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

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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. 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 served as the conceptual frameworks for this study Data were collected from seven K–6 principals using semi-structured interviews. Findings from coding analysis revealed six themes: principal's expertise regarding SBT, perceived roles and responsibilities, perceived benefits of SBT, perceived challenges in the use of SBT, strategies to support use of SBT, and status of effective use of SBT. The results 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.

Keywords: Smart Board, Education, Leadership, Transformation, Social Change.

INTRODUCTION

Technology has revolutionized the world and has greatly impacted the educational system (Dehqan et al., 2017; Riaz, 2018). 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). 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). 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. Globally, one current piece of instructional technology visible in almost every K–6 classroom is the SB (Gurbuzturk, 2018; 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). 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..

PURPOSE OF THE STUDY

This basic qualitative study addressed the perspectives of the principals 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. This basic qualitative design was used to investigate the main phenomenon of this study, which involved principals' perspectives regarding their leadership roles and responsibilities in the integration of SBTs in K–6 schools in an urban district in Canada. Principals may find this study useful to develop education programs and policies to support teachers to effectively use the technology to enhance student learning.

RESEARCH QUESTIONS

The following research questions (RQs) were used to guide this study:
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?

REVIEW OF LITERATURE

Importance of Technology Integration

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. 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. Therefore, teachers must be supported and then given the mandate to effectively teach with technology.

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). 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. In doing so, the principal's sincere encouragement and inspiring leadership tactics motivate the teachers to use the SBTs in effective ways (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).

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). Currently,

the SB is considered to be the most popular instructional technological device in classroom and is deemed a highly interactive (Luo & Yang, 2016). SBT is a powerful influence in teaching and learning and 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 (Almajali et al., 2016; Davidivitch & Yavich, 2016; Riaz, 2018). A major advantage of the SBT is the huge work area that it offers, supporting users to work in groups (Almajali et al., 2016), 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). The SB is a major motivational device for student learning and is beneficial to students who are intrinsically or extrinsically motivated, but the SB can be difficult for teachers to maneuver without strong technical abilities or little or no SB training (Alfaki & Khamis, 2018). Also, 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).

Role of the Principal

The society we live in is highly digitized and therefore schools must be provided with principals who technology savvy, have the ability to enable change and can maintain a learning environment for the integration of technology (Arokiasamy et al., 2015). Chang (2012) concurred that 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. 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). 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). 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 (Alsaleh & Mahroum, 2015)). 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).

RESEARCH DESIGN AND APPROACH

Research Design

The perspectives of the participants were crucial to an understanding of principals' leadership roles in the integration of SBT in K–6 schools and whether principals put policies and practices in place to support teachers to ensure effective integration of the SBT in the teaching and learning process. Since the perspectives of the participants led to an in depth understanding of the leadership roles and responsibilities of the participants in the integration of SBTs in K–6 schools, a basic qualitative approach was chosen. The focal point of basic qualitative methodology is 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 (Merriam, 2009).

Conceptual Framework

The conceptual framework that informed this study was based on two frameworks. The first framework was drawn from Bass's (1985) theory of transformational leadership which was used to provide a basis for the analysis of the data. Using Bass's (1985) theory, the principal can move the teachers to utilize the SBTs through charismatic guidance and motivation. 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. Smith (2016) expressed that transformational leaders enable teachers to become agents of change which greatly affects the climate of the school.

The second framework attributed to Alberta Education, (2004a) is the learning and technology policy framework. 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. Stated in policy direction 4 of the framework, 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).

Setting, Population/Participants

Purposeful sampling was used to obtain seven elementary schools principals in Canada. The criteria for the sampling procedure were twofold; that the principals must serve as a principal in K–6 schools and the principals must have SBTs implemented in their K–6 classrooms. The site where this 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 and contains a diverse population of students and staff and a large population of elementary, 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.

