2018) investigated the perspectives of the teachers about the advantages and challenges of SB when used to teach Social Studies. 483 teachers participated in the study (Al-Rabaani, 2018). Although the participants reported that they used the SB extensively in their lessons and found it to be an effective tool that enhanced students' learning (Rabaani, 2018). The participants reported that the SB kept the students excited and engaged during the Social Studies lessons (Rabaani, 2018) While, the teachers reported that there were some challenges in using the technology (Al-Rabaani, 2018).

Conversely, Sheffield (2015) posited that even though IWBs were implemented in almost every classroom in North America, not much was known about how it was being used in Social Studies lessons. Sheffield (2015) pursued a case study, using interviews, focus group of students and observation to find out how Grade 5 teachers used the IWB to teach Social Studies. Sheffield (2015) noted that the IWB was utilized in the classroom mainly as a projector hence the lesson was deemed teacher centered causing a shift from the student-centered approach. The results also revealed that the teachers used the traditional method because of the lack of confidence in using the IWB to teach Social Studies (Sheffield, 2015).

Balta and Duran (2015) did a study quantitatively to understand the attitudes of teachers and students when SBT was integrated in the teaching and learning process. Balta and Duran (2015) wanted to find out if there were any differences in attitudes due to demographics. The participants were 255 Grade six to twelve students and 23 teachers from three private high schools in Turkey (Balta & Duran, 2015). Balta and Duran collected data via two parallel surveys consisting of 25 items. The results revealed that both students and teachers felt that the SB enhanced the pedagogic process. The students believed that the SB was mostly beneficial during Mathematics lesson (Balta & Duran, 2015).

Aflalo et al. (2018) studied the effects of the IWB in Science class on 62 students at the primary level using qualitative methods. More specifically, Aflalo et al. (2018) examined the interactive features of the IWB when used in the lesson and also examined the students' attitudes in the process. Aflalo et al. (2018) collected data through

observations that were structured methodically. Aflalo et al. (2018) observed a total of 26 science lessons in primary schools in Israel. The results of their study indicated that even though the students were accustomed to being taught with the IWB for five years, they were still overly enthused (Aflalo et al., 2018). The results also revealed that the IWB added to dynamic learning and participation in the classroom (Aflalo et al., 2018).

In a study done by Grimalt-Alvaro et al. (2019), the researchers examined the way science teachers incorporated the use of different technologies, which included SBs in their high school lessons, using a mixed methods approach. Grimalt-Alvaro et al. (2019) collected data from 94 teachers and 69 high schools in Spain using a survey. The findings indicated that the SB was used extensively in the science lessons, while the other devices were scarcely used, supporting a teacher centered approach to learning (Grimalt-Alvaro et al., 2019).

In order to find out the effects of teaching English Language with IWB in K–6 English classes, Lin and Chu (2018) conducted a quantitative study, using an experimental research design. Lin and Chu recruited randomly 43 Taiwanese Grade 3 students from two classes. Lin and Chu (2018) used a questionnaire to collect data from the experimental group which was taught with technology, while the control group was taught with traditional methods. The results revealed that the experimental group excelled over the control group in terms of test scores (Lin & Chu, 2018). The results further indicated that the students who were taught with IWB expressed enjoyment learning English (Lin & Chu, 2018). Additional results from the study revealed that teaching with

the IWB proved to be effective in helping students learn the English Language (Lin & Chu, 2018).

Similarly, Mohammed et al. (2016) sought to find out the level of importance when SB is used to teach small English as a Foreign Language (EFL) classes. , Mohammed et al. (2016) used quantitative methods to conduct the case study. The participants were 15 EFL teachers from Majmmah University in Saudi Arabia (Mohammed et al., 2016). , Mohammed et al. (2016) collected data from the EFL teachers who were randomly selected. To analyze the data, Mohammed et al. (2016) used SPSS. The results revealed that the SB when used in small EFL classes improved students' communication skills and provided greater interaction between teacher and student (Mohammed et al., 2016).

Whitacre et al. (2015) approached the value of IWB during teaching from a different angle, in that the participants (a group of pre-service teachers) were asked to conduct a Language Experience Approach (LEA) to learning with the aid of the technology. The pre-service teachers made a comparison between the interactions and responses of the students, using the LEA the traditional way and then extended the classroom activity using IWB (Whitacre et al., 2015). The results revealed that teaching with the IWB kept the students fully engaged and they interacted well with the lesson (Whitacre et al., 2015).

Role of the Principal

The principal is charged with many different roles which included that of technology leadership (Perkins-Jacobs, 2015; Yieng & Daud, 2017). Arokiasamy et al.

(2015) noted that the society we live in is highly digitized and it is imperative that principals are competent to integrate technology in their daily practice and must be able to provide continuous and constructive leadership for technology use in education. Therefore schools must be provided with principals who have the ability to enable change and can maintain a learning environment for the integration of technology (Arokiasamy et al., 2015).

Given the mandate to integrate instructional technologies in education, the leadership role of the principal is the important link for the effective use of SBTs in K–6 classrooms. The principals play a fundamental role in helping teachers to construct the ideal learning environment for students. This was supported by several researchers who expressed that principals continued to play a significant part in the integration of technologies in K–12 schools (Perkins-Jacobs, 2015; Williams, 2015; Yieng & Daud, 2017). The principal has maximum influence on the day to day running and the collective ethos of the school (Perkins-Jacobs, 2015). In order for principals to be effective leaders in the current era, they must have the knowhow and are able to understand the problems and the competences of technology, and must be adept in using the technologies to successfully execute their roles as leader and adviser of curricula activities within the schools (Perkins-Jacobs, 2015).

The principal as technology leader is guided by the standards of the International Society for Technology in Education (ISTE) (2013). The principal as technology leader is also guided by Policy Direction 4: leadership of the Learning and Technology Policy Framework (2013). McLeod and Richardson (2013) expressed that an important attribute

of a principal is to support the school's vision. McLeod and Richardson (2013) further mentioned that the vision for successful and effective technology integration must essentially start with a good knowledge of the multifaceted and symbiotic nature of the current digitally enhanced society that schools are incorporated in (McLeod & Richardson, 2013). Additionally, Chang (2012) concurred that in the capacity of technology leaders, principals must promote and carry out the vision and plans to integrate technology in their schools, while motivating and providing technology professional development training and continued support for teachers. This will ultimately lead to an effective school assessment design (Chang, 2012). Perkins-Jacobs (2015) added that if principals are technologically savvy, they will be skillful with using SBTs and will be able to provide superior direction and support to teachers who are expected to integrate technology in education. Perkins-Jacobs (2015) further argued that principals whose leadership style support the integration of technology and enforce its use in the classroom, can generate a culture in the school environs that is open-minded to the use of digital devices hence effective use of technology will be visible (Perkins-Jacobs, 2015). Conversely, Perkins-Jacobs (2015) mentioned that leaders who are novices with the use of technology are unable to do a proper evaluation of teachers' technology use as part of the instructional practice and learner assessments, hence the need for tech savvy principals.

Several researchers said that for SBT to be effectively integrated in teaching and learning principals must be involved to ensure its instructional advancement (Banoglu et al., 2016; McKnight et al., 2016). Additionally, Vatanartiran and Karadeniz (2015)

agreed that the effective and meaningful use of the technology in classrooms started with school principals. But even though principals are influential when it comes to reducing challenges regarding technology integration, they cannot do it without ensuring they encourage teachers to integrate the technologies in their classroom instruction (Wegerif, 2015). Brown and Jacobsen (2016) proposed that design-based research must take place to increase scholar practitioner partnership. According to Brown and Jacobsen, principals must develop policies and standards of care to guide the utilization of educational technologies.

Cabrera (2016) expressed that if principals provided support when it comes to the use of digital devices, such as SBs in the classroom, teachers will be more inclined to use them. Conversely, Preston et al. (2015) mentioned that more effort is needed to embed technology literate approaches into pedagogical policies, so that students of today will be able to perform effectively as global digital citizen. In addition, Malik (2015) informed that using technology is significant to the current era worldwide and it is important to examine principals' leadership roles in the promotion of educational technologies in elementary schools and the approaches the principals take in order to advance such climate. Machado and Chung (2015) suggested that principals must be proficient with the use of technology and passionate to integrate it in teaching and learning. Hence it is important to examine the leadership role principals play in the integration of SBTs in K–6 schools.

Teachers' Attitude toward the Use of Smart Board Technologies

Using SBTs in the classroom is a crucial pedagogic tool for teachers, because the technologies are permanently a part of society (Perkins-Jacob, 2015). Uluyol and Sahin (2016) expressed that an integral part of the technology integration process in educational environments is the role that teachers played. Riaz (2018) maintained that teachers have a major responsibility in integrating SBT in pedagogy. Teachers are expected to utilize the technologies to enhance their teaching in the classroom (Alberta Education, 2013; Brown & Jacobsen, 2016; Morelock, 2015). However, Dehqan et al. (2017) expressed that the majority of teachers were not keen on using the technologies and more than likely they had never included them in their classroom practices. Also, Malik (2015) mentioned that majority of teachers were not able to competently include technology in the teaching and learning process and this presented a distance in the creation of purposeful educational classrooms for learners. Pourciau (2014) conducted a study of a K–9 school, and found that the classrooms were equipped with SBTs, but most of the teachers did not use the educational technologies for the enhancement of pedagogical practices. The findings revealed that teachers needed ongoing training to teach effectively using the SBTs (Pourciau, 2014).

Additionally, Mustafina, (2016) explored teachers' attitudes toward the integration of technology in a Secondary School in the Republic of Kazakhstan. Four variables (self-confidence, knowledge, gender, age) were examined that directly influenced teachers' attitudes on technology integration. Mustafina, (2016) did an analysis to find out if there was a relationship between teachers' attitudes and the

academic motivation of students. The results revealed that teachers had positive attitudes toward technology integration in schools (Mustafina, 2016). Moreover, the analysis indicated that the four variables had potential influences to change the attitudes of teachers in the technology integration process (Mustafina, 2016). An interesting revelation from the study was the preconception regarding age and gender that impeded the technology integration process in pedagogy (Mustafina, 2016). The statistical analysis showed that the attitude of teachers in the technology integration process directly influenced the academic motivation of students (Mustafina, 2016).

Al-Rabaani (2018) opined that in order to reap the real benefits of SBT depended largely on the qualification of teachers in the area of SBT training and their confidence to embrace and apply the technology in their instructional practices. On the other hand, some teachers are resistant to incorporate SBTs in their instructional practices because they are trained prior to the digital age causing them to lack confidence in teaching with the technologies (Momani et al., 2016). But Pourciau (2014) stated that part of the reason why teachers did not maximize the use of the SB in the classroom was the lack of continuous training, and also the method used to train teachers might have been ineffective. The teachers' belief in teaching with technology pose a major barrier to the effective technology integration process because they are the ones who bring about the change in the pedagogic process (Ghavifekr & Rosdy, 2015). Another reason for teachers' reluctance to teach with SBT is the fear of the device malfunctioning during the lesson and most times there is no technical assistance on hand (Ghavifekr & Rosdy, 2015).

Gura and Percy (2005) more than a decade ago mentioned that some teachers were “resistant to change” (p. 2) and were unwilling to avert the traditional way of imparting knowledge and were referred to as “the typewriter generation” (p. 133). But Al-Rabaani (2018) expressed that if teachers are supported and provided with adequate training, it will boost their confidence level and they will be able to effectively teach with SBT. Hence, the motivation of teachers in the use of SBTs is imperative for the enhancement of students’ learning. In fact, when teachers are motivated it show increase use of technologies in teaching and learning (Uluyol & Sahin, 2016). It is important that teachers are mindful of what creates paramount performances in teaching with technology and that a student-centered approach is inevitable for today’s digital natives (Prensky, 2010). The student-centered approach supports a technologized learning environment where the students are no longer passive learners, but are given a chance to actively participate in their learning (Onder & Aydin, 2015). According to Williams (2015) a major precondition to accept and integrate technology in the teaching and learning process is whether teachers display a positive attitude in using the devices. While it is understood that for technology integration to be effective in the pedagogic process, teachers need professional training and resources must be in place, it still remains the attitude of the teachers to effectively use the devices in the classroom. Williams (2015) mentioned that teachers’ view of technology use in the classroom is imperative, as a positive mindset can assist them to be more effective during instruction. Meanwhile Carver (2016) opined that negative attitude toward instructional technology

use by teachers present a resistive atmosphere toward learning about digital devices and will influence the decision and use of technology in the classroom.

Teachers Need for Support in the SBT Integration Process

Teachers are expected to use SBT to enhance student learning yet they receive very little support on how to use the technologies in their instructional practice (McKenney & Visscher, 2019). With various kinds of educational technologies filling up classrooms, principals must be mindful of the importance of and take care to address the needs of teachers for a successful technology integration process (Hopster-den Otter et al., 2017). Providing supports for teachers in the form of ongoing professional development and resources, teachers would feel empowered and would be more inclined to integrate technology in the classroom (Gashan & Alshumaimeri, 2015). İstifçi et al. (2018) confirmed that some teachers are enthusiastic about using SBT in the class. But lack of ongoing technical professional development discourage teachers and cause them to lose interest in teaching with SBTs and return to the traditional ways of teaching (Guerrero & Velastegui, 2017; Momani et al., 2016). Teachers are expected to use the technology in the classroom to enhance the teaching and learning process; and the anticipation is that principals will encourage and support teachers and provide professional development training to ensure the effective use of the technology in the classroom (Samancioglu et al., 2015). For teachers to effectively integrate SBTs in their teaching and learning, principals must be supportive, implement policies and ensure continuous professional development training.

Policy for Effective Technology Integration

For the effective use of SBTs, it is necessary for principals to implement policies to make it mandatory for teachers to use the instructional technologies to prepare students for 21st century learning (Gabby et al., 2016). According to Alsaleh and Mahroum (2015) policies provide the path to hold individuals accountable, and to provide accountability is an important starting point for the effective use of instructional technology in schools. In order to implement a policy and to ensure the policy mandate is being carried out by teachers to use the SBT in a way that enhances students' learning, principals must first be competent in using the technology (Dunham, 2012). If principals are competent with using instructional devices they will be able to promote the development of policy which will push teachers to support the use of technology in teaching and learning (Dunham, 2012). Without the implementation of policy, the decision would be left up to teachers to use or not use the SBTs to support and enhance learning.

Student Attitudes on the Use of Smart Board Technology

Given the increasing emphasis on the use of instructional technology in schools, SBT is recognized as an important device that increases student engagement and performance. According to Tertemiz et al. (2015) keeping students engage is a crucial part in their learning and a great way is by teaching with technology, especially SBTs.

In an effort to examine elementary school students' attitudes when SB was used in their teaching and learning, Gurbuzturk (2018) used quantitative methods to conduct a study on Grade 4 to Grade 8 students in three elementary to junior high schools in the province of Malatya. Gurbuzturk (2018) collected data using a Smart Board Attitude

Scale developed by Sad (2012). The questionnaire consisted of 10 items and a 5-point Likert scale was used in the data collection (Gurbuzturk, 2018). The findings revealed that the participants had a positive attitude on the use of SB in their learning (Gurbuzturk, 2018).

Likewise, Yapici and Karakoyun (2016) investigated the attitudes of secondary school students toward the use of SB in their Biology classes. Yapici and Karakoyun (2016) used the "Student Attitude Scale for Smart Board Use" generated by Elaziz to collect data from 200 high schools' students using a survey. The results revealed that the overall attitude of the students was positive, less time was used in the delivery of instruction, the motivational level of students was increased and the student found the lesson interesting because they were able to see the images and move text around (Yapici & Karakoyun, 2016). Also, with the use of the SB in the Biology class, the students had a better understanding and grasped the content quicker (Yapici & Karakoyun, 2016).

In another Biology class of tenth graders at Anatolian High School in the Izmir, Onder and Aydin (2016) were interested to find out the effect on academic achievement when the SB was used. Onder and Aydin (2016) collected data from 50 participants using a mixed method study, quasi-experimental design including pretest, posttest groups and semi-structured interviews to gather data, but only interviewed 10 students in the test group. The participants in the test group were taught based on the student centered approach, using the SB, while those in the control group were taught via the curriculum that was used at that time (Onder & Aydin, 2016). The results revealed a significant difference between achievements of both student groups (Onder & Aydin, 2016). The test

group scores were much higher than that of the control group of student (Onder & Aydin, 2016). The test group students who were interviewed gave detailed views about the use of SB in their learning (Onder & Aydin, 2016). Among the positive highlights from the participant in the test group regarding the use of the SB was that when used in the teaching and learning process it made students' learning more interesting, engaging, meaningful, attractive and interacting (Onder & Aydin, 2016).

The Malaysian students under achieved in an international assessment test in data handling that mainly focused on higher order thinking skills, and therefore Julius et al. (2018) pursued a study on "Using digital SB to overcome higher order thinking skills learning difficulties in data handling among primary school students" to identify the learning difficulties students faced in data handling at the various higher order thinking skills level. Julius et al. (2018) also examined the effect the SB had when used to overcome data handling in higher order thinking skills. Julius et al. (2018) used semi structured interview by way of purposive sampling to collect data from five veteran Math teachers and 30 Grade 5 students. The results revealed that the use of the SBs had a positive effect on student attitude and accomplishment and boosted their confidence in tackling Math (Julius et al., 2018). The report further revealed that the SB increased the interaction among students, kept them highly engaged and little supervision was needed for them to complete their work (Julius et al., 2018).

Luo and Yang (2016) investigated how students at the elementary level perceived the way teachers use the many interactive features of the IWB in their classes. Luo and Yang (2016) also wanted to find out the effect the different interactive functions of the

IWB had on the learning attitudes of the students. Luo and Yang (2016) used a survey to collect the data from 554 students. The results revealed that the use of the interactive function of the IWB by the teachers assisted the students to develop positive attitudes toward learning, allowed them to enjoy the lesson, and they thought the IWB was beneficial and allowed enjoyment in learning (Luo & Yang, 2016). An important revelation was that part of the enjoyment and engagement with the lesson stemmed from the students being able to physically operate the IWB (Luo & Yang, 2016).

Gursoy and Celikoz (2017) examined the effects of SB on students' attitudes in a fashion design and clothing education course and 51 students participated in the study. Gursoy and Celikoz (2017) used a pretest, posttest control group design and a self-made attitude scale to generate the results. Gursoy and Celikoz (2017) used the SB to teach the two experimental groups; one face-to-face and the other Synchronous E-Learning. Gursoy and Celikoz (2017) taught the control group using the traditional style of teaching. The results revealed that the experimental groups that were taught with the SB displayed more positive attitudes than those who were taught the traditional way (Gursoy & Celikoz, 2017).

In another study, Tertemiz et al. (2015) used qualitative methods to examine the use of SBs based on the perspectives of both students and teachers at the elementary level in a private school in Istanbul. Tertemiz et al. (2015) collected the data using semi structured interviews and used Content Analysis to analyze the data. Tertemiz et al. (2015) evaluated the beliefs of the students and the teachers based on the positive and negative inference of using the SBs. The results revealed that the use of the SB in the

teaching and learning process maximized students' motivation and engagement (Tertemiz et al., 2015).

Student Engagement and Motivation

Le Lant and Lawson (2016) stated that SB positively affects students' learning and the perception is that it motivates both students and teachers. According to Le Lant and Lawson (2016), the versatility of the SB netted the attention of students and transitioned students from the traditional 'chalk and talk' way of learning to a more constructivist learning environment. The fact that students are born in the digital age and are accustomed to using electronic devices, whether to play electronic games or to interact with peers online have already link them to what they enjoy, hence students are motivated to learn in a digitally enhanced medium (Le Lant & Lawson, 2016). Students are able to visualize, verbalize or use their aural ability to understand and grasp the lesson (Alfaki & Khamis, 2018). Alfaki and Khamis (2018) maintained that the SB is a major motivational device for student learning and that it is beneficial to students who are intrinsically or extrinsically motivated. They expressed that the SB is a colorful device which the students found pleasurable manipulating text, images and moving around objects (Alfaki & Khamis, 2018).

Summary

This study of understanding the leadership roles of the principals to support teachers in the integration of SBTs in K–6 schools and understanding how principals' develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools used the transformational leadership theory and the learning and

technology policy framework to provide understanding and guidance. The transformational leadership theory helps principals to be innovative and provide leadership qualities that support creative and positive change in teachers while the framework guides the process. The sub topics and related studies gave insights on the benefits and challenges, and the leadership role that the principals played in the integration of SBTs in the schools. According to Kelly (2015), principals must be innovative and preemptive in their quest to alleviate technology integration challenges. While Momani et al. (2016) articulated the need for principals and teachers shared responsibility to adequately integrate SBTs in the teaching and learning process.

The review of literature suggests that the technology integration, especially SBT is crucial to the teaching and learning process. It motivates, engages and increases student performance. For the SB to be effectively integrated in the classroom teachers need support and professional development. Also, a technology support personnel is needed on location to facilitate and support teachers in their instructional practices. Having these supports in place will boost the confidence level of teachers to integrate SBT in teaching and learning. The SB is versatile and supports student motivation and engagement, but even though it has many advantages, several disadvantages are highlighted in the literature. In the review of literature, the researchers emphasized that resources should be provided for teachers to become digitally literate in addition to ongoing training which would ultimately lead to higher order thinking skills and ultimately prepare students for a technologically enhanced society. Finally, for the successful SBT integration process, principals must be adept with using technologies and must be ready to motivate teachers

and in the process implement policies to ensure effective SBT integration. In the review of the literature, I was not able to find any research that addressed the leadership role of the principal in terms of support for teachers in the SBT integration process and policies and practices implemented to ensure a successful SBT integration process.

In Chapter 3, I discussed methodology and design, my role as a researcher, and disclosed any potential conflicts and biases. I also discussed in details the sampling strategies, data collection, analysis of data, ethical considerations and trustworthiness.

Chapter 3: Research Method

Introduction

The purpose of this study was to understand principals' perspectives regarding their leadership roles in the integration of SBT in K–6 schools in an urban setting in Canada. In Chapter 2, I examined research relating to the importance of technology, SBT, advantages and disadvantages of SBT, role of the principal, and teachers' attitude toward the use of SBTs, teachers need for support in the SBT integration process and policy for effective technology integration. I also examined student attitudes on the use of SBT and student engagement and motivation in my literature review.

I used a basic qualitative approach to pursue this study. Qualitative methodology is versatile and provides multiple options to researchers. These options include phenomenology, grounded theory, case study, ethnography, narrative, and basic qualitative research (Creswell, 2018; Merriam, 2015). However, I used the basic qualitative study as it was deemed most appropriate to yield the desired outcome. The basic qualitative approach is used to explore and understand thoughts and feelings people attribute to a human issue (Creswell, 2018). According to Merriam (2009), a basic qualitative study is used by researchers to provide a "rich thick description" (p. 29) of the phenomena being studied and readers are able to transfer results to their particular context. I explored and comprehended the meaning principals attributed to the integration of SBTs in the schools and I gave rich and substantial description of the participants (see Creswell, 2018 & Merriam, 2009). According to Creswell (2018), using qualitative design the researcher generates questions, proceed with data collection, analyze data

inductively, bringing about overall themes and understanding of what the data means. Merriam (2009) added that the researcher discovers, and interprets the meanings of the question under investigation. I carried out this research to understand K–6 principals' perspective regarding their leadership roles and responsibilities in the SBT integration process; and I wanted to find out whether principals put policies and practices in place to support teachers to ensure effective integration of the SBT in the teaching and learning process. I conducted a search of the literature, and a vast amount of literature surrounding the integration of technology in schools from the perspective of the teachers emerged. İstifçi et al. (2018), McKnight et al. (2016), and Momani et al. (2016) confirmed that there was a vast amount of literature surrounding the integration of technology in schools from the teachers' perspective. There has been little investigation on the integration of technology from the point of view of principals. Furthermore, I was unable to find any literature regarding the leadership role of the principal in the integration of SBTs. Davidovitch and Yavich (2017), Hebing (2017) and Worden (2017) in their review of the literature established that the SBT when used properly in the classroom enhances student performance and engagement. In Chapter 3, I included the research method I used in the study along with a description of the research design and rationale, and the role of the researcher. I discussed the research methodology including the participants, instrumentation, plan for data collection and data analysis. I also discussed the issues of trust worthiness and the potential risk to the validity of the study and ethical considerations regarding this study.

Research Design and Rationale

The following research questions guided the study:

RQ1: What are the perspectives of the K-6 principals regarding their leadership roles and responsibilities in the integration of SBTs?

RQ2: How do principals develop policies and practices that support teachers in the effective use and integration of SBTs in their schools?

I included an interview protocol (see Appendix A for the interview protocol) which I used to develop the questions that were explored during the interview in order to gain answers to the research questions. Using the interview guide served as a directory to ensure that the questions asked brought about responses that expounded on the topic explored (Patton, 2015).

The qualitative design is a flexible emergent design and researchers avoid any possibility getting tied up into inflexible designs that reduce openness (Johnson & Christensen, 2017). Hence, with the use of qualitative methods, I explored and understood the perspectives of the K–6 principals regarding their leadership roles and responsibilities in the integration of SBTs and whether the principals develop policies and practices that support the effective use and integration of SBTs in their schools. A quantitative researcher would be more concerned with testing a hypothesis deductively in order to examine the relationship between variables (Creswell, 2018; Merriam, 2015).

Using qualitative methodologies, I collected data and develop concepts, which I used to analyze the data in an inductive manner (see Creswell, 2018). I interpreted the meaning of the data from the themes that emerged. On the other hand, data collected

using quantitative methods would be analyzed deductively using statistical procedures; and the results would be generalizable to the larger population (Creswell, 2018). The quantitative paradigm includes experiment, which consists of complex structured equations which involves the use of variables and treatments (Creswell, 2018). Qualitative researchers do not use numerical data and is not based on breaking down reality into preset variables to arrive at a conclusion but researchers explore and understand the meaning groups or persons ascribe to a human or social matter (Creswell, 2018). In this study I explored perspectives that provided insight on a human problem and therefore the use of quantitative approach was deemed unsuitable for this study. Therefore I chose a basic qualitative study as the main goal was to understand the principals' perspectives regarding their leadership roles in the integration of SBT in K–6 schools. The results of this study may help principals implement policies that will support teachers in the effective use of the SBT to enhance learning and thereby increasing student engagement and performance. To collect data for this study, I interviewed principals in K–6 schools in an urban setting in Canada

Role of the Researcher

In a qualitative study, the researcher's role is critical, as they are responsible for beginning, developing, and recruiting of participants, in addition to collecting, and ensuring the accuracy of the interviews, analyzing the data, and writing the study (Creswell, 2018). Merriam (2009) stated that humans are the chief instrument for collecting and analyzing data in qualitative study; and the interpretation of reality are gained by way of the researcher conducting interviews and observing. In this study, I

served as the chief researcher. My role as chief researcher involved developing the research design for the study, selecting and recruiting participants, collecting data, and analyzing the data. As chief researcher, an important part of my role was to develop strategies to strengthen trustworthiness of my study, in addition to being responsible for reporting results and making recommendations for future research.

Creswell (2018) and Merriam (2009) explained that there is the potential for bias in carrying out the study which can greatly affect the accuracy of outcomes and must be addressed. Therefore, the researcher must take care to address biases prior to the study. Being mindful of the interaction between the participants and the researcher and the development of the interview questions is of great significance (Bourke, 2014). I followed the recommendations by Creswell and Merriam to address any biases that I had. I took care to interact with the participants in an authentic and unbiased manner. Bourke (2014) stated that showing respect, listening attentively, establishing rapport, and ensuring privacy and confidentiality in all aspects of the data collection is essential in conducting a credible and authentic study. I used these guidelines set out by Bourke and I was able to conduct myself appropriately throughout the data collection process. I personally evaluated and addressed any potential bias before starting the research as any form of bias could impact the outcome of the study. With the use of his self-evaluation to remove potential bias I remain objective and nonjudgmental in thought and actions. Rubin and Rubin (2012) expressed the importance of using analytical memos to check for accuracy and to analyze the data collected. Therefore, I used analytical memos to confirm

the interpretations and I was critical in the analysis of the data. I recorded analytical thoughts and relevant points during data collection.

My past position as a substitute teacher and current position as a teacher did not impact my role in the research as I had no relationship with the participants; and therefore eliminated the potential for bias. My role as researcher did not conflict with my past or current position as I avoided schools that I taught at and principals that I knew. The decision to avoid recruiting or selecting participants with whom I worked or knew minimized any potential conflict. Almost every school in the district is equipped with SBs and I have been able to see and experience how the SBs are being used. Even though this could limit my point of view, the experience made me more aware of the features and use of the SB and how it was being used and therefore I sought to gain an understanding from the perspectives of the principals regarding their leadership roles in the integration of SBTs.

I sought to get an in depth understanding of the leadership role of the principals in the integration of SBTs in K–6 schools. Using the basic qualitative research design was necessary to discover whether and how policies are implemented by the principals to ensure the effective use of the SB to enhance student learning. The basic qualitative design was also essential to get firsthand information of the participants' experiences, find what meaning they ascribed to their experiences (Merriam, 2009). Most of all, the qualitative methodology was used to find out whether and how the participants ensured the effective use of the SB to increase the student performance and engagement which will ultimately set up the students for success. Recognizing the worldviews of the

participants and taking control of my own biases for the full protection of the participants increased the validity and credibility of the study. Prior to collecting the data, I made certain that after I contacted a potential participant and they agreed to participate, I sent out the informed consent form to all the participants for their approval to carry out the interviews. All the participants responded to the email with the informed consent form with the phrases, “I consent” or “I agree.”

Interviewees were apprised of the research process and given the assurance that they would not face any harm due to their participation in the study. It is the obligation of the researcher to ensure that participants are not pressured in any way. There was no coercion, no dishonesty, and the participants were shown respect from the initial contact to the final and no promises were broken. Ravitch and Carl (2016) expressed that protecting privacy, reducing harm, and respecting the shared experiences of the participants is most important. They further added that those who participate in research must be seen as the masters of their own experiences (Ravitch & Carl, 2016). While, Johnson and Christensen (2017) stated that a person who engage in research must be capable to carry out the study.

To demonstrate accuracy, validity, and trustworthiness of the results, member checking was done, and to control for bias, I constantly self-reflected, in addition to keeping a personal journal to note my thoughts and feelings during the research process. As part of controlling for potential bias, Aurini et al. (2016) and Creswell (2018) urged that researchers make contact with participants to verify the accuracy of the reports. Therefore, I contacted participants by way of email to verify the final report of their

interviews. The most common measures used to achieve trustworthiness in qualitative research are credibility, transferability, dependability, confirmability, and authenticity (Cope, 2014). I followed these procedures to strengthen the trustworthiness of this research:

- Credibility: Korstjens and Moser (2018) defined credibility as the confidence that is placed in the truth results of the study. I ensured the truth of the data by using triangulation, member checking, and audit trail which is explained in the methodology of the study. Polit and Beck (2012) posited that the views of the participants and how the data are interpreted and represented by the researcher is crucial to the credibility of this study.
- Transferability: To ensure transferability the researcher use a thick and rich description of the process of the research and the participants to provide readers with evidence that the results from the study could be transferred to other settings, situations, context, or respondents (Korstjens & Moser, 2018).
- Dependability: Dependability is an important criterion to ensure trustworthiness as the results of the study must be confirmed as consistent and may be repeatable (Lincoln & Guba, 1985). The aim is to verify that the results are consistent and stable with the raw data that will be collected (Korstjens & Moser, 2018). I used an audit trail is to ensure my results were dependable. I ensured that my data analysis was reliable and in keeping with accepted standards for pursuing a basic qualitative study.

- Confirmability: To ensure confirmability, Korstjens and Moser (2018) maintained that an audit trail is needed. The audit trail is a detailed documentation of the data collection process, data analysis and interpretation of the data .Polit and Beck (2012) stated that the responses from the participants must be accurate and should not be the views of the researcher. Therefore, I ensured the data collected were the correct responses from the participants and not my views or biases. I provided a rich description of the findings and interpretation and showed that the results were directly from the data. Cope (2014) advised that a rich account of the findings, describing each emerging theme must be reported.
- Authenticity: According to Polit and Beck (2012), the researcher must faithfully express the moods and passions of the participants' experiences. Reporting the results descriptively is essential for the readers to understand the core of the experience by way of the narratives from the participants (Cope, 2014). I followed the advice from Polit and Beck.

Using these measures, I ensured that this qualitative study was credible and according to Cope (2014) the truth of the data were evident. Rubin and Rubin (2012) mentioned that the credibility of the research is dependent on how knowledgeable the interviewees are about the research topic.

Methodology

I pursued a basic qualitative research design to understand the leadership roles of the principal in the integration of SBTs and to understand how principals develop policies and practices that support teachers in the effective use and integration of SBT in K–6

schools. The population for this study was K–6 principals in an urban setting in Canada. Merriam stated that data are collected by way of "interviews, observations, or document analysis" (2009, p. 23). However, I collected all data in this study through telephone interviews with the K–6 principals. The basic qualitative research design was the preferred choice because I used this design to obtain an in depth understanding from participants regarding their leadership role in the SBT integration process in K–6 schools.

I used purposeful sampling to obtain participants for this study. Using this sampling technique I chose participants from the population of interest to take part in the study. According to Johnson and Christen (2017), purposeful sampling is not randomized and the researcher is able to ask participants with the particular characteristics to take part in the study. I used this method of sampling to select participants from the population where principals meet the inclusion criteria. Criteria for the sample were twofold: the participants must serve as a principal in K–6 schools; the participant must have SBTs implemented in their K–6 classrooms. I interviewed seven principals. Creswell (2018) explained that qualitative research normally has a small number of participants which is dependent on the design being used.

I used purposefully sampling to identifying and select K–6 principals to gain a better understanding of the problem being researched and the research questions. Upon receiving approval from Walden University's Institutional Review Board (IRB), approval number 03-06-20-0617395 and gaining permission from the school district to pursue the study, I contacted the principals who met the inclusion criteria by telephone, for an introduction and apprised them of the study. I provided the participants with a detailed

explanation about the study via email. I assured the participants of the ethical guidelines, so that they understood that they would remain anonymous and all information provided would remain confidential (see Gill et al., 2008). Based on the participants' responses, I followed up with emails and telephone calls to talk more about the study and to find out about their comfort level in participating in the study. In this way I established a good rapport and gain the participants trust (see Rubin & Rubin, 2012). Rubin and Rubin (2012) stated that people are often inclined to converse with you if they build personal connection with you. Rubin and Rubin further explained that the researcher should make contact with the participant several time before proceeding with the interview. The participants who were willing to take part in the study I sent them the research contract and consent form and asked them to sign the consent form.

Once the participants agreed to participate in the study, I proceeded to set a convenient date and time with each of the participant in order to conduct the telephone interview. The time to collect the data was approximately three weeks. I collected the data using semistructured interviews via telephone and I audio recorded each interview. I transcribed, coded and thematically analyzed the data. The codes are used to retrieve responses during the interview and the identification of distinctive features within the data (Rubin & Rubin, 2012). Saldana (2016) acknowledged that coding is an interpretative act and a code is represented as a word, a short phrase or sentence that emerges from conducting interviews, or collecting data using videos, or transcripts. I coded the data and categories and themes emerged. Specifically, the coding process served to summarize and synthesize what was happening in the data (Saldana, 2016). I

continued coding, generating themes until the themes were recurring and nothing new was apparent. Once the data I received was sufficient and addressed all the research questions, interviewing stopped, resulting in data saturation. Fusch and Ness (2015) stated that data saturation is achieved when there is sufficient data to address the research questions and the themes are recurring and nothing new appear.

Instrumentation

Creswell (2018) noted that the researcher is the main instrument in the data collection process and is able to collect data through the examination of documents, observation of behaviors or interviewing of participants. I collected the data only with the use of interviews over the telephone. I used semi-structured interviews with open ended questions in addition to an interview protocol that I developed. After the development of the interview protocol, it was imperative to get feedback from an expert committee. I contacted two experts who recently graduated with PhDs and were principals and were also colleagues of mine to review the alignment of the interview protocol with the research questions. A researcher contacts an expert in the field to get feedback "on how they think the questions will work" (Maxwell, 2013, p. 101). Insights from the volunteers clarified whether the interview questions were clear, whether the questions were confusing or ambiguous and needed to be adjusted or revised, and whether the interviewees thought they had pertinent answers (Hurst et al., 2015). I received feedback form the two principals regarding the pilot test (interview protocol). According to Dikko (2016) a researcher must ascertain whether the instrument can generate the desired outcome based on the objectives of the study. Validating this interview protocol was

subjected to the approval from Walden's IRB and the school district. Subsequent to the approval I proceeded with the validation process. According to Yeong et al. (2018), the validation can reveal unforeseen but worthwhile results which help researchers fine tune interview questions resulting in a smoother interview process. Creswell (2018) informed that researchers have no intention to use or rely on other researchers' questionnaires or instruments. The developed the interview questions alone and the participants had the opportunity to freely answer without any form of partiality.

In order to glean this information, the accuracy, analysis and development of the data collection by way of interviews were foremost. Part of the analysis was writing analytical memos based on the interviews. I audio taped and transcribed the interviews. Shortly after, I compared the interview and the transcriptions with the audio recording to ensure accuracy. I transcribed the interviews within a day of conducting the interview. According to Saldana (2016), the writings are used to gain understanding of the phenomena being investigated after transcription. I proceeded to code the transcript. Saldana explained that a code can take the form of a word, phrase or sentence which captures the features of the data. The codes generated had similar features emerging from the data. From the distinctive features, categories developed and from the categories, themes emerged from careful review of the participants' interview transcripts. I reviewed the transcripts and gathered information on the interviewee's perspective of the topic, which helped with the generation of accurate results. The summary statements (themes) were essential for the interpretation and also triangulation of the data. Rubin and Rubin (2012) described summary statements as themes that justify the reason things happen,

explain the meaning of things or thoughts and feelings of participants. Creswell (2018) and Merriam (2009) informed that an important feature of research using qualitative methodology is to describe the phenomena being researched using a rich and thick account to report the results, allowing the reader to move results to their particular setting. Hence, I used a thick and rich explanation to convey the results based on interviews from the participants. In addition to member checking to ensure accurate results, I emailed the final report back to the participants for them to say whether the reports are correct. Additionally, I contacted an external auditor who does not know anything about the study to review the entire research (see Creswell, 2018). Having an external auditor to review the entire research enhances the overall trustworthiness of the research project (Creswell, 2018). The privacy of the participants was protected as each participant was given a pseudonym name. The participating organization privacy was protected as the name, location and any other information that would identify the organization was omitted in the study.