Data Collection, Coding and Analysis

Data was collected from seven principals in K–6 schools by way of the telephone. Data from each recorded interview was transcribed manually and verbatim. The data was then coded. The data was organized based on the themes that emerged by way of the coding of the transcripts. NVivo12 software, a qualitative data analysis was utilized to thematically analyze the data. Using the NVivo12, categories were developed 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. Similar codes were grouped together in containers called nodes. The grouping of the codes, generated broader thematic categories which was essential for the development of approximately six themes for this basic qualitative study.

RESULTS

Introduction

The purpose of this basic 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.

Research Question 1

Research Question1 asked the following: What are the perspectives of the K-6 principals regarding their leadership roles and responsibilities to support teachers in the integration of SBTs? The following four themes were identified:

- Principal's Expertise Regarding SBT
- Perceived Roles and Responsibilities
- Perceived benefits of SBT
- Perceived Challenges in use of SBT

Theme # 1: Principal's Expertise Regarding SBT

Principal's expertise regarding SBT was the first theme that emerged from coding the data. Principal's expertise were crucial to the effective integration of SBT. According to Dunham (2012) 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. The categories *understanding of SBT, level of comfort with using SBT, means to stay abreast, and impact of teachers' belief on SBT on teachers* emerged, shown in Fig. 1 illustrated a direct relationship with principal's expertise regarding SBT.

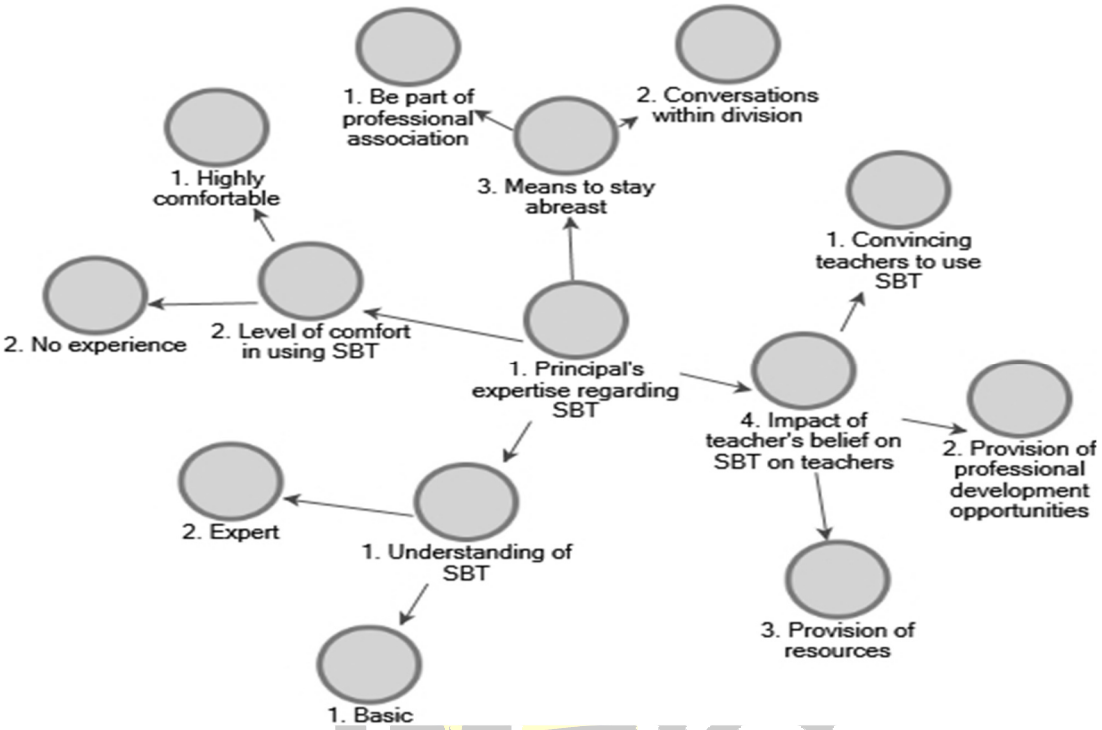

Fig. 1 Principal's Expertise regarding SBT

Theme # 2: Perceived Roles and Responsibilities

Perceived roles and responsibilities was the second theme that emerged from coding the data. In regards to perceived roles and responsibilities, 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. The categories illustrated in Fig. 2 showed *facilitation responsibilities and strategic roles* as important elements for the effective integration of SBTs.