Data Analysis Plan

The plan for data analysis took on an inductive approach (Creswell, 2018). I used semistructured telephone interviews to collect the data. I audio recorded the interviews. I transcribed the recorded interviews, coded and thematically analyzed the data. According to Saldana (2016) a code is a word, phrase or sentence that signifies aspects of data obtained from interviews, videos or transcripts; and the coding is interpretive. The initial coding process derived a number of codes related to the perspective of the principals. I grouped similar codes together on a color coded spreadsheet which helped with the

writing of memos and generating of themes until the saturation point was reached. The grouping of the codes generated broader thematic categories and further developed smaller number of themes for a basic qualitative study (Creswell, 2018). Engaging in a second round of coding, results into more emergent themes (Saldana, 2016) Therefore I continued to organize the themes during the second round of coding in which common themes were generated. I used NVivo12 software to code the data in order to find common themes. I uploaded the transcribed data from the interviews in the NVivo12 software which made it possible to create codes based on common information that was found in the data. I continued the coding and more categories were developed. According to Saldana (2016), a category is the putting together of similar codes; and from the categories themes emerged. I used the information gleaned from the thematic coding to explain how the results from the interviews related to the research that was underway. The themes generated are significant and "parsimonious units of analysis" (Saldana, 2016, p. 236). The themes formed the major findings in the study. From the themes, I was finalized the results based on the research questions and I reflected on the study.

To ensure confidentiality and to preserve data integrity, I safely secured all data collected from the participants on a password protected computer at my home and no unauthorized person had access to the data. I transcribed and coded the raw data from digitally recorded interviews for thematic interpretation. I securely stored the digital recordings in a locked and password protected file on my computer that no one was able to access. The data had unique identifiable names (letters of the alphabet) and were saved on a USB stick solely for this study which I also securely stored. The USB stick will be

securely stowed for five years after the completion date of the study and the data will be permanently deleted afterwards as per Walden University IRB and the APA guidelines. The data were coded using the NVivo12 software. Using the NVivo12 software to analyze the data eliminated potential biases and I was able to objectively evaluate the data. The NVivo12 software was essential for the identification and organization of themes, leading up to emergent and contributing themes of the research.

Issues of Trustworthiness

In pursuing this qualitative research, my intention was to understand the perspectives regarding the leadership role and responsibilities of principals in the integration of SBTs in K–6 school. More specifically qualitative research is an investigative process where the person carrying out the research steadily makes sense of a social phenomenon by using different strategies such as making comparison, contrasting or replicating, and the study is done in a natural setting with human behavior (Creswell, 2018). In conducting this qualitative research, the objectivity and truthfulness of the study were critical (Creswell, 2018).

I used member checking to arrange for participants to conclude the accuracy of the outcomes which improved the credibility of my study. By member checking the researcher sends the end result of the report to the participants for their review and approval (Creswell, 2018). The use of the member checks was crucial for the participants to provide their input as to whether they were in agreement with the findings (Creswell, 2018). If the participants are in agreement with the results then the study is deemed credible (Birt et al., 2016). Creswell (2018) and Merriam (2009) agreed that to ensure

reliability and trustworthiness of a study, researchers must use a rich, thick description to provide detail of the context of the study and will add to the validity of the findings. According to Creswell (2018), the rich thick description will give several perspectives regarding the theme, causing the results to become more conclusive and richer.

Another method I used to add rigor to the data collection was triangulation. According to Fusch et al. (2018) triangulation adds depth to the collected data and increases the credibility of the results. Triangulation incorporates many methods of data collection regarding a particular event which is enhanced by multiple methods of analysis (Denzin, 1978). Because I only used interviews to collect the data, I conducted a follow up interview with participants after member checking in order to triangulate the data. I use this method of a follow up interview to examine evidence from the data in order to generate a clear explanation for themes. If the themes generated yield similar results based on the perspectives from the participants then triangulation will be achieved as the evidences collected will lead to the same outcomes; which will add trustworthiness to the research (Creswell, 2018; Johnson & Christensen, 2017). According to the researchers triangulation can significantly increase the credibility of the result of a study (Creswell, 2018; Fusch et al., 2018; Johnson & Christensen, 2017). Lincoln and Guba (1985) expressed the importance of employing an external reader who knows nothing about the study or the researcher to review the entire study in order to provide an objective assessment of the research. Hence, I employed a second reader who was unfamiliar to me or the study to objectively assess my entire study.

Another method I used was analytic memos. According to Rubin and Rubin (2012) researchers use analytic memos to confirm the interpretations and make a critical analysis of the data collected. The use of analytical memos was important for the recording of analytical thoughts and relevant points regarding information that was crucial to expand the data collected from interviews (Johnson & Christensen, 2017). According to Johnson and Christensen (2017) and Saldana (2016), the use of memos allow researchers to write reflective memos to themselves and can include thoughts on concepts that emerge, themes or patterns found in the data collected as well as deal with bias.

In conducting the study, the objectivity and truthfulness in every aspect of the research were crucial. The most common measures used to develop trustworthiness in qualitative research are credibility, dependability, confirmability and transferability, and authenticity (Lincoln & Guba, 1985). Using these measures, I ensured that this qualitative study was credible. According to Cope (2014) following these protocol put forth by Lincoln and Guba, the truth of the data will be apparent. Rubin and Rubin (2012) mentioned that the credibility of the research is dependent on how knowledgeable the interviewees are about the research topic. Once this is established, it is important to find out the experiences of the interviewees by "asking them politely if they are speaking from firsthand experience" (Rubin & Rubin, 2012, p. 65). To ensure trust worthiness, I build relationships with the participants. Building the relationships, I was able to set boundaries. I emailed and had telephone conversations with the participants several times so that they were able to develop trust and in return they would be honest in responding

to the questions during the interviews. According to Ravitch and Carl (2016), taking this kind of approach in research in building relationships is relational and taking care to build rapport with the participants will greatly benefit the research. Building rapport and setting boundaries in the research is a good way to maintain professionalism and the participants will be able to build trust in the researcher and will provide honest and accurate information (Ravitch & Carl, 2016). Dependability and transferability were important aspects of the study in that the results may be replicated with similar participants and may be applied to other setting or groups (Cope, 2014). Cope, 2014 expressed that researchers must take care to understand the emotional state of participants during data collection. Therefore to ensure authenticity of the study, I was mindful of how the participants expressed their feelings and emotions and I made sure that I proceeded in an authentic way.

Credibility

For qualitative research, Korstjens and Moser (2018) defined credibility as the confidence that is placed in the truth results of the study. The views of participants and how the data are interpreted and represented by the researcher are crucial to the credibility of this study. (Polit & Beck, 2012). After data collection, I described my experiences and I ensured that the research findings were verified with the participants based on the recommendation by Cope (2014) and Korstjens and Moser, (2018). Several researchers stated that a study that uses qualitative methodologies is considered credible if during the reporting phase, the researcher demonstrates different strategies such as continued engagement, triangulation, member checking, audit trail and persistent

observation (Creswell, 2018; Cope, 2014; Korstjens & Moser, 2018). However, Korstjens and Moser warned that not all the strategies will be suitable in every research setting, hence, it was imperative that I determined at the design phase of the study which strategies would work. Therefore I considered triangulation, member checking and audit trail to be most appropriate to ensure credibility of my study.

Transferability

Korstjens and Moser (2018) and Polit and Beck (2012) explained that transferability happens when the researcher provides a rich account of the research process and the participants, enabling the reader to make an assessment of whether the research findings can be transferred to their particular setting. Hence, I ensured transferability by using a thick and rich description of the process of the research and the participants to provide readers with evidence that the results from the study could be transferred to other settings, situations, context or respondents. According to Korstjens and Moser (2018) and Lincoln and Guba (1985), the researcher does not know the settings of the reader and therefore will not be able to prove that the results of the study will be applicable. This process is known as transferability judgement (Korstjens & Moser, 2018; Lincoln & Guba, 1985). Additionally, Merriam (2009) said that the main reason for pursuing a qualitative study is to give a "rich thick description" (p. 29) of the phenomena being researched in order that readers can transfer results to their specific context. Hence, I addressed transferability by indicating how the results of this study regarding the perspectives of the K–6 principals based on their leadership roles and responsibilities in the integration of SBTs in their schools could be applied to a similar

study using a rich and deep explanation of the phenomena I studied enabling the reader to transfer results to their own context. The use of a rich and thick account of the phenomena will be essential for readers to make the transferability judgement (Korstjens & Moser, 2018; Lincoln & Guba, 1985). And providing detailed descriptions of the results and site add to the transferability where by others will be able to replicate the study.

Dependability

Dependability is an important criteria to ensure trustworthiness as the results of the study must be confirmed as consistent and may be repeatable in comparable situations (Lincoln & Guba, 1985). Koch (2006) provided a clear description of the process involved to achieve dependability. Koch explained that the researcher documents each stage of the process of the research in the audit trail. If another person conducting a research agrees with the decisions reported in the audit trail then the study is considered dependable providing the outcome of study is reproduced with participants of the same nature and in alike conditions. The aim is to verify that the results are reliable and stable with the raw data that will be collected (Korstjens & Moser, 2018). Similarly, Korstjens and Moser (2018) and Lincoln and Guba (1985) concurred that an audit trail is the strategy needed to ensure dependability. I maintained dependability that the process of my data analysis was consistent and in keeping with accepted standards for pursuing a basic qualitative study. The strategies I used to establish dependability included setting up a database using NVivo12 software and generating an audit trail. I also ensured other readers would be able to conclude similar findings, interpretations and recommendations

about the data. Using this strategy, I made sure that there were no misguided or misleading results and nothing missed in the study.

Confirmability

Confirmability has to do with how much confidence and corroboration is placed in the data and the interpretation of the results of the study based on other researchers' reports, instead of the potential of the researcher's bias (Korstjens & Moser, 2018 ; Lincoln & Guba, 1985). To ensure confirmability, Korstjens and Moser (2018) maintained that an audit trail is needed. Therefore I provided an audit trail which is a detailed documentation of the data collection process, data analysis and interpretation of the data. Additionally, I ensured confirmability by remaining objective and neutral, and I disclosed any potential bias as I tried to maintain my integrity in reporting every action I took in pursing this study. I also took time to build rapport with the participants and to collect the data. Taking time to build relationships and collect the data promotes rich and thorough responses (Lincoln & Guba, 1985). I also ensured that my interpretation was not based on my perspective or inclinations but ultimately grounded in the data analysis process.

Reflexivity

Bourke (2014) advised that a researcher's bias and positionality can have significant impact on the accuracy of the results and may be deemed as reflexive. In pursuing this research, I was cognizant that my predispositions and positionality can greatly affect the accuracy of the results and I was mindful of the way I interacted with the participants and how I approached the research setting. Palaganas et al. (2017) stated

that reflexivity involves self-reflection which means that the researcher is vigorously involved in the study. Qualitative researchers reflect on their values, recognize, examine and comprehend how their social upbringing, position, beliefs, biases and socioeconomic status will affect their interpretation during the research (Creswell, 2018). According to Bourke (2014) and Creswell (2018), with the use of analytical memos, researchers can recognize reflexively their biases. Hence, I reflexively scrutinized myself to eliminate any bias, values and personal background that could compromise the relationship between the participants and me. I used dated analytical memos to process all thoughts and record any potential bias or assumption I made.

Ethical Procedures

The main person in the study was the researcher (Creswell, 2018). It was inevitable that the study maintains ethical standards; hence I assured the participants that all ethical standards were adhered to, in accordance with Walden IRB and the APA guidelines. Privacy and confidentiality of the principals involved in the study was of utmost importance. I informed the participants that there would be no coercion and that their participation was voluntary. The participants were also informed of the nature of the study. I clearly stated the procedure for the study and provided the participants with firsthand knowledge of how the data collected would be used. I informed the participants that there would be were no harm to them if they participated in the study; and that the information collected would be held in confidence and that no unauthorized person would have access to the data. These procedures are in keeping with the Walden IRB and the APA guidelines. I assured the participants that if there was any breach of conduct, risk of

harm to them, unethical or biased behavior of any kind to them, this situation would be dealt with immediately. I assured the participants that there would be no risk of harm, neither would there any unethical behavior of any kind during the whole process. In carrying out the data collection, I used a record identifier in the form of pseudonyms instead of participants' names to ensure anonymity. I informed the participants that there were no incentives for them to participate in the study.

Summary

In chapter 3, I explained the reason and rationale for pursuing a basic qualitative study and described the research design. I discussed my role and responsibilities in conducting the research. I highlighted the sample and instrument and the data analysis plan that I used was discussed in detail.

I addressed the issue of trustworthiness which included triangulation via member checking. I also discussed the most common measures to ensure trustworthiness. I discussed trustworthiness in details as well as how I ensured that the results from the study were credible, transferable, dependable and confirmable. Hence, I provided a detailed explanation of credibility, transferability, dependability and confirmability. I acknowledged the importance of self-awareness and reflexivity about my role in the research process in terms of data collection, analysis and interpretation of the data and assumptions which can have adverse effects on the outcome of the study. Hence I discussed reflexivity, researcher bias and positionality in details.

In chapter 4, I discussed the research setting, demographics of participants, data collection and data analysis and evidence of trustworthiness along with the findings.

Chapter 4: Results

Introduction

The purpose of this study was to explore principals' perspectives about their leadership roles and responsibilities to support teachers in the integration of SBTs in K–6 schools and to understand how principals develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools in an urban setting in Canada. To understand the perspectives of principals regarding SBTs, I used a basic qualitative research design with semistructured interviews that were well aligned to address the main research questions. The purpose of this chapter is to present the results of the perspectives of the K–6 principals. In this chapter, I discussed the setting where the interviews occurred, demographics of the participants, how I collected and analyzed the data. I further explained the evidence of trustworthiness, the results, and the summary.

Research Question

I sought answers to the following research questions:

RQ1: What are the perspectives of the K-6 principals regarding their leadership roles and responsibilities to support teachers in the integration of SBTs?

RQ2: How do principals develop policies and practices that support teachers in the effective use and integration of SBTs in their schools?

Settings

The site where this basic qualitative study took place was a public school district in an urban setting in Canada. This school district ranks among the largest school districts in Canada. The district contains a diverse population of students and staff and a large population of elementary schools among junior high and senior high schools. There is also a mix of elementary to junior high and elementary, junior high, and senior high. SBTs are implemented in almost every K–6 school within the district.

Demographics

The data in Table 1 revealed that a total of seven elementary school principals participated in this basic qualitative study. I selected all seven participants from the district school directory. Five of the participants were between 41 to 50 years old with 1 to 10 years of experience as a principal. One participant was between 31 to 40 years old and had 4 years of experience as a principal, and one participant was between 61 to 70 years of age and had 20 years of experience as a principal. Two of the participants were female and five were male. The principals each participated in the semistructured interviews composed of 11 questions. Five questions focused on the perspectives of the principals as it relates to their leadership roles and responsibilities to support teachers in the integration of SBTs and six questions focused on how principals develop policies and practices that support the effective use and integration of SBTs in their schools. I contacted four out of the seven principals to participate in Round 2 of the interviews (see Appendix A). I made the selection based on their demographics of the principals and the responses they gave in their first interview. The categories for the participant

demographic table included interview code, participant pseudonym, age group, gender, and years of experience as a principal. All participants had prior years of experience with using the SB except one participant, who had the most year experience as a school principal but little to no experience with using the SB. All seven participants were elementary school principals, and they all had SBTs implemented in their schools.

Table 1

Participants Demographics

Round 1 Interview Code	Participant Pseudonym	Age Group	Gender	Experience as Principal
1	Principal A	41-50 Years	Female	4 Years
2	Principal B	41-50 Years	Male	3 Years
3	Principal C	41-50 Years	Male	1 Year
4	Principal D	31-40 Years	Female	4 Years
5	Principal E	61-70 Years	Male	20 Years
6	Principal F	41-50 Years	Male	10 Years
7	Principal G	41-50 Years	Male	6 Years
Round 2				
8	Principal B	41-50 Years	Male	3 Years
9	Principal D	31-40 Years	Female	4 Years
10	Principal F	41-50 Years	Male	10 Years
11	Principal G	41-50 Years	Male	6 Years

Data Collection

I was given conditional approval by Walden University on March 6, 2020, pending approval by the partner organization. Due to the COVID-19 pandemic, there was a halt on getting the approval from the partner organization. On October 2, 2020, my study was approved by the partner organization and final approval was granted on December 9, 2020 by Walden University's IRB to carry out data collection. I began the recruitment process by contacting participants from a list of 20 elementary schools that I had prepared from the school district directory. I contacted the principals who met the

inclusion criteria by telephone, for an introduction and apprised them of the study. I provided the participants with a detailed explanation about the study via email. Following the recruitment process and the participants signed consent to participate in the study, the time and date to conduct the individual interview was agreed on. I collected the first round of interviews by way of telephone and the interviews lasted for 30 minutes. I invited four of the seven interviewees to participate in a second round of interviews, which lasted 10 minutes by way of the telephone. I purposefully selected the Round 2 interviewees based on the demographics and the responses from the initial interview. After I transcribed the data, I sent the responses to the participants to identify any inaccuracies or if they had any additional thoughts to include. I proceeded to code the data.

Triangulation

To enhance rigor and validity, I used triangulation in addition to seven initial interviews from principals, I approached four of the respondents for a second round of interview. In the second round I asked a different set of interview questions. (Appendix B). The interview questions were aligned with the two research questions of the study and were framed in such a way that they could verify the validity of the respondent's responses in the first round. After the initial (Round 1) interview, I analyzed all the transcripts through NVivo12 software and I identified initial codes, categories, and themes. Subsequently, I collected and transcribed the data in Round 2. I collated respondent's responses in Round 2 with patterns and themes of Round 1 to assess the validation of the findings of Round 1. The process involved adding more respondent's

statements to previously made codes and making new codes under previously made subthemes. The findings of Round 2 dovetailed with the findings of Round 1, and hence ensured rigor and validity of the results.

Data Analysis

Creswell (2018) stated that qualitative researchers analyze data inductively developing from the bottom up, categories sub themes and themes. Therefore I used an inductive approach to analyze the data collected. According to Creswell (2018), the researcher moves the data backwards and forwards between the sub themes and themes until the researcher creates a complete set of themes. Therefore, I coded and moved the data around between the categories and themes until I developed a whole set of themes. I proceeded to analyze the data. The data I collected were the responses from each participant to the questions generated to get answers to the main research questions which focused on the perspectives of the K–6 principals regarding their leadership roles and responsibilities in the integration of SBTs, and how they develop policies and practices that support the effective use and integration of SBTs in their schools. I collected the data with the use of semistructured interviews using the telephone. I downloaded a voice recorder app on my computer which I used to record each interview. I transcribed the recorded interviews manually and verbatim. Once all the transcriptions were completed, I was undecided on one of two qualitative data analysis software. The qualitative data analysis software I finally chose was NVivo12 after several tries with the free trial. I uploaded the transcribed data from the interviews in the NVivo12 software which helped to create codes based on common information that was found in the data. Using the

NVivo12, I developed categories based on the codes generated. According to Saldana (2016), a category is the putting together of similar codes and from the categories themes emerged. The initial coding process derived a number of codes related to the perspective of the principals. I grouped similar codes together in containers called nodes. I continued coding, generating themes until the themes were recurring and nothing new was apparent. Once the data I received was sufficient and addressed all the research questions interviewing stopped, resulting in data saturation. Fusch and Ness (2015) stated that data saturation is achieved when there is sufficient data to address the research questions and the themes are recurring and nothing new appear.

As I continued to code the interviews, data that showed commonality were grouped under similar node and new nodes were created from the rest of the data. Creswell (2018) stated that researchers should use codes to generate small numbers of themes or categories, and the number should be "five to seven themes" (p. 199) for a qualitative study. Therefore as I grouped the codes, broader thematic categories emerged which was essential for the development of approximately six themes for this basic qualitative study. I further organized the themes during the second round of coding in which common themes were generated. I used the information gleaned from the thematic coding to explain how the results from the interviews related to the research. I used NVivo12 software to generate a number of common themes from the codes. The themes generated form the major findings in the study, I finalized the results based on the research questions and reflected on the research.

Once all the codes and themes emerged, I grouped the themes that related to the research questions. The first research question regarding the perspectives of the K–6 principals as they relate to their leadership roles and responsibilities to support teachers in the integration of SBTs were answered from the group of codes that generated the theme: Principal expertise regarding SBT. The codes that emerged were basic, expert, highly comfortable, no experience, be part of professional association, conversation with division, convincing teachers to use SBT, provision of professional development opportunities, and provision of resources. The next theme that emerged was: Perceived roles and responsibilities. The codes that emerged were conducting need assessment, involve teachers in technological decisions, deciding appropriate technologies, using SBT as quality standard, making long term plan for technology adaptation, oversee implementation, making SBT available to teachers, provide necessary resources, professional development of teachers to use SBT, and enabling environment for use of SBT. Another theme that emerged from RQ1 was perceived benefits of SBT and the codes were high student engagement, interactive tool for students, digital literacy for students, makes teachers well organized, allow using different teaching methodology, making teaching easy. Perceived challenges in the use of SBT emerged as a theme and the subsequent codes were acquisition and maintenance of SBT is expensive, outdated equipment and technology, technical issues, teacher attitude, inability of teachers to fully utilize it, lack of professional development opportunities.

The second research question about how principals develop policies and practices that support teachers in the effective use and integration of SBTs in their schools, were

answered from the group of codes that generated the theme, strategies to support use of SBT The codes were ensuring availability of resources, technology committee, technology teacher leaders, communication with staff, sensitization that technology usage is part of quality standards, identify early adopters, professional development, support for fixing technology breakdowns. Status of effective use of SBT also emerged as a theme and the codes were interactive, premade lessons, using full options of SBT, active supervision, being a role model, conversations, encouraging teachers to use it, observations, professional development of teachers, student engagement, full utilization of SBT, regular use of SBT underutilization, varies.

Evidence of Trustworthiness

In conducting this qualitative research, the objectivity and truthfulness of the study were critical (Creswell, 2018). The criteria for evaluating research may differ slightly based on the methods used by the researcher. There are two criteria for evaluating the quality of a study: reliability and validity (Burkeholder et al., 2016). According to Burkeholder et al. (2016), validity is relative to the truth in promoting the results and the reliability refers to how consistent the findings are based on the strategy used.

I used member checking to arrange for participants to conclude the accuracy of the outcomes which improved the credibility of my study. By member checking the researcher sends the end result of the report to the participants for their review and approval (Creswell, 2018). The use of the member checks was crucial for the participants to provide their input as to whether they were in agreement with the findings (Creswell,

2018). If the participants are in agreement with the results then the study is deemed credible (Birt et al., 2016). Creswell (2018) and Merriam (2009) agreed that to ensure reliability and trustworthiness of a study, researchers must use a rich, thick description to provide detail of the context of the study and will add to the validity of the findings. According to Creswell (2018), the rich thick description will give several perspectives regarding the theme, causing the results to become more conclusive and richer.

Another method I used to add rigor to the data collection was triangulation. According to Fusch et al. (2018) triangulation adds depth to the collected data and increases the credibility of the results. Triangulation incorporates many methods of data collection regarding a particular event which is enhanced by multiple methods of analysis (Denzin, 1978). Since I only used interviews to collect the data, I conducted a follow up interview with participants after member checking in order to triangulate the data. I use this method of a follow up interview to examine evidence from the data in order to generate a clear explanation for themes. If the themes generated yield similar results based on the perspectives from the participants then triangulation will be achieved as the evidences collected will lead to the same outcomes; which will add trustworthiness to the research (Creswell, 2018; Johnson & Christensen, 2017). According to the researchers triangulation can significantly increase the credibility of the result of a study (Creswell, 2018; Fusch et al., 2018; Johnson & Christensen, 2017). Lincoln and Guba (1985) expressed the importance of employing an external reader who knows nothing about the study or the researcher to review the entire study in order to provide an objective

assessment of the research. Hence, I employed a second reader who was unfamiliar to the researcher or the study to objectively assess my entire study.

Another method I used was analytic memos. According to Rubin and Rubin (2012) researchers use analytic memos to confirm the interpretations and make a critical analysis of the data collected. The use of analytical memos was important for the recording of analytical thoughts and relevant points regarding information that was crucial to expand the data collected from interviews (Johnson & Christensen, 2017). According to Johnson and Christensen (2017) and Saldana (2016), the use of memos allow researchers to write reflective memos to themselves and can include thoughts on concepts that emerge, themes or patterns found in the data collected as well as deal with bias.

In conducting this study, it was imperative that I was objective and truthful in every aspect. Lincoln and Guba, (1985) advised that the most common measures used to develop trustworthiness in qualitative research were credibility, dependability, confirmability and transferability, and authenticity. I used these measures from Lincoln and Guba as a yardstick to assess myself and I ensured that this qualitative study was credible. According to Cope (2014) following these protocol, the truth of the data will be apparent.

Rubin and Rubin (2012) mentioned that the credibility of the research is dependent on how knowledgeable the interviewees are about the research topic. Once this is established, it is important to find out the experiences of the interviewees by "asking them politely if they are speaking from firsthand experience" (Rubin & Rubin, 2012, p.

65). To ensure trust worthiness, I made sure to build relationships with the participants. Building the relationships, I was able to set boundaries. I emailed and had telephone conversations with the participants several times so that they were able to develop trust and in return they would be honest in responding to the questions during the interviews. According to Ravitch and Carl (2016), taking this kind of approach in research in building relationships is relational and taking care to build rapport with the participants will greatly benefit the research. Building rapport and setting boundaries in the research is a good way to maintain professionalism and the participants will be able to build trust in the researcher and will provide honest and accurate information (Ravitch & Carl, 2016). Dependability and transferability were important aspects of this study in that the results may be replicated with similar participants and may be applied to other setting or groups (Cope, 2014). Cope, 2014 expressed that researchers must take care to understand the emotional state of participants during data collection. Therefore to ensure authenticity of the study, I was mindful of how the feelings and emotions of the participant's experiences were expressed and I made sure that I proceeded in an authentic way.

Credibility

For qualitative research, Korstjens and Moser (2018) defined credibility as the confidence that is placed in the truth results of the study. The views of participants and how the data are interpreted and represented by the researcher are crucial to the credibility of this study. (Polit & Beck, 2012). After data collection, I described my experiences and I ensured that the research findings were verified with the participants based on the recommendation by Cope (2014) and Korstjens and Moser, (2018). Several

researchers stated that a study that uses qualitative methodologies is considered credible if during the reporting phase, the researcher demonstrates different strategies such as continued engagement, triangulation, member checking, audit trail and persistent observation (Creswell, 2018; Cope, 2014; Korstjens & Moser, 2018). However, Korstjens and Moser warned that not all the strategies will be suitable in every research setting, hence, it was imperative that I determined at the design phase of the study which strategies would work. Therefore I considered triangulation, member checking and audit trail to be most appropriate to ensure credibility of my study.

Transferability

Korstjens and Moser (2018) and Polit and Beck (2012) explained that transferability happens when the researcher provides a rich account of the research process and the participants, enabling the reader to make an assessment of whether the research findings can be transferred to their particular setting. Hence, I ensured transferability by using a thick rich description of the process of the research and the participants to provide readers with evidence that the results from the study could be transferred to other settings, situations, context or respondents. According to Korstjens and Moser (2018) and Lincoln and Guba (1985), the researcher does not know the settings of the reader and therefore will not be able to prove that the results of the study will be applicable. This process is known as transferability judgement (Korstjens & Moser, 2018; Lincoln & Guba, 1985). Additionally, Merriam (2009) said that the main reason for pursuing a qualitative study is to give a "rich thick description" (p. 29) of the phenomena being researched in order that readers can transfer results to their specific

context. Hence, I addressed transferability by indicating how the results of this study regarding the perspectives of the K–6 principals based on their leadership roles and responsibilities in the integration of SBTs in their schools could be applied to a similar study using a rich thick explanation of the phenomena being studied enabling the reader to transfer results to their own context. The use of a rich and thick account of the phenomena will be essential for readers to make the transferability judgement (Korstjens & Moser, 2018; Lincoln & Guba, 1985). And providing detailed descriptions of the results and site add to the transferability where by others will be able to replicate the study.

Dependability

Dependability is an important criteria to ensure trustworthiness as the results of the study must be confirmed as consistent and may be repeatable in comparable situations (Lincoln & Guba, 1985). Koch (2006) provided a clear description of the process involved to achieve dependability. Koch explained that the researcher documents each stage of the process of the research in the audit trail and if another person conducting a research agrees with the decisions reported in the trail then the study is considered dependable providing the outcome of study is reproduced with participants of the same nature and in alike conditions. The aim is to verify that the results are reliable and stable with the raw data that will be collected (Korstjens & Moser, 2018). Similarly, Korstjens and Moser (2018) and Lincoln and Guba (1985) concurred that an audit trail is the strategy needed to ensure dependability. I maintained dependability that the process of my data analysis was consistent and in keeping with accepted standards for pursuing a

basic qualitative study. The strategies I used to establish dependability included setting up a database using NVivo12 software and generating an audit trail. I also ensured other readers would be able to conclude similar findings, interpretations and recommendations about the data. Using this strategy, I made sure that there were no misguided or misleading results and nothing missed in the study.

Confirmability

Confirmability has to do with how much confidence and corroboration is placed in the data and the interpretation of the results of the study based on other researchers' reports, instead of the potential of the researcher's bias (Korstjens & Moser, 2018; Lincoln & Guba, 1985). To ensure confirmability, Korstjens and Moser (2018) maintained that an audit trail is needed. Therefore I provided an audit trail which is a detailed documentation of the data collection process, data analysis and interpretation of the data. Additionally, I ensured confirmability by remaining objective and neutral, and I disclosed any potential bias as I tried to maintain my integrity in reporting every action I took in pursing this study I also took time to build rapport with the participants and to collect the data. Taking time to build relationships and collect the data promotes rich and thorough responses (Lincoln & Guba, 1985). I also ensured that my interpretation was not based on my perspective or inclinations but ultimately grounded in the data analysis process.

Reflexivity

Bourke (2014) advised that a researcher's bias and positionality can have significant impact on the accuracy of the results and may be deemed as reflexive. In

pursuing this research, I was cognizant that my predispositions and positionality can greatly affect the accuracy of the results and I was mindful of the way I interacted with the participants and how I approached the research setting. Palaganas et al. (2017) stated that reflexivity involves self-reflection which means that the researcher is vigorously involved in the study. Qualitative researchers reflect on their values, recognize, examine and comprehend how their social upbringing, position, beliefs, biases and socioeconomic status will affect their interpretation during the research (Creswell, 2018). According to Bourke (2014) and Creswell (2018), with the use of analytical memos, researchers can recognize reflexively their biases. Hence, I reflexively scrutinized myself to eliminate any bias, values and personal background that could compromise the relationship between the participants and me. I used dated analytical memos to process all thoughts and record any potential bias or assumption I made.

Results

The rest of this section formed the participant's answers to the interview questions relative to the research question and were organized by way of themes. Seven participants responded to the questions. The participants' responses were examined to answer the research question by way of the initial codes that emerged. The codes were further analyzed using the NVivo12 software. During the analysis of the data, categories and themes emerged. Four themes emerged from the data regarding perspectives about leadership roles and responsibilities. The themes that emerged in the data sought to address this first research question. The themes were: principal's expertise regarding

SBT, perceived roles and responsibilities, perceived benefits of SBT, perceived challenges in the use of SBT.

Research Question 1: Perspectives about Leadership Roles and Responsibilities

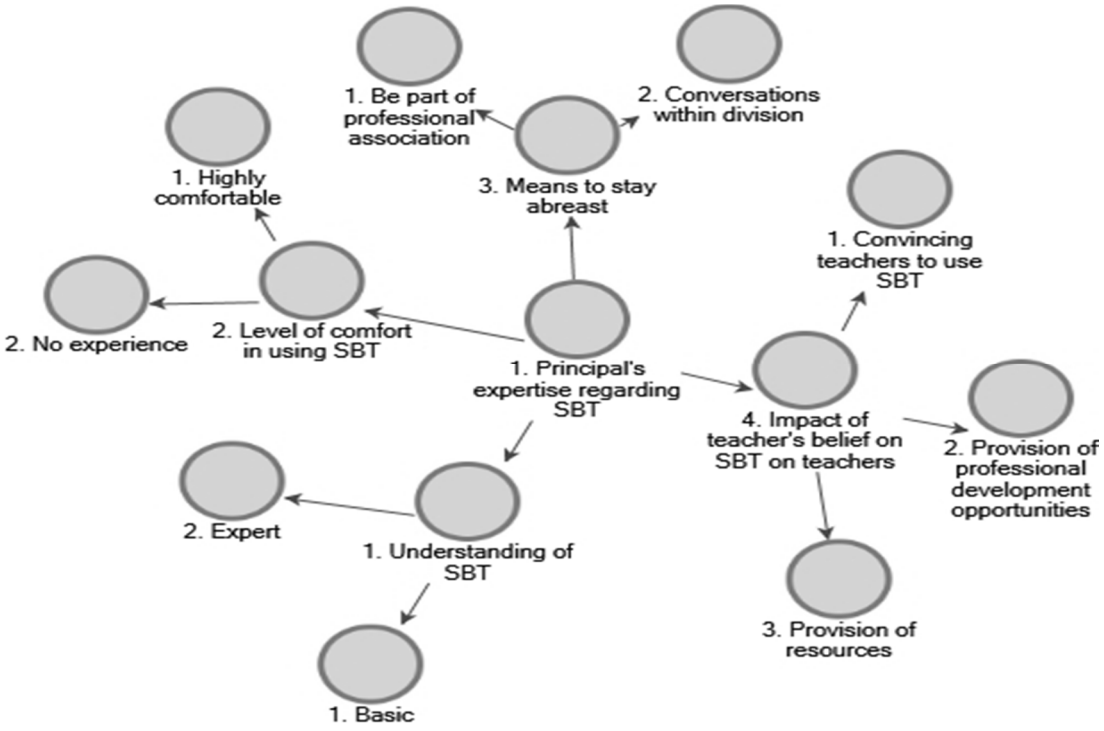
RQ1: What are the perspectives of the K–6 principals regarding their leadership roles and responsibilities to support teachers in the integration of SBTs?

Theme 1: Principal's Expertise Regarding SBT

Figure 1 shows the categories and theme that emerged from coding the data which directly relates to RQ1. The categories emerged were understanding of SBT, level of comfort in using SBT, means to stay abreast, and impact of teacher's belief on SBT on teachers. The theme that emerged was principal's expertise regarding SBT.

Figure 1

Principal's Expertise regarding SBT



Principal expertise regarding SBT (see Table 2) were based on their knowledge and how comfortable they were with using SBTs, the means they used to stay up to date with using SBT and the impact of teacher's values regarding their use of SBT. Of the seven principals interviewed, six principals were knowledgeable and had high comfort level with using SBTs. The principals who were knowledgeable and were highly comfortable with using SBTs were principal A, B, C, D, F and G. Principal E had the most years' experience working as a principal but had little knowledge of how the SB worked and hence his comfort level was low. Principal E noted "well my knowledge of using instructional technologies is actually quite rudimentary. I don't really have any

personal experience using SBT as an instructional device in the teaching and learning process."

The principals stayed current with using technology by attending professional development training, being able to access Alberta Teachers Association supports in the area of technology and had conversations with the division in the area of technology. Principals A, B, C, D, F and G agreed that their prior years as a teacher and teaching with the SB allowed them to become experts with using the technology. Principal G said "I think being a classroom teacher prior to be an administrator and using my SB in effective ways enables me to have the backing to be able to inform my teachers as to how purposeful this tool is." Principal B remarked "I guess my experience using SB as an instructional device when I was a classroom teacher I definitely have and I remember un-boxing the first SB in my school." Dunham (2012) expressed that principals should be competent with using instructional devices and having competency in using the technology will allow them to promote the development of policy which will push teachers to support the use of technology in teaching and learning. Principals were mindful of the value of technology and especially SBT in the teaching and learning process.

The impact of teacher's belief on SBT on teachers emerged based on the theme principal's expertise regarding SBT. The participants expressed the importance to provide teachers with professional development training and resources in using technology and SBTs. Principal D remarked "I do see the value in including SBT, so I am very happy to support my teacher around the professional development."

Principal B said:

> I've always seen the value of using technology and ensuring that teachers have access to technology that works, that teachers have access to technology support because that's one of the big barriers with the use of technology.

Uluyol and Sahin (2016) expressed that an integral part of the technology integration process in educational environments was the role that teachers played. While Perkin-Jacob (2015) mentioned that the use of the SBTs in the classroom is a crucial pedagogic tool for teachers because the technologies are permanently a part of society. Providing supports for teachers in the form of ongoing professional development and resources, teachers will feel empowered and will be more inclined to integrate technology in the classroom (Gashan & Alshumaimeri, 2015). İstifçi et al. (2018) confirmed that some teachers are enthusiastic about using SBT in the classroom. But lack of ongoing technical professional development discouraged teachers and caused them to lose interest in teaching with SBTs and returned to the traditional ways of teaching (Guerrero & Velastegui, 2017; Momani et al., 2016). Therefore, making provision for professional development opportunities and providing technological resources for teachers will positively influence teachers' attitude toward using SBTs in the classroom.

Table 2

Representative Statements from Interviews: Principal's Expertise Regarding SBT

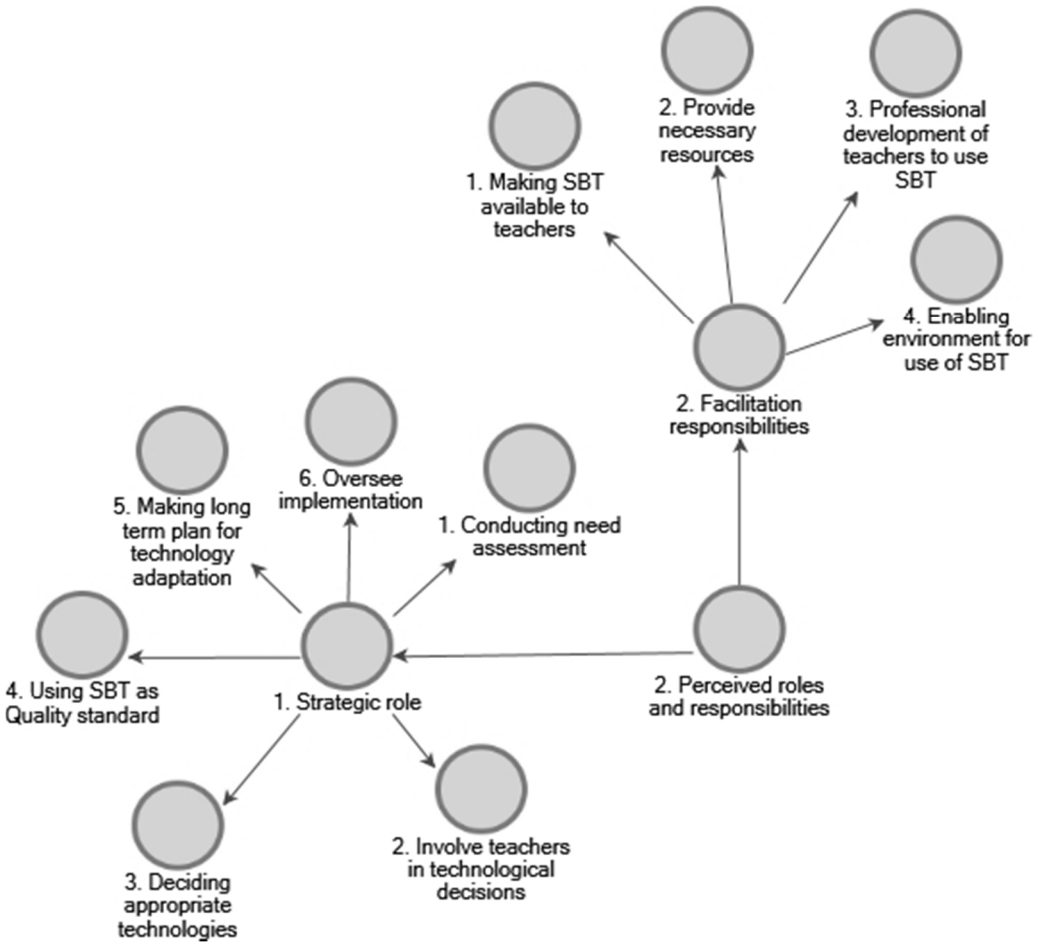
Representative Statements from Interviews	Codes	Categories	Themes
Well my knowledge of using instructional technologies is actually quite rudimentary.	Basic	Understanding of SBT	Principal's expertise regarding SBT
So like I said it's an area that I've lots of expertise in.	Expert		
I am very comfortable with using various instructional technologies and before getting into leadership roles and as a teacher I would definitely consider myself an early adopter; always trying technology as soon it becomes available.	Highly comfortable	Level of comfort in using SBT	
I don't really have any personal experience using Smart Board Technology as an instructional device in the teaching and learning process.	No experience		
My strategies would be my own professional learning, accessing to ensure Alberta Teacher's Association, hopeful accessing a professional learning through our division, there is a lot of things that way.	Be part of professional association	Means to stay abreast	
Also having conversation with our division, having weekly conversation about technology which is actually important.	Conversations within division		
I think being a classroom teacher prior to be an administrator and using my Smart Board in effective ways enables me to have the backing to be able to inform my teachers as to how purposeful this tool is.	Convincing teachers to use SBT		
I do see the value in including Smart Board Technology, so I am very happy to support my teacher around that professional development.	Provision of professional development opportunities	Impact of teacher's belief on SBT on teachers	
I've always seen the value of using technology and ensuring that teachers have access to technology and ensuring that teachers have access to technology that works, that teachers have access to technology support because that's one of the big barriers with the use of technology.	Provision of resources		

Theme 2: Perceived Roles and Responsibilities

Figure 2 shows the categories and theme that emerged from coding the data which directly relates to RQ1. The categories emerged were strategic role and facilitation responsibilities. The theme that emerged was perceived roles and responsibilities.

Figure 2

Perceived Roles and Responsibilities



In regards to perceived roles and responsibility (see Table 3), the principals agreed that it was crucial to find out where teacher were at in terms of instructional

technologies in their teaching and learning. The principals mentioned that connecting with staff individually to identify where the support was needed and to help them to find ways to use SBT in effective ways was important. Part of their role was to involve teachers in the decision making surrounding technology integration. For instance, Principal C, mentioned that "sometimes they have such grand ideas that it was good for me because it would challenge my thinking of how we can utilize smart technology to make it happen or come alive in the classroom." Principal F mentioned that he used distributive leadership which he explained as delegating a staff as a tech lead and that staff had a team of teachers who were knowledgeable and comfortable to work and share new ideas. He added that he modelled the use of the SB during staff meetings.

The leadership quality standards (LQS) which is the fourth quality standard in the learning and technology policy framework served as a yardstick for the participants in leading in the schools; allowing for the safe and ethical use of the device; and this was echoed by Principal E and Principal A. Principal G mentioned that part of his role was making decisions regarding which technology was put in his school, having conversation with tech lead in his school and division tech person. Principal G stated:

> And also listening the parents too in school council to see what they think and so part of that responsibility is to ensure that there is a long term plan in effect to ensure that we constantly look at it and renew our technology that we have.

Additional roles were to make long term plans for technology integration, oversee the integration of SBT and to ensure that SBT and other technologies were accessible to teachers and students. An important role of the principal was to ensure resources were

available to teachers with the main one being professional development training for teachers. Principal A remarked “I guess my greatest role is providing the professional learning that is needed to our teaching staff.” While, Principal B stated that “… first and foremost my role is to make sure that students and teachers have access to technology … and to oversee all the instructional leadership within our building.”

The role teachers play are fundamental to a successful and effective technology integration in teaching and learning (Uluyol & Sahin, 2016). Riaz (2018) mentioned that teachers have a major responsibility in integrating SB in pedagogy. Therefore, principals must be mindful of the importance of and take care to address the needs of teachers for a successful technology integration process (Hopster-den Otter et al., 2017).

Table 3

Representative Statements from Interviews: Perceived Roles and Responsibilities

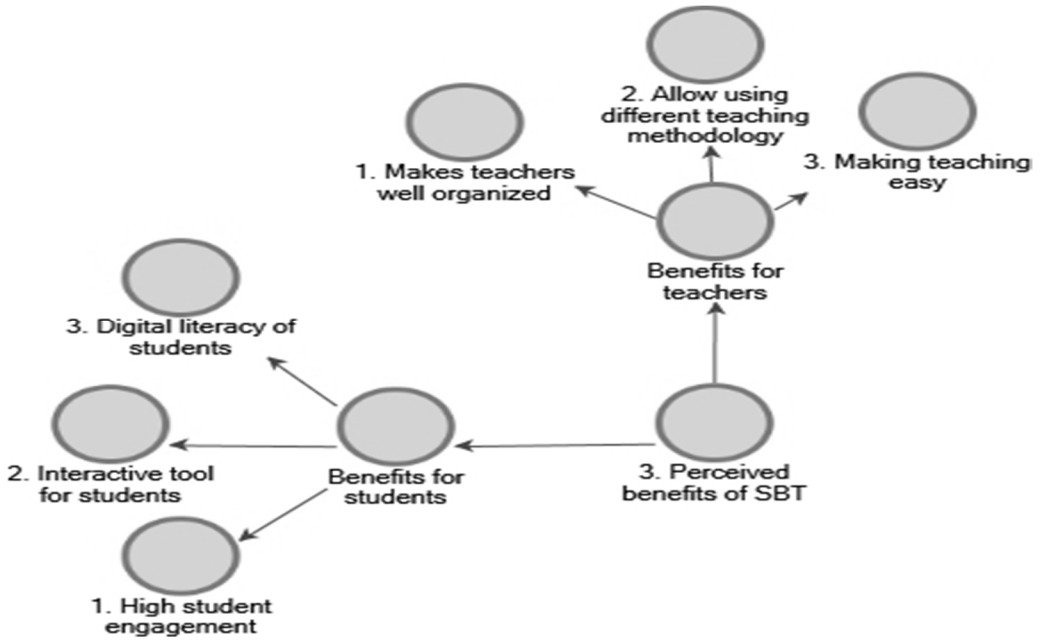
Representative Statements from Interviews	Codes	Categories	Themes
So as I mentioned it really was sort of identifying where there was need and apprehension and where the is appetite and so working to sort of differentiate for different staff members and find out what they are interested in doing and then being able to find ways to utilize Smart Board Technology to do it.	Conducting need assessment		
Sometimes they have such grand ideas that it was good for me because it would challenge my thinking of how we can utilize Smart technology to make it happen or come alive in the classroom.	Involve teachers in technological decisions		
I play the part of deciding what technology is placed within our school; in conversation with our lead tech person as well as our division tech person and also like obviously listen to the parents too in school council to see what they think.	Deciding appropriate technologies	Strategic role	
Well I guess part of it goes with the leadership quality standards right. I guess leading a learning community, so that would be the fourth leadership standard and part of that is creating an environment for safe and ethical use of the technology so that would be part of that.	Using SBT as Quality standard		
So part of that responsibility is to ensure that there is a long term plan in effect to ensure that we constantly look at it and renew our technology that we have.	Making long term plan for technology adaptation		Perceived roles and responsibilities
My leadership role in the integration of Smart Board Technology within our school is just to really help oversee all the instructional leadership within our building.	Oversee implementation		
As being the instructional leader of our building, I think first and foremost my role is to make sure that students and teachers have access to technology.	Making SBT available to teachers		
So I think that where my role is, is to support the teaching and learning and to provide the time and resources required; whether it breaks down.	Provide necessary resources		
I guess my greatest role is providing the professional learning that is needed to our teaching staff.	Professional development of teachers to use SBT	Facilitation responsibilities	
And the other one within the Leadership Quality Standard is number four, and that has to do with leading a learning community. And so with that we are looking at creating an environment for the safe and ethical use of technology.	Enabling environment for use of SBT		

Theme 3: Perceived benefits of SBT

Figure 3 shows the categories and theme that emerged from coding the data which directly relates to RQ1. The categories emerged were benefits for students and benefits for teachers. The theme that emerged was perceived benefits of SBT.

Figure 3

Perceived Benefits of SBT



The perceived benefits of SBT included the benefit to students and the benefit to teachers (see Table 4). Students are kept highly engaged with the use of the SBT. The SBT is deemed an interactive and effective tool and provides 21st century learning skills making students digitally literate. The use of the SB motivates and engages students at every level and all style of learners (auditory, visual, tactile) benefit from the use of the smart lessons (Momani, et al., 2016; Tertemiz et al., 2015).

Principal G noted “obviously, if you think about classroom engagement, there is a high level of engagement from students.”

Principal A said “I think it is an effective tool, there is no doubt about that.” Principal D stated “With the implementation of SBT, or Epson Board or Smart TV to equate them all you definitely see kiddos have an understanding around 21st century learning skills in relation to digital literacy.” The SB when combined with the computer gives rise to the students’ full attention and thoughts in resourceful means, thus promoting higher order thinking (Davidivitch & Yavich, 2016)

The SB helps teachers to be more organized and allows teachers flexibility to utilize different teaching methodologies which includes audio, visual materials to enhance the lesson. The SB makes teaching easy. Riaz (2018) expressed that the use of the SB in the classroom can positively reform the teaching learning process. Teachers expressed that the quality of their teaching improved with the integration of the SB in the classroom (Davidivitch & Yavich, 2016). Teachers reported that the SB is quite influential in that their methods of teaching and their classroom atmosphere improved (Al-Rabaani, 2018).

Principal B noted:

> I find teachers that they are using SBT they are more able to, because there is a little bit more planning before …and it allows teachers to utilize different teaching modalities within their instructional approaches so they could be having some more visual or audio in accordance with their lesson.

SBs makes it easier to teach. Principal G stated:

Obviously SBs were great. I really enjoyed using them for Math to show different angles and three D objects and things and obviously was a lot easier on graphing and different things, using our SB was really helpful that way.

Table 4

Representative Statements from Interviews: Perceived Benefits of SBT

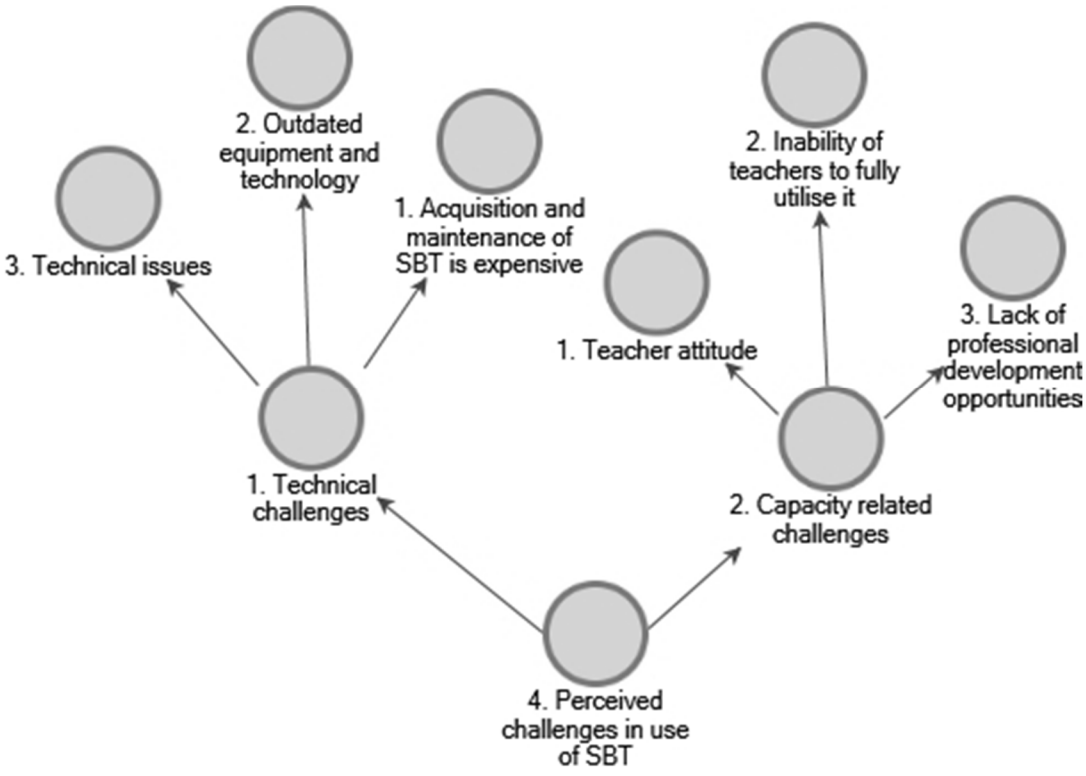
Representative Statements from Interviews	Codes	Categories	Themes
Obviously, if you think about classroom engagement, there is a high level of engagement from students.	High student engagement	Benefits for students	Perceived benefits of SBT
I think it is an effective tool, there is no doubt about that.	Interactive tool for students		
With the implementation of Smart Board Technology or Epson Board or Smart TV to equate them all you definitely see kiddos have an understanding around 21st century learning skills in relation to digital literacy.	Digital literacy of students		
I find teachers that they are using Smart Board Technology they are more able to, because there is a little bit more planning before and especially if they are using Smart Notebook software to prepare more of an interactive lesson.	Makes teachers well organized		
It allows teachers to utilize different teaching modalities within their instructional approaches so they could be having some more visual or audio in accordance with their lessons.	Allow using different teaching methodology	Benefits for teachers	
Obviously Smart Boards were great. I really enjoyed using them for Math to show different angles and three d objects and things and obviously was a lot easier on graphing and different things, using our Smart Board was really helpful that way.	Making teaching easy		

Theme 4: Perceived Challenges in use of SBT

Figure 4 shows the categories and theme that emerged from coding the data which directly relates to RQ1. The categories emerged were technical challenges and capacity related challenges. The theme that emerged was perceived challenges of SBT.

Figure 4

Perceived Challenges in use of SBT



Acquisition and maintenance of SBT is expensive, outdated equipment and technology, and technical issues were codes that emerged to generate the category,

technical challenges which further generated the theme of perceived challenges. One of the perceived challenges (see Table 5) is that the SB is expensive to purchase and maintain. Hebing (2017) and Riaz (2018) informed that the SB is quite costly and cost more than a regular whiteboard and computer screen combined and low funding schools may be unable to afford it. The SB may cost $1000 to $7000 for each board and this is dependent on the series (Smartboards.com).

Principal E stated:

> The only thing I would like to tell you is that SBT, although it's good, it can be quite expensive. So there is a cost factor that schools need to be aware of when they have SBs in the schools.

The SB needs maintenance on a regular basis and the cost to maintain it might be too much for most schools to handle (Momani et al., 2016). The SBT may become outdated and needs to be updated or replaced and sometimes there are technical issues with using the technology. According to Principal C:

> Probably the biggest challenge is outdated equipment. If your equipment is outdated and beyond what the teachers are used to, if they come from one school to another school and are used to Smart technologies versus Epson Board versus Touch Screen TV.

While, Principal G stated that "the biggest challenge I would say was to ensure that the equipment was working properly so teachers would be able to use it in an easy way."

Principal E noted "some of the challenges included teacher attitude."

Teacher attitude, and the inability of teachers to fully utilize use it, along with lack of professional development activities were codes that emerged to generate the category, capacity related challenges, which further generated the theme of perceived challenges.

Principal A stated that "some teachers at first were using it more of a kind of overhead or you know a large TV and not interacting as efficiently as it could have been." But inadequate training and the lack of professional development training for teachers could be the main reason for improper use of the SB according to Principal E. Principal A further stated that "depends on your staff and what comfort level they have will vary on the challenges. But I would say the biggest challenges is using it to its full capacity."

Alfaki and Khamis (2018) expressed that the SB can be difficult for teachers to maneuver without strong technical abilities or little or no SB training. Alfaki and Khamis shared that for SB to be successfully integrated in teaching and learning, technical support is needed in the schools.

Principal E noted "also the availability of professional development opportunities or the availability of a staff member who already has that ability to use the technology."

Table 5

Representative Statements from Interviews: Perceived Challenges in use of SBT

Representative Statements from Interviews	Codes	Categories	Themes
The only other thing I would like to tell you is that Smart Board Technology, although it's good, it can be quite expensive. So there is a cost factor that schools need to be aware of when they have Smart Boards in the school.	Acquisition and maintenance of SBT is expensive		
Probably the biggest challenge is outdated equipment. If you equipment is outdated and beyond what the teachers are used to if they come from one school to another school and are used to Smart technologies versus Epson board versus Touch Screen TV.	Outdated equipment and technology	Technical challenges	
The biggest challenge I would say was to ensure that the equipment was working properly so teachers would be able to use it in an easy way. So I think that's the biggest challenge.	Technical issues		Perceived challenges in use of SBT
Some of those challenges include teacher attitude.	Teacher attitude		
Some teachers at first were using it more of a, kind of an overhead or you know a large TV and not interacting as efficiently as it could have been.	Inability of teachers to fully utilize it	Capacity related challenges	
Also the availability of professional development opportunities or the availability of a staff member who already has that ability to use the technology.	Lack of professional development opportunities		

Research Question 2: Policies and Practices to support integration of SBT

RQ2: How do principals develop policies and practices that support teachers in the effective use and integration of SBTs in their schools?

There were two themes that emerged from the data regarding policies and

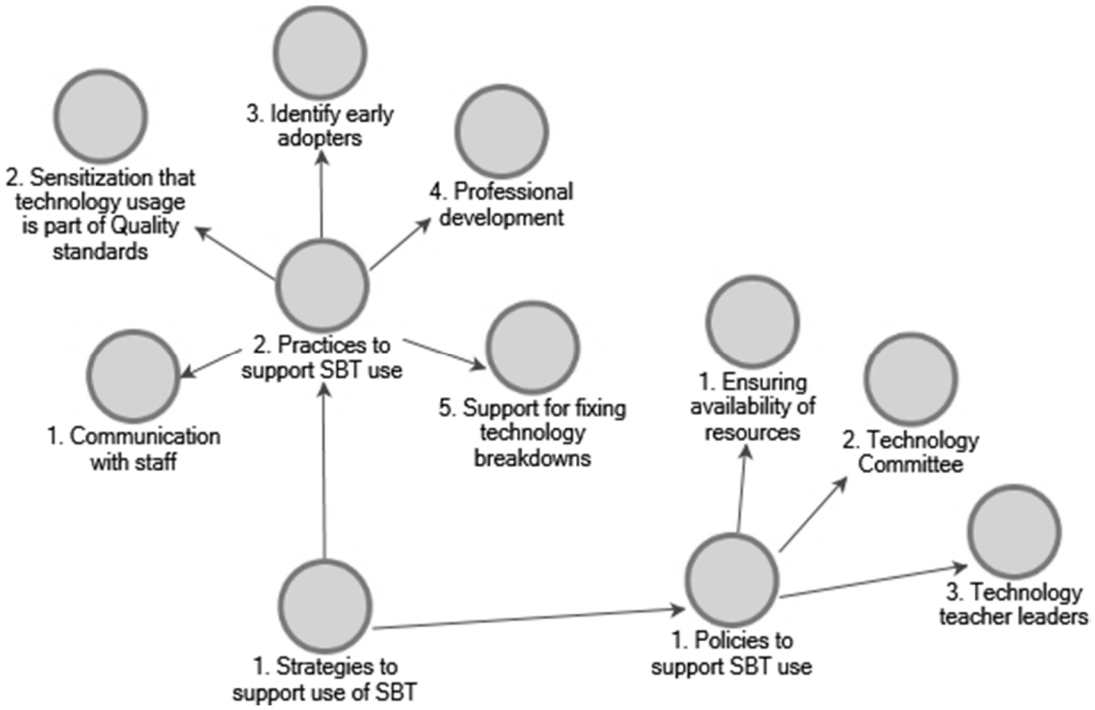
practices to support integration of SBT. The themes that emerged in the data provided answers to this research question. The themes were: strategies to support use of SBT, and status of effective use of SBT.

Theme 1: Strategies to Support use of SBT

Figure 5 shows the categories and theme that emerged from coding the data which directly relates to Research Question two. The categories emerged were policies to support SBT, and practices to support SBT use. The theme that emerged was strategies to support use of SBT.

Figure 5

Strategies to Support use of SBT



Ensuring availability of resources, technology committee, and technology teacher leaders were codes that emerged to generate the category, policies to support SBT use which further generated the theme of strategies to support use of SBT. Supports for teachers are central to the effective use of SBT to enhance student learning and is a major strategy needed (see Table 6). Some supports that evolved were making sure that the technology was working appropriately and having someone available to attend to breakdowns. The SB is an expensive tool and ensuring that all level of support are in place for successful implementation and integration is integral. Principal A said:

> I guess supports, supporting the teachers, making sure the technology is working appropriately, making decisions, for we are spending dollars for technology in schools, making sure that we have all the systems in place and that they are working perfectly.

Participants expressed that forming a technology committee with teachers who are technology savvy or early adopters and the identification of technology teacher leaders would provide support for teachers. Participant E mentioned that "another strategy that can be used and I've used this before is to have a technology committee on staff and so by having the technology committee you are having members of your teaching staff help provide support to teachers."

Communication with staff, sensitization that technology usage is part of TQS, identifying early adopters, professional development, and support for fixing technology breakdowns were codes that emerged to generate the category, practices to support SBT use which further generated the theme of strategies to support use of SBT. Participants

mentioned that by communicating with staff and making time to meet, were important to the SBT integration process. Principal C noted "so the biggest strategy would be the communication piece and being able to offer a time." Another strategy was sensitizing teachers to the Teacher Quality Standards (TQS) which addressed the use of technology. Principal E stated:

> One strategy is to point out that the TQS does address the use of technology. So if you look at number two which is engaging in career long learning, it does say that a teacher should maintain an awareness of learning technologies to enhance knowledge and inform practice.

According to Principal B, "part of it is identifying those teachers or early adopters and allowing them to have some leadership roles, sharing kind of responsibilities, supporting ongoing professional development, showcasing best practices." While Principal A added that "I think it goes back to the professional development right. Providing opportunities for them to continue their learning or drawing their attention to sessions that may be available to our school division." Another strategy to support the use of SBT was to have a person on hand to attend to breakdowns. Principal B noted:

> That's always the challenge to make sure somebody is readily available. I am always fortunate as I mentioned I am pretty competent with using technology so often I can probably solve most problems for people and I am around quite often, so I can pop in and support.

Table 6

Representative Statements from Interviews: Strategies to Support

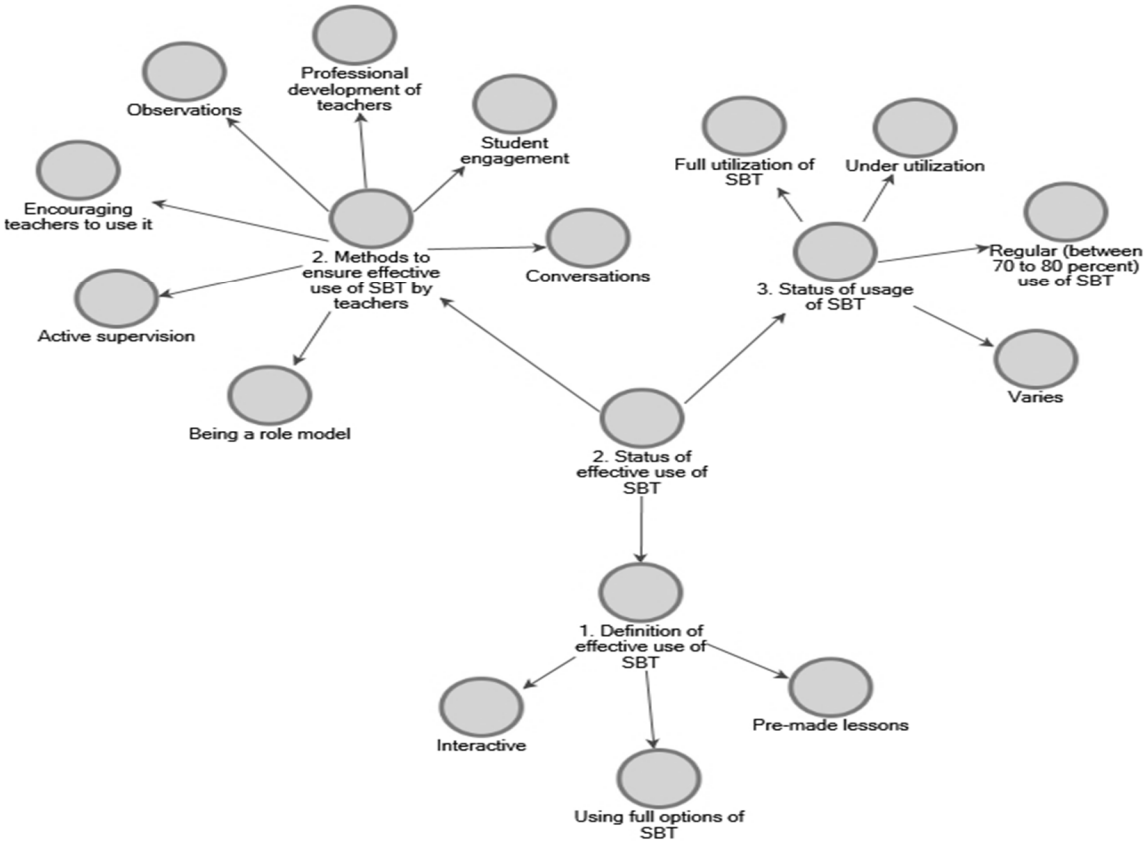
Representative Statements from Interviews	Codes	Categories	Themes
I guess supports, supporting the teachers, making sure the technology is working appropriately, making decisions for we are spending dollars for technology in schools, making sure that we have all the systems in place and that they are working perfectly.	Ensuring availability of resources		
Another Strategy that can be used and I've used this before is to have a technology committee on staff and so by having the technology committee you are having members of your teaching staff help provide support to teachers.	Technology Committee	Policies to support SBT use	
Another way is to have a technology teacher leader who can then get information and share that information with teachers or they can even present on the use of technology in the classroom.	Technology teacher leaders		
So the biggest strategy would be the communication piece and being able to offer a time.	Communication with staff		
One strategy is to point out that the Teaching Quality Standard does address the use of technology. So if you look at number two which is engaging in career long learning, it does say that a teacher should maintain an awareness of learning technologies to enhance knowledge and inform practice.	Sensitization that technology usage is part of Quality standards		Strategies to support use of SBT
Part of it is identifying those teachers or early adopters and allowing them to have some leadership roles, sharing kind of possibilities, supporting ongoing professional development, showcasing best practices.	Identify early adopters	Practices to support SBT use	
I think it goes back to the professional development right. Providing opportunities for them to continue their learning or drawing their attention to sessions that may be available to our school division.	Professional development		
That's always the challenge to make sure somebody is readily available. I am always fortunate as I mentioned I am pretty competent with using technology so often I can probably solve most problems for people and I am around quite often; so I can pop in and support.	Support for fixing technology breakdowns		

Theme 2: Status of Effective use of SBT

Figure 6 shows the categories and theme that emerged from coding the data which directly relates to RQ2. The categories emerged were definition of effective use of SBT, methods to ensure effective use of SBT by teachers, and status of usage of SBT. The theme that emerged was status of effective use of SBT.

Figure 6

Status of Effective use of SBT



Interactive, pre-made lessons, and using full options of SBT were codes that emerged to generate the category, definition of effective use of SBT which further

generated the theme of status of effective use of SBT (see Table 7). The SBT is an interactive tool and should be used to make the lesson more interactive and engaging. Principal A said "I guess not just using it as a board … but is also making it more interactive and using the tools that are available to them within the software system."

Another code that emerged was pre-made lessons. An effective use of the SB is to utilize the pre-made lessons with the software package. Principal A stated "there is a lot of pre-made lessons so that directing them to those avenues where those areas if they are not aware of them; that would be another method I suppose."

There are other useful options of the SB that teachers can navigate and use, providing they know how. Principal B stated "I think my general feeling is that I don't think most teachers are using technology, the SBT as glorified projectors or whiteboards, if I am being honest."

Active supervision, being a role model, conversations, encouraging teachers to use, observations, professional development of teachers, and student engagement were codes that emerged to generate the category, methods to ensure effective use of SBT by teachers which further generated the theme of status of effective use of SBT. The participants mentioned that, actively supervising teachers is one method to ensure the proper use of the SB. Principal D stated that the most effective method is having a visual presence "being visible with an active supervision."

Principal A said:

> Another way in which I support teachers is I am model the use of technology in the classroom using that software, often I will go in and model different lessons

> and of course as I am modelling I am utilizing the technology to support the teachers in learning the technology and thus the instructional practices in the classroom.

Having conversation about how to use the SB in effective ways emerged. Principal G said "we have the conversation of how we can use the SB effectively and part of your role as a leader is to ensure that you are modelling what you expect of your teachers."

Encouraging teachers to use the SB was echoed by the participants. Principal G stated "as an administrator we can't dictate how teachers teach, but we can encourage them in terms of the different things that are available." Observing teachers were mentioned by the participants as a way of providing support and ensuring the proper use of the SB. Principal A said:

> I guess I do a lot of daily walk through and visiting classrooms, checking in, seeing the learning that is occurring and seeing how they are applying the use of Smart Board Technology in the classroom. And keeping an eye on teachers to see what is there level of comfort in using the technology.

Offer professional development for teachers who were not including the use of the SB was imperative for teachers to comfortably and skillfully use SBTs. Principal E said that "if the teacher was not including the use of technology such as the SB, the response would be for me to inquire about the reason and then help to facilitate a change; that could be through professional development."

Keeping students engaged is one of the important features of the SB. Principal D noted "looking on student engagement all the way down to a triangulated approach where you are having observations and visually seeing teachers effectively use the technology in support of student learning to the actual product."

Almajali et al. (2016) found that the interactive feature of the SB allows for more student engagement and participation that may not be offered by other methods of presentation. Meanwhile, Momani, et al. (2016) and Tertemiz et al. (2015) concurred that and all style of learners (auditory, visual, tactile) and students at every level benefitted from the use of the smart lessons using the SB.

Full utilization of SBT, regular use of SBT, underutilization, and varies were codes that emerged to generate the category, status of usage of SBT which further generated the theme of status of effective use of SBT (see Table 7). The SB is used in teaching and learning most of the time based on the participants' responses. Principal F said "I would probably put it in the range of seven or eight, where they're used" out of ten times. Principal G said "so I do see them being used in effective ways as I walk around and do classroom observations." While another participant reported that most of the staff under-utilized the SBs. Principal B stated:

> If I am being 100 percent honest, most of our staff are using our SBS as a glorified projector, where they are mostly just presenting on videos and perhaps slide shows that they have made, but they are not really incorporating that interactive nature of SBs in many of their lessons.

Another participant also reported that the effective use of the SB varies in terms of the classroom and the teacher. Principal D stated "I think it varies from classroom to classroom. I think it is very teacher dependent on their continuum of understanding and readiness based on their comfort level in integrating technology."

Principal G:

> That SBT is a must to be used within the classroom. I think
> being a classroom teacher prior to be an administrator and using my SB in effective ways enables me to have the backing to be able to inform my teachers as to how purposeful this tool is; because it's truly a teaching tool in creating a classroom environment where students are highly engaged and are truly focused on the lesson and what else the teacher is teaching.

Table 7

Representative Statements from Interviews: Status of Effective use of SBT

Representative Statements from Interviews	Codes	Categories	Themes
I guess not just using it as a board to make it cleaner and less chalkier less duster but it also making it more interactive and using the tools that are available to them within the software system.	Interactive	Definition of effective use of SBT	Status of effective use of SBT
There is a lot of premade lessons so that directing them to those avenues where those areas if they are not aware of them; that would be another method I suppose.	Pre-made lessons		
I think my general feeling is that I don't think most teachers are using technology, the Smart Board Technology as glorified projectors or whiteboards if I'm being honest.	Using full options of SBT		
Well I would say the most effective method being a visual presence and being visible with an active supervision.	Active supervision		
Another way in which I support teachers is I am model the use of technology in the classroom using that software, often I will go in and model different lessons and of course as I am modelling I am utilizing the technology to support the teachers in learning the technology and thus the instructional practices in the classroom.	Being a role model		
We have the conversation of how we can use the Smart Board effectively and part of your role as a leader is to ensure that you are modelling what you expect of your teachers.	Conversations	Methods to ensure effective use of SBT by teachers	
As an administrator we can't dictate how teachers teach, but we can encourage them in terms of the different things that are available.	Encouraging teachers to use it		
I guess I do a lot of daily walk through and visiting classrooms, checking in, seeing the learning that is occurring and seeing how they are applying the use of Smart Board Technology in the classroom. And keeping an eye on teachers to see what is there level of comfort in using the technology.	Observations		
If the teacher was not including the use of technology such as a Smart Board, the response would be for me to inquire about the reason and then help to facilitate a change; that could be through professional development.	Professional development of teachers		
Looking on student engagement all the way down to a triangulated approach where you are having observations and visually seeing teachers effectively use the technology in support of student learning to the actual product.	Student engagement		
So I do see them being used in effective ways as I walk around and do classroom observations.	Full utilization of SBT	Status of usage of SBT	
I would probably put it in the range of 7 or an 8, where they're used.	Regular (between 70 to 80 percent) use of SBT		
if I am being 100 percent honest, most of our staff are using our Smart Boards as a glorified projector, where they are mostly just presenting on videos on perhaps slide shows that they have made but they are not really incorporating that interactive nature of Smart Boards in many of their lessons.	Under utilization		
I think it varies from classroom to classroom. I think it is very teacher dependent on their continuum of understanding and readiness based on their comfort level in integrating technology.	Varies		

Themes from the Data analysis

Tables 2, 3, 4, 5, 6, 7 and figures 1, 2, 3, 4, 5 and 6 reflected the categories and themes that emerged from the codes and allowed for the retrieval of responses. Distinctive features were identified within the data. Using the NVivo12 data analysis tool, I continued coding and more categories and themes emerged. Tables 2, 3, 4, and 5 were directly related to RQ 1 and Table 6 and 7 were directly related to RQ 2. The integrated map (see Appendix C) showed themes and the sub themes. The alignment of the themes with the research questions were presented in the results.

NVivo12 Interpretations: Participants

The research questions guided the analysis of the data, and the software interpreted and created common patterns within the study. Once the data were entered in NVivo12 it produced codes and themes which made it manageable to analyze the data. The codes that emerged from the data analysis further led to the themes and representative statements from each theme as seen in the results. The codes that emerged from the analysis of the data were documented in the codebook (see Appendix B). Saldana (2016) mentioned the importance of developing a codebook. According to Saldana, codes change and increase rapidly during the analysis phase and therefore it is imperative to record the codes as they emerge in a codebook. Saldana added that maintaining a codebook provides the chance to analyze, change and regroup the codes into key patterns and themes. The data collected had no discrepant cases and was consistent with the responses from all the participants.

Summary

The results of this study were presented in Chapter 4 and were guided by the main research questions. The chapter explored principals' perspectives about their leadership roles and responsibilities to support teachers in the integration of SBTs in K–6 schools and to understand how principals' develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools. I provided the research questions that were used in the data collection process. I described the setting and demographics, I explained the data collection process which included how the data were triangulated. I further described evidence of trustworthiness and I explained the results based on the research questions.

There were four themes that emerged from the participant's responses to the interview questions that were related to RQ1, regarding the perspectives of the K–6 principals as it relates to their leadership roles and responsibilities in the integration of SBTs. There were two themes that emerged from the interview questions that were related to RQ2, about how principals develop policies and practices that support teachers in the effective use and integration of SBTs in their schools. Quotations from the interview transcripts provided supports for the themes generated. Categories were created based on the codes and each category was broken down in themes based on the perspective of the participants regarding their leadership roles and responsibilities and how they develop policies and practices that support teachers in the effective use and integration of SBTs.

The results revealed that of the seven participants who took part in the study, only one of the participant had a basic knowledge of SBTs and therefore was not comfortable with using SBT. The other six participants were experts at using SBTs and therefore had a high comfort level using SBT. The objective of this section was to show how the categories and themes aligned with the research questions.

In terms of the participants perspectives about their leadership roles and responsibilities, the four themes emerged were relative to the principals' knowledge and comfort level with the use of SBT and the strategies they used to stay abreast with the use of technology and the impact of teacher's belief on SBT. The six participants that were knowledgeable with using instructional technologies including SBTs had high comfort level and were experienced with using the SB. The participant who had a basic knowledge with using instructional technologies including SBTs also had low comfort level with using computers and had little to no experience with using the SB.

The data showed that all the participants except one were adept with using instructional technologies and more specifically, SBTs. Some of the reasons that helped the participants to stay current with using the technologies were attending professional development training, being able to access Alberta Teachers Association supports in the area of technology and having conversations with the division in the area of technology.

Data from the study revealed that all of the principals identified technology leads and tech teams among teaching staff in their schools who they mostly relied on to provide support and attend to minor breakdowns with the SB. Professional development were provided by the district both internally and externally. Participants also provided

professional development for their staff and provided technology supports in many ways. Some of the ways principals provided technology supports revealed in the data were broken down in strategic roles, and facilitation responsibilities. Specific to the strategic roles were, conducting need assessment, involving teachers in technology decision making, using quality standards when using SBT, making long term plan for technology adaptation, and overseeing implementation. The facilitation responsibilities included making SBT available to teachers, provide necessary resources, professional development of teachers to use SBT and enabling the environment for use of SBT.

The data showed the participants perceived benefits of the SBT. The data revealed benefits for students as well as benefit for teachers. The benefits for students were high student engagement, interactive tool for students, and digital literacy for students. The benefits for teachers entailed, made teachers well organized, allowed the use of different teaching methodologies, and made teaching easy.

The data revealed the perceived challenges in using the SBT. The challenges were divided in two sections, namely technical challenges, and capacity related challenges. One of the technical challenge was acquisition and maintenance of SBT. It was revealed in the data that the SBT was expensive to purchase and maintain. The other technical challenges revealed were outdated equipment and technology, and technical issues. The capacity related challenges were teacher attitude, inability of teachers to fully utilized the technology, and lack of professional development opportunities.

As it relates to the policies and practices to support integration of SBT, the data revealed two areas, policies to support SBT use, and practices to support SBT use. With

regards to policies to support SBT use, the data revealed, ensuring availability of resources, having a technology committee and having technology teacher leaders. The practice to support SBT use were, communication with staff, sensitization that technology usage is part of teacher quality standards, identification of early adopters, professional development and support for fixing technology breakdowns.

In addition, the data revealed the status of effective use of SBT which was broken down in three sections, definition of effective use of SBT, methods to ensure effective use of SBT by teachers, and status of usage of SBT. The definitions revealed were interactive, premade lessons, and using the full options of the SBT. Active supervision, being a role model, conversations, encouraging teachers to use SBT, observations, professional development of teachers, and student engagement were the methods to ensure effective use of SBT by teachers and were revealed in the data. With regards to the usage of SBT, full utilization, regular usage of SBT, underutilization, and the use of the SBT varies depending on teacher and classroom.

The results revealed that from the perspectives of the principals, the SBT is an important pedagogical tool that enhances student performance and engagement in the classroom. Student's engagement in the classroom is maximized when the SB is used. The SBTs promote interactivity among the students and ultimately prepare students for 21st century workforce. The SBT is beneficial to both students and teachers, but the use of the SB is based on teacher's attitude toward the technology. To boost the confidence of teachers to maximize the full potential of the SBTs, the data revealed providing

professional development training in the area of SBT, modelling the use of the SB, and having conversation with teachers to utilize the different features of the SBTs.

The key finding of the study indicated that the SBTs were used by teachers in the classroom majority of the time. Another key finding was that the SBTS were based on the teacher's attitude toward the technology. How the SB was used varied from classroom to classroom was another key finding.

It was found that the SBT was not necessarily used in effective ways by all the teachers. In fact a couple of the participants believed that the SBTs were underutilized. Resources were provided in the form of tech leads and technology committees to support teachers in using the technologies. District technology staff was assigned to each school on designated days and times depending on the needs of the school.

Other findings were that principals stayed abreast with using technologies by having weekly conversations with technology division staff, being part of the professional association and using the LQS and TQS. Involving teachers in the decision making process regarding technology integration, inclusive of decisions regarding SBTs

In Chapter 5, I provided the interpretation of the findings, limitations of the study recommendations, implications, and reflections and conclusion.

Chapter 5: Discussion, Conclusions and Recommendations

Introduction

The purpose of this qualitative study was to explore principals' perspectives about their leadership roles and responsibilities to support teachers in the integration of SBTs in K–6 schools and to understand how principals develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools in an urban setting in Canada. Using the basic qualitative approach, I explored principals in K–6 schools perspectives regarding their roles and responsibilities using the transformational leadership theory and the learning and technology policy framework as the platform to guide the research. Grant and Osanloo (2014) and Merriam (2009) acknowledged that the theoretical framework is the foundation of a study and provide the justification of the research. The perspectives of the principals regarding their leadership roles and responsibilities in the integration of SBTs and how principals develop policies and practices that support the effective use and integration of SBTs in their schools is not known. Hence the gap in the literature that I addressed in this study was a lack of knowledge regarding the leadership role of principals as it relates to the integration of SBTs. The principals offered their perspectives as it relates to their roles and responsibilities in the integration of SBTs in their K–6 schools.

I chose the basic qualitative design as it aligned well with my research questions and purpose statement and I was able to interact with participants using telephone interviews. The K–6 principals with SBTs in their schools were the participants for this study. Seven principals participated in the study and each one answered all 11 interview

questions. In reviewing the literature related to this topic, I used Bass's theory of transformational leadership and the learning and technology policy framework to explore the perspectives of the participants. According to Merriam (2009), a theoretical framework is the foundation, support, or frame of a research.

In analyzing the data, I discovered that six of the participants were knowledgeable and comfortable with using SBT and had one to 10 years of experience as a principal. One principal who had the most years of experience as a principal had little knowledge with using SBTs and was not comfortable with using the technology. Six core themes resulted from the study. The themes generated form the major findings in the study:

- Expertise in using SBTs is based on knowledge and experience.
- The perceived roles and responsibilities of the principals are cited as strategic roles and facilitation were used to support teachers in the effective use of SBTs.
- The perceived benefits of the SBTs for daily instruction are cited as benefits for students and benefits for teachers.
- The perceived challenges with the use of SBT are cited as technical challenges and capacity related challenges.
- Strategies to support use of SBT are broken down into policies and practices.
- The status of the effective use of the SBT were cited with a definition of effective use of the SBT, methods to ensure effective use of the SBT and status of usage of the SBT.

Interpretations of the Findings

Principal's Expertise Regarding SBT

The findings of the study revealed the reports in the literature review. These findings were based on the perspectives of the principals about their leadership roles and responsibilities to support teachers in the integration of SBTs. The findings revealed that as part of their roles and responsibilities, principals must be very knowledgeable with using technology and especially SBTs. If principals are not skillful in using SBTs, they will not be able to support the teachers to effectively use the smart technologies. This is supported in the literature review, that the principals are charged with many different roles and one important role is that of technology leadership (Perkins-Jacobs, 2015; Yieng & Daud, 2017). As technology leader, the principal will enable change and part of that change is the ability to maintain a learning environment for the integration of technology (Arokiasamy et al., 2015). Part of being the technology leader encapsulates the characteristics of a transformational leader who has the innate ability to motivate the teachers in a positive direction toward change where workers are willing to be followers (Northouse, 2001). The transformational leader allows followers to be autonomous in carrying out certain aspects of their work (Bass, 1999); and this is supported in the findings that the principals allowed teachers to decide when and how the SB was used in the classroom. The transformational leadership theory model was one of the two frameworks that guided this research. This theory of transformational leadership provided focus on the perspective of principals regarding their leadership roles in SBT integration. The learning and technology policy framework puts into place action to inspire principals

to effect innovation and developing capabilities within the K–12 educational structure as a way to leverage the use of technology, supporting student centered learning environments (Alberta Education, 2016).

The results revealed that the majority of principals were technologically savvy and therefore had high comfort level with using technologies including SBTs. The findings revealed that the principal who had the most years of experience as a principal had little knowledge using SBTs and therefore had low comfort level using the technology. It is noted in the review of literature that principals who are technologically savvy will be skillful with using SBTs and will be able to provide superior direction and support to teachers who are expected to integrate technology in education (Perkins-Jacobs, 2015). Principals who are novices with the use of technology are unable to do a proper evaluation of teachers' technology use as part of the instructional practice and learner assessments, hence the need for tech savvy principals (Perkins-Jacobs, 2015).

Perceived Roles and Responsibilities

In the capacity of technology leaders, part of the principals' roles and responsibilities must be to promote and carry out the vision and plans to integrate technology in their schools, while motivating and providing technology professional development training and continued support for teachers (Chang, 2012).This will ultimately lead to an effective school assessment design (Chang, 2012). Some of participants in this study agreed that it was essential to find out where teachers were at in terms of instructional technologies in their teaching and learning; and connecting with staff on an individual basis to identify where the support was needed and to help them to

find ways to use SBT in effective ways. Part of their role as principals was to involve teachers in the decision making surrounding technology integration. Professional development training and resources were key components for the effective use of SBTs to enhance student engagement and performance. It is imperative to include teachers in the decision making for digital (SBT) technologies to be successfully integrated in the K–6 classroom. Constant professional development in the area of SBTs is of utmost importance for teachers to be able to proficiently use these technologies, as SBTs are constantly evolving.

Perceived Benefits of SBT

The results suggested that the SB provides benefits for both students and teachers. During the review of literature, it was revealed that for students, the SBT was deemed a highly interactive and an important instructional device in the learning environment (Riaz, 2018). The SB supports a student driven atmosphere and students are able to work collaboratively in their efforts to learn (Almajali et al., 2016; Al-Rabaani, 2018; Riaz, 2018). Riaz (2018) expressed that the use of the SB in the classroom can positively reform the teaching and learning process. According to Tertemiz et al. (2015), students are stimulated and are able to construct meaning, supporting a constructivist learning environment. Students also retain the lesson with the use of the SB. The SB supports individualized learning and students at every grade level, including all kind of learners (auditory, tactile and visual) can benefit from the use of the SBTs in the classroom (Momani et al., 2016; Termitez et al., 2015). Children with special needs are empowered in the classroom with the use of the SB (Riaz, 2018). The results from this research

revealed that the SBT when used by teachers in the teaching and learning process kept students highly engaged, provided interaction and enhanced the students' learning.

In the literature, teachers expressed that the quality of their teaching improved with the integration of the SB in the classroom, and being able to combine the SB with the computer they gained the students' full attention, and the students were able to understand the content, thus promoting higher order thinking (Davidivitch & Yavich, 2016). Teachers also reported that the SB was influential in that their methods of teaching and classroom atmosphere improved (Al-Rabaani, 2018). Special needs teachers could include a wide range of teaching tools, which allowed more flexibility and they were able to modify learning to the individual needs of the students (Riaz, 2018). The results revealed that the SBT allowed teachers to be more organized, made it possible for teachers to use different teaching methods, and made teaching easy.

Perceived Challenges in use of SBT

During the review of literature, it was revealed that even though SBT was referred to as the "outsmart technology" in the pedagogic realm (Riaz, 2018), there were some challenges that were presented by the researchers (Hsu, 2016; Momani et al., 2016). Some of the challenges presented were the high cost involved to purchase and to maintain the SB on a regular basis (Hsu, 2016; Momani et al., 2016). Teachers without strong technical skills will have difficulty to use the SB (Alfaki & Khamis, 2018). The results from the participants revealed both technical and capacity-related challenges. Based on the results, the technical challenges were the cost to purchase the SB and the maintenance cost, which could be very expensive. The idea of the SB becoming outdated and the cost

involved to upgrade or replace it and other technical issues that may arise during the lesson were the added technical challenges.

In addition, teacher attitude was revealed in the review of literature as a challenge in the integration of SBTs. Uluyol and Sahin (2016) stated that integral to an effective technology integration process in schools is the role that the teachers play. Teachers are expected to utilize the technologies to enhance their teaching in the classroom (Alberta Education, 2013; Brown & Jacobsen, 2016; Morelock, 2015). But Dehqan et al. (2017) opined that the majority of teachers were not keen on using the technologies and more than likely they had never included them in their classroom instruction. Teachers who were trained prior to the digital age may be reluctant to use SBTs. This was revealed in the results as the principal with the most years of experience as a principal had little experience with using the SBTs in addition to a low comfort level with using the technology. Lewis 2016) confirmed that teachers who are adept in using technology will feel confident to integrate technology in their instructional practices. The findings revealed capacity-related challenges. The capacity related challenges were the attitude of the teacher regarding the use of SBT, the inability of teachers to fully utilize the technology and the lack of professional development opportunities for teachers.

Strategies to Support Use of SBT

In my review of the literature, I found that teachers' attitudes toward the use of SBT could affect effective use of the technology. Not only should teachers be trained to use SBTs but for the effective use of SBTs, it is necessary for principals to implement policies to make it mandatory for teachers to use the instructional technologies to prepare

students for 21st century learning (Gabby et al., 2016). According to Alsaleh and Mahroum (2015) policies provide the path to hold individuals accountable, and to provide accountability is an important starting point for the effective use of instructional technologies in schools. In order to implement a policy and to ensure the policy mandate is being carried out by teachers to use the SBT in a way that enhances students' learning, principals must first be competent in using the technology (Dunham, 2012). If principals are competent with using instructional devices, they will be able to promote the development of policy which will push teachers to support the use of technology in teaching and learning (Dunham, 2012). Without the implementation of policy, the decision would be left up to teachers to use or not use the SBTs to support and enhance learning.

Based on the findings, it is important to have the necessary resources available to support teachers in the effective use of the SB. The results revealed the need for a technology committee and teachers with the ability to use the technologies effectively should be designated technology teacher leaders. The teacher leaders will be able to provide support to teachers when technical issues are presented with the SB. An important piece to the policies and practice to support integration of SBT is communicating with staff and sensitizing staff to the policy standards in the TQS.

Status of Effective use of SBT

In using the SB, Hebing (2017) mentioned that the main phrase with regards to the use of the SB is "when implemented effectively" (p. 25), the SB increases student learning and performance. The SBs are visible in almost every classroom, and the

appropriate use is a motivating factor for students in every area of the teaching and learning process (Liu, 2016). The results revealed that the SBT is an interactive and engaging tool that enhances the teaching and learning process. There are useful options embedded in the SBT and premade lessons that teachers can use to support the students' learning (Pourciau, 2014).

Further results revealed that in order for principals to understand the extent to which the SB was being used and whether teachers were using the SB in effective ways, active supervision was done by walking around and popping in classrooms. By making unplanned visits to classrooms, principals were able to see how the teachers were using the SBTs. Other findings revealed how principals ensured the effective use of the SBs. Principals engaged in planned visits with the teachers and during the visits they observed how the SB was used. Inclusive in the results principals modelled the use of the SB during classroom visits. An important revelation was that principals cannot force teachers to use the technologies or dictate how they should teach their lessons but they encouraged teachers to use the SB in their teaching and learning. The results revealed that principals were aware that to ensure the proper use of the SB, teachers must take professional development courses in the area of technology. The professional development courses were offered within the district on a regular basis and teachers were encouraged to take the courses so that they were equipped to use the SB in effective ways to enhance students' learning.

For example, Gashan and Alshumaimeri (2015) mentioned that providing supports for teachers in the form of ongoing professional development and resources,

teachers will feel empowered and will be more inclined to integrate technology in the classroom. The results confirmed existing empirical study that informed that students were fully engage in the lessons and their performance level increased when the SB was used (Davidovitch & Yavich, 2017; De Silva et al., 2016; Momani et al., 2016). In terms of how the participants thought the SBTs were being used, majority of participants stated that the SBTs were fully utilized. In fact the participants said the SBTs were being used regularly most of the time. A couple of the participants stated that the SBTs were under-utilized and others stated that the use of the SBT varied based on the teacher and the classroom.

Limitations of the Study

This basic qualitative study was used to explore principals' perspectives about their leadership roles to support teachers in the integration of SBTs in K–6 schools and to understand how principals' develop policies and practices that support teachers in the effective use and integration of SBT in K–6 schools in an urban setting in Canada. The research study was limited only to the school district where the data collection took place. The data collection was limited to the K–6 principals who had SBT implemented in their schools.

Another limitation was the small number of participants in this study. As the chief researcher, I had to balance time and work in order to conduct the interviews and the limitation was the three weeks I devoted to collect the data for this study. The responses to the interviews may not have been answered truthfully. My decision to select the district that I work might bias the responses from the interview. Another limitation was

that the population I used for data collection was K–6 principals, therefore the results from this study was not a representation of the wider population of principals. Finally, the participants were from one particular school district in an urban area in Canada, and the use of qualitative methodology, the findings could not be generalized to the larger population of principals. The findings not being able to be generalized, limits the transferability of study.

Recommendations

In pursuing this basic qualitative study, my goal was to understand the perspectives of the K–6 principals regarding their leadership roles and responsibilities to support teachers in the integration of SBTs and to find out how principals develop policies and practices that support teachers in the effective use and integration of SBTs in their schools. The research findings offered the perspectives of the K–6 principals by way of six emerging themes.

The first theme addressed the expertise of the principals in using SBTs, and formed part of the key results and is linked to RQ1. Without the expertise of principals in the area of SBT, the ability to support and provide resources for teachers would be lacking. This result aligned with Perkins-Jacobs (2015) idea that if principals are experts with using technology, they will be skillful with using SBTs and therefore will be able to support teachers in using the SB effectively to enhance students' learning. By taking this approach, the principal characterized as a transformational leader and is guided by the guidelines of the learning and technology policy framework empowers the teachers who are motivated to make the change (see Bass, 1985; learning and technology policy

framework,). I recommend that more research is done with a wider population of principals from other schools and districts to get a deeper understanding of the principals' perspectives regarding their leadership roles and responsibilities to support teachers in the integration of SBTs.

The second theme was linked to RQ1 and addressed the perceived roles and responsibilities of the principal and formed part of the key results. With this second theme of perceived roles and responsibilities, the principal is influenced by the characteristics of a transformational leader. The transformational leadership theory is an approach to leadership and serves as a guide for principals (Bass, 1985). Principals are expected to carry out their roles and responsibilities by providing a school climate where teachers feel supported and feel that their voices are heard (see Balyer, 2012). Using the transformational leadership theory the principal can move the teachers to utilize the SBTs through charismatic guidance and motivation (Bass, 1999). The transformational leadership makes way for principals to create valuable and positive change in their teachers (Smith, 2016).

Principals are guided by the learning and technology policy framework to become knowledgeable and skillful with using technology to support teaching and learning (Learning and Technology Policy Framework, 2013). The review of literature informs that if teachers feel supported in the use of digital devices, they will be more inclined to integrate technology (Cabrera, 2016), especially SBTs in their classroom. I recommend that research is conducted with principals in other school districts to get a broader understanding of their roles as it relates to how they support and collaborate with teachers

in the technology integration process. In the review of literature it was brought to the forefront that an integral part of the technology integration process is the role that the teachers play (Uluyol & Sahin, 2016). The principal as transformational leaders not only operates the school but tries to make things better through collaboration between the teachers and themselves (Northouse, 2001).

The third theme, perceived benefits of SBT formed part of the key results and was linked to RQ1. This theme is twofold and provided benefits for both students and teachers. Riaz (2018) mentioned that the SBT is beneficial to both teachers and students. In the review of literature, the SBT is deemed an interactive and engaging device that enhances students learning Riaz (2018), therefore it should not be left up to teachers to decide whether to use the SBT in their teaching and learning. The findings indicated that the SBTs were used based on the attitude of the teacher. The principal as a transformational leader has the potential to enable teachers' effectiveness in their delivery of instruction (see Emmanouuil et al., 2014) and hence, I recommend that principals develop policies and procedures to ensure the effective use of SBTs. I also recommended that principals implement policies and make it mandatory for teachers to use the SBTs in their instructional practices. For the effective use of SBTs, Gabby et al. (2016) concurred that there is need for principals to implement polices to make it mandatory for teachers to use instructional technologies to prepare students for 21st century learning. The learning and technology policy framework provides guidelines to use instructional technology in effective ways to enhance student learning. Alberta Education (2013) maintained that principals are expected to establish policy to ensure that technology is used effectively

and proficiently in the K–6 classroom to enhance the teaching and learning process. McLeoad and Richardson (2013) confirmed that policy made within the schools were imperative to enable an effective technology integration.

The fourth emerging theme, perceived challenges in the use of SBT is linked to RQ1 and formed part of the key results. The theme, perceived challenges in the use of the SBT generated two kind of challenges, (a) technical challenges and (b) capacity related challenges. Technical challenges were cited as cost and maintenance issues. Alfaki and Khamis (2018) explained that without technical support in schools the SB might malfunction due to a number of issues. Among the issues mentioned were the cost to purchase and maintain the SB. I recommend that a dedicated technology coach is placed in each elementary school to attend to breakdowns and other technical matters with the SB that needed immediate attention. Teachers will feel more supported and will be confident to use the SB effectively in the classroom. Another technical challenge was teachers having to teach with outdated SBs which could be a deterring factor for teachers. I recommend that principals are mindful of the years and life of the SBTs and upgrade and replace them accordingly. The interest and care shown by the principals with regards to updated equipment will boost the teacher's interest in using the SBs. By addressing the technical challenges, the capacity related challenges could be minimized. The capacity related challenges that emerged were teacher attitude, inability of teachers to fully utilize the SBTs, and lack of professional development opportunities.

The fifth theme that emerged was strategies to support use of SBT, and formed part of the key results; and was linked to RQ2. This theme regarding strategies to support

the use of SBT addressed policies and practices to support the use of SBTs. Inherent to the strategies to support the use of SBTs, was involving teachers in the decision making process in the integration of technology to support and enhance students' learning. Clear, open and unswerving communication with teachers encourages positive attitude in the school environment which will ultimately contribute to increased student performance (Chang, 2012; Tyler, 2016). Transformational leaders are characterized by consistent open communication approaches which promotes "two-way communication pathways between principals and teachers" (Tyler, 2016). If communication is not forthcoming between principals and teachers, teachers will feel excluded and will feel that they are not part of the team; which will adversely affect the classroom instruction. The transformational leader in addition to communicating effectively, listens and considers the opinions and requirements of teachers using a "bottom-up participation" (p. 33) resulting in pedagogical change (Day et al., 2001). I recommend that principals encourage two-way communication between teachers and themselves and institute an open-door policy to support the communication, where teachers feel comfortable to voice their opinion and make recommendations for technology integration in school.

The sixth theme, status of effective use of SBT, formed part of the key outcomes and was linked to RQ2 and addressed the definition of effective use of SBT, methods to ensure effective use of SBT by teachers, and status of usage of SBT. The SB has many features to support and enhance the teaching and learning process (Momani et al., 2016). Most importantly, students at every level including all style of learners (auditory, tactile visual) benefit from the use of the smart lessons and they are motivated with the use of

the SB (Momani et al., 2016; Termitez et al., 2015). The SBT is equipped with lots of premade lessons and most importantly, the SB makes it easier for teachers to present a "media-rich" lesson (Pourciau, 2014, p.11) but utilizing all the features require teachers to be versed with using the technology. I recommend that principals actively and constantly supervise teachers in using the SBTs. I also recommend that principals ensure resources are in place to support teachers to become skillful with the use of SBTs. Hebing (2017) noted that with proper implementation of the SB, student performance and engagement is maximized. While, Alejandro et al. (2019) suggested that the use of digital devices by principals convey the significance of the technology to teachers and students. Esplin (2017) confirmed that transformational leaders are of utmost importance for technology to be effectively used in schools. The transformational leadership is the epiphany of change; enabling teachers to become agents of change which allows for a positive school climate (Smith, 2016).

I recommend that further research is conducted using quantitative methods with a wider population of principals and from other schools districts to get a deeper understanding of the perspectives of the principals relating to their roles and responsibilities in the integration of SBTs. Conducting a quantitative study would allow for the results to be generalized to the wider population. With regards to recommendation for future practices, I also recommended that principals provide ongoing professional development training for teachers on how to use the SB appropriately to enhance student learning and smart technology is always evolving bringing about new and different ways to enhance student learning.

Implications

SBT impacts the way teachers teach and the way students learn. The SBTs, if used appropriately can support students learning in a positive way and prepare students for the world of work in the 21st century. According to Mun and Abdullah (2016) the SB empowers students to learn and discover new ideas. This research has addressed principal's perspectives regarding their roles in the integration of SBTs. The results from this study may provide added insight in the SBT integration process in K–6 schools and the leadership role principals play to support teachers in the integration of SBT in the classroom. The findings of this study may make a positive impact within the K–6 schools for the integration of SBTs to prepare students for 21st century workforce and hence positive social change may occur at the local or community level and spiral beyond. Other ways that this study may contribute to positive social change is that the study may assist in creating a higher level of understanding at the administrative level which may involve including teachers in the decision-making process for the integration of SBTs in schools; which may ultimately position students for increased academic performance and engagement and therefore positive social change would be achieved. Additionally, the results of this study may effect positive social change as it may provide awareness on the importance of providing continued smart technology training and support for teachers and insight on policy implementation to ensure the effective use of SBTs to enhance student engagement and performance.

Reflections and Conclusions

The SB is a digital tool with extraordinary capabilities that replaces the traditional way of teaching to a more digitally enhanced learning environment (Luo & Yang, 2016: Riaz, 2018). The SB is an interactive white board that enhances the way teachers teach, making it easier for student with different learning styles, along with students with learning disabilities to understand and enjoy learning, thus supporting an inclusive classroom setting (Riaz, 2018). Ultimately the SB promotes interactivity, keeps student motivated and engaged, makes learning fun and increases student learning (Luo & Yang, 2016: Pourciau, 2014).

Providing enhanced, engaged, fun learning spaces is in keeping with the learning and technology policy framework with part of its purpose being the development and strategic planning of technology integration in the schools to enhance student learning (Learning and Technology Policy Framework, 2013). The goal is not to use the smart technologies as just an addition but to recognize it as a fundamental part of the teaching and learnings process in order to help students succeed. With the plan consideration for technology to be an integral part of the curriculum and to ensure a successful technology integration process, the principals are at the head. Research suggests that for the SB to be effectively and adequately used in the classroom to enhance student learning, principals must be skilled with using the technology, ensure teachers are trained and supported, implement policies and strategies to ensure the continuous and appropriate use of the technology in the classroom. Principals must not only be managers in their schools but must also be technology leaders (Alejandro et al., 2019). So as part of the conceptual

framework, Bass's (1985) transformational leadership theory was used to guide the study. The transformational leadership theory speaks to the proactive response in promoting positive change within the workplace (Bass, 1985).

The plan for technology integration addressed the successful out comes of students' learning and was also guided by the learning and technology policy framework instituted by Alberta Education (see Learning and Technology Policy Framework, 2013). Hence implementing the SBTs in the elementary classrooms is deemed a step in the right direction to enhance the teaching and learning process. However, the SB by itself is ineffective unless it is used conscientiously by teachers (Davidovitch & Yavich, 2017: DeSilva et al., 2016). Teachers will or will not use the SBT effectively base on their comfort level and whether they are trained to use it. Riaz (2018) maintained that the teachers have a major responsibility to integrate SB in pedagogy. According to Williams (2015) a major precondition to accept and integrate technology in the teaching and learning process is whether teachers display a positive attitude in using the devices.

The results from this study, if implemented, may be used by principals to develop education programs and policies that will support teachers to more competently implement the technology in their teaching and learning to ultimately increase student learning. The results may support the school district's technology plan to facilitate planning for the successful technology integration outcomes to improve student engagement and performance. Additionally, this study provided insight that support plans for successful SBT integration to enhance student learning through maximized efficient learning opportunities. The guidelines of the Alberta Education, learning and technology

policy framework are used as a yardstick for the planning of learning outcomes. Policy direction 4 of the learning and technology policy framework addressed the importance of principals to implement policies and strategies to ensure educators use digital tools effectively and proficiently to support a student centered learning environment (Learning and Technology Policy Framework, 2013).. Finally, getting the perspectives of the principal regarding their leadership roles in the integration of SBT provided relevant information and may be beneficial to the schools.

The perspectives of the principals as they relate to their leadership roles and responsibilities to support teachers in the integration of SBTs and how they develop policies and practices that support teachers in the effective use and integration of SBTs in their schools were revealed in this research. The perspectives of the principals were influenced by their past experience in their role as teachers and their current roles as principals. The key findings of this basic qualitative study were that majority of principals were knowledgeable and avid users of technologies inclusive of SBTs and that teachers used the SBTs majority of the time. Other key findings were that teachers used the SBT based on their attitudes toward the technology and the use of the SB varied based on the teacher and the classroom.

All of the participants interviewed with the exception of one participant were experienced and had high comfort level with using the SB. The results revealed that principals as part of their roles and responsibilities, must be very knowledgeable with using technology and especially SBTs.

The participants reported that the SBT was an interactive and engaging tool that was beneficial for both students and teachers. The SB kept students highly engaged, provided interactivity in the classroom and provided them with skills to meet 21st century demands. Teachers were more organized with the use of the SB, teachers were able to incorporate different teaching modalities and made the teaching easier. All of the participants agreed that part of their roles and responsibilities were to provide professional opportunities in the area of technology for teachers and ensured teachers were included in the decision making with regards to technology integration. Another role that the participants highlighted was to make SBT available to the teachers support and enhance their delivery of instruction.

Participants reported that the SBTs were costly both to purchase and maintain. The teachers must be provided with the proper supports and resources to maximize and use the technology to its full potential. The SB is equipped with pre-made lessons that may provide teachers with added tools to enhance the teaching and learning process.

Participants reported that lack of training and the attitude of the teachers determined the effective use of the SB. Some participants stated that the biggest challenge was the malfunctioning of the board and the time that was needed to troubleshoot and attend to breakdowns. All the participants reported that tech lead or tech teams among teaching staff provided supports to teachers when the need arose. The participants reported that each school within the division had an I. T. person assigned to a group of schools. The I. T person worked in the school that they were assigned to half day to a day, or two days depending on the needs of the school to provide support for teachers with technology related issues.

The effective use of SBT makes the learning fun, interactive and engaging, while students learn in digitally enhanced student centered environments. Teachers are more organized and teaching is easier with the use of the SBTs. Teachers can teach with more versatility as they are able to incorporate more teaching methods in their instruction. The knowledge and comfort level of the principal in using the SB is crucial to the effective implementation and use of the SBTS in the school. Finally, the roles and responsibilities of the principals in the integration of SBT are important to the successful SBT integration process.

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Appendix A: Interview Protocol

To the Participant: This research is to find out your perspectives as it relates to your leadership roles and responsibilities in the integration of Smart Board technologies in your school. To maintain the focus please tell me about your leadership role in the integration of SB in your school.

a.) Are you feeling okay to proceed with this interview? We are here today to talk about your role in the integration of Smart Board Technologies in your school.

b.) Could you tell me about your knowledge and comfort level with using instructional technologies? Could you tell me what part do you play in the integration of technologies in your school?

c.) Could you tell me about your experience using SBT as an instructional device in the in the teaching and learning process?

d.) Please tell me about your role in the SBT integration process in the classrooms? Please tell me what methods do you use to ensure that teachers are teaching with the SB?

e.) Some teachers use the SB to project lesson content and as a regular whiteboard. Please tell me what methods you use to ensure that teachers are using the SB in effective ways to enhance student learning?

f.) Please tell me what challenges you face when you attempt to ensure the proper use of the SB to enhance student learning?

g.) Could you tell me what strategies you use to support teachers in the appropriate use of the SB?

h.) Please tell me what challenges you face when attempting to ensure the appropriate use of the SB by teachers?

i.) Please tell me what support and resources do you put in place to ensure that teachers are comfortable to maximize the different features of the SB in the classroom

j.) Now, please tell me about your general feeling about how the SBTs are being used in the classroom to enhance student performance and engagement? Is there anything else you would like to tell me?

Main Interview Questions

RQ1. What are the perspectives of the K-12 principals as they relate to their leadership roles in ensuring the effective use of SBTs in their schools?

RQ2. How do principals develop policies and practices that support the effective use and integration of SBTs in their schools?

Sub questions

1. What are the methods you use to ensure that teachers are teaching using SBTs?
2. What strategies have you use to ensure that the SB is being used effectively by teachers?
3. What are the challenges you experience when attempting to enhance the use of the SB by teachers?
4. What support and resources do you put in place to ensure that teachers are comfortable in using all the features of the SB to maximize student learning?

Round 2 Interview Questions

1. Based on your experience in using instructional technology and more so SBT, have you noticed any changes in the way students learn? If so what changes have you noticed?
2. Do you believe that the Smart Boards in your school are being used in effective ways to enhance student learning? Please explain your answer.
3. On a scale of 1 -10 (with 1 being very little to not being used), (5 being sometime) an (10 being most of the time or all the time), how would you rate the use of the Smart Board by your teachers in your school? Explain the reason for your answer.
4. What is your perspective regarding the integration of Smart Board Technology in your school?
5. How have your beliefs about the use of Smart Board Technology as an instructional tool influenced your support of teachers to maximize and effectively use Smart Board Technology to enhance student performance and engagement?

Appendix B: Code Book

RQ1 - Perspective about leadership roles and responsibilities			
Nodes Name	Description	Files	References
1. Principal's expertise regarding SBT			
1. Understanding of SBT	This node represents principals' level of understanding of SBT		
1. Basic	Basic understanding of SBT	1	1
2. Expert	Expert in SBT	4	4
2. Level of comfort in using SBT	This node represents principals' level of comfort in using SBT		
1. Highly comfortable	Highly comfortable using SBT	6	8
2. No experience	No prior experience of using SBT	1	1
3. Means to stay abreast	This node represents principals' sources to stay abreast about SBT		
1. Be part of professional association	Be part of professional associations of SBT	1	1
2. Conversations within division	Conversations within division to understand SBT	1	1
4. Impact of teacher's belief on SBT on teachers	This node represents principals' views about impact of teacher's belief on SBT on teachers		
1. Convincing teachers to use SBT	Convincing teachers to use SBT	2	2
2. Provision of professional development opportunities	Provision of professional development opportunities	2	2
3. Provision of resources	Provision of resources	1	1

2. Perceived roles and responsibilities	This node represents principals' perceived roles and responsibilities		
1. Strategic role	Strategic role of principals'		
1. Conducting need assessment	Conducting need assessment for SBT training	1	1
2. Involve teachers in technological decisions	Involve teachers in technological decisions while implementing SBT	1	1
3. Deciding appropriate technologies	Deciding appropriate smart board technologies	2	3
4. Using SBT as Quality standard	Using SBT to maintain quality standard	1	1
5. Making long term plan for technology adaptation	Making long term plan for technology adaptation	3	3
6. Oversee implementation	Oversee implementation of SBT	1	2
2. Facilitation responsibilities	This node represents principals' responsibility for facilitation of SBT		
1. Making SBT available to teachers	Making SBT available to teachers	5	10
2. Provide necessary resources	Provide necessary resources	2	3
3. Professional development of teachers to use SBT	Professional development of teachers to use SBT	6	14
4. Enabling environment for use of SBT	Enabling environment for use of SBT	1	1
3. Perceived benefits of SBT	This node represents principals' views about perceived benefits of SBT		
Benefits for students	Benefits for students		
1. High student engagement	High student engagement in the institution	5	6

2. Interactive tool for students	Interactive tool for students to enhance learning	4	4
3. Digital literacy of students	Enhance digital literacy of students	1	1
Benefits for teachers	Benefits for teachers		
1. Makes teachers well organized	Makes teachers well organized	1	2
2. Allow using different teaching methodology	Allow using different teaching methodology	1	1
3. Making teaching easy	Making teaching easy	3	3
4. Perceived challenges in use of SBT	This node represents principals' views about perceived challenges in use of SBT		
1. Technical challenges	Technical challenges		
1. Acquisition and maintenance of SBT is expensive	Acquisition and maintenance of SBT is expensive	2	3
2. Outdated equipment and technology	Outdated equipment and technology	1	4
3. Technical issues	Technical issues	2	3
2. Capacity related challenges	Capacity related challenges		
1. Teacher attitude	Teacher attitude	2	3
2. Inability of teachers to fully	Inability of teachers to fully utilize it	4	5
3. Lack of professional development opportunities	Lack of professional development opportunities	2	2
RQ2 - Polices and Practice to support integration of SBT			
1. Strategies to support use of SBT	This node represents strategies to support use of SBT		

1. Policies to support SBT use	Policies to support SBT use		
1. Ensuring availability of resources	Ensuring availability of resources for SBT	3	3
2. Technology Committee	Make technology committee	2	4
3. Technology teacher leaders	Identify technology teacher leaders	5	6
2. Practices to support SBT use	Practices to support SBT use		
1. Communication with staff	Communication with staff	1	3
2. Sensitization that technology usage is part of Quality standards	Sensitization that technology usage is part of Quality standards	1	1
3. Identify early adopters	Identify early adopters	2	3
4. Professional development	Professional development	7	12
5. Support for fixing technology breakdowns	Support for fixing technology breakdowns	4	7
2. Status of effective use of SBT	Status of effective use of SBT		
1. Definition of effective use of SBT	Definition of effective use of SBT		
Interactive	Interactive	1	1
Pre-made lessons	Pre-made lessons	1	1
Using full options of SBT	Using full options of SBT	1	2
2. Methods to ensure effective use of SBT by teachers	This node represents methods to ensure effective use of SBT by teachers		
Active supervision	Active supervision	1	2
Being a role model	Being a role model	2	2
Conversations	Conversations	4	10

Encouraging teachers to use it	Encouraging teachers to use it	1	1
Observations	Observations	7	9
Professional development of teachers	Professional development of teachers	2	2
Student engagement	Student engagement	2	4
3. Status of usage of SBT	This node represents status of usage of SBT		
Full utilization of SBT	Full utilization of SBT	2	4
Regular (between 70 to 80 percent) use of SBT	Regular (between 70 to 80 percent) use of SBT	4	4
Under utilization	Under utilization	1	2
Varies	Depends on teacher and type of course	1	2

Appendix C: Integrated Maps of Themes and Subthemes