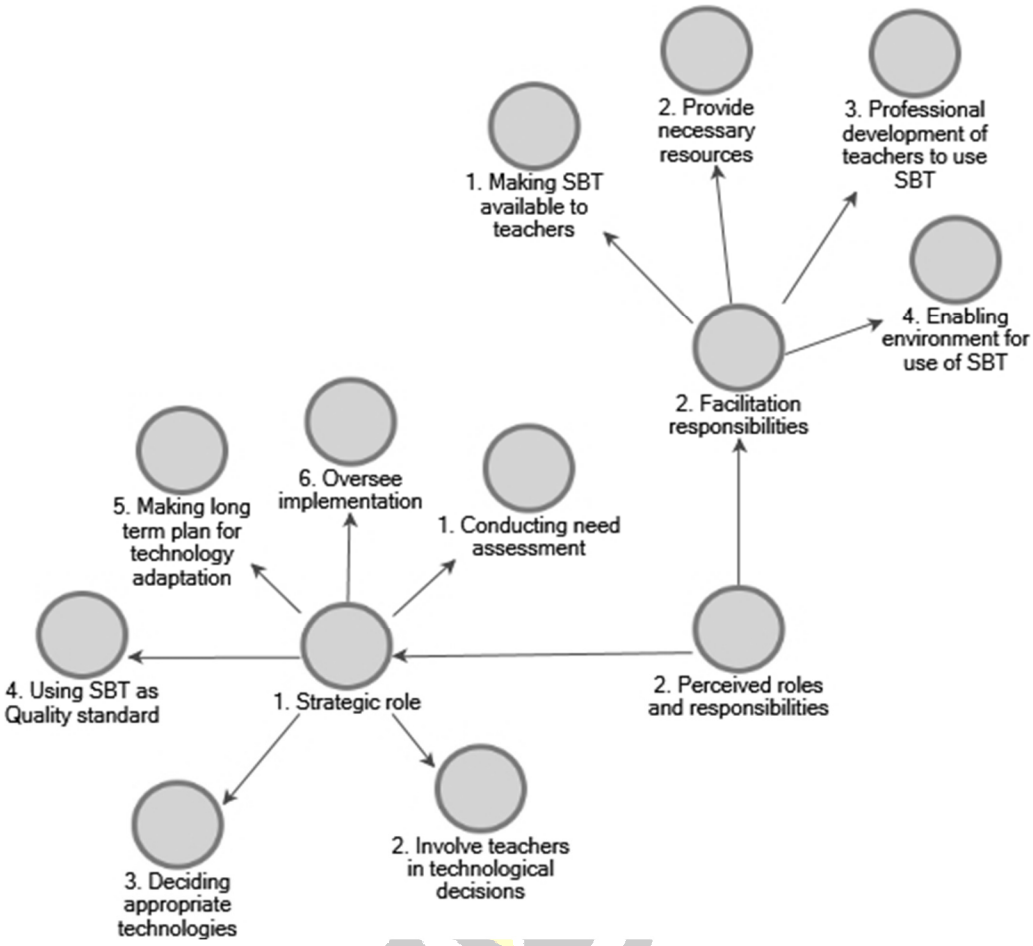

Fig. 2 Perceived Roles and Responsibilities

Theme # 3: Perceived benefits of SBT

The perceived benefits of SBT included the benefit to students and the benefit to teachers. 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). According to Davidivitch and Yavich, (2016), the SB when combined with the computer gives rise to the students' full attention and thoughts in resourceful means, thus promoting higher order thinking. The participants recognized that 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.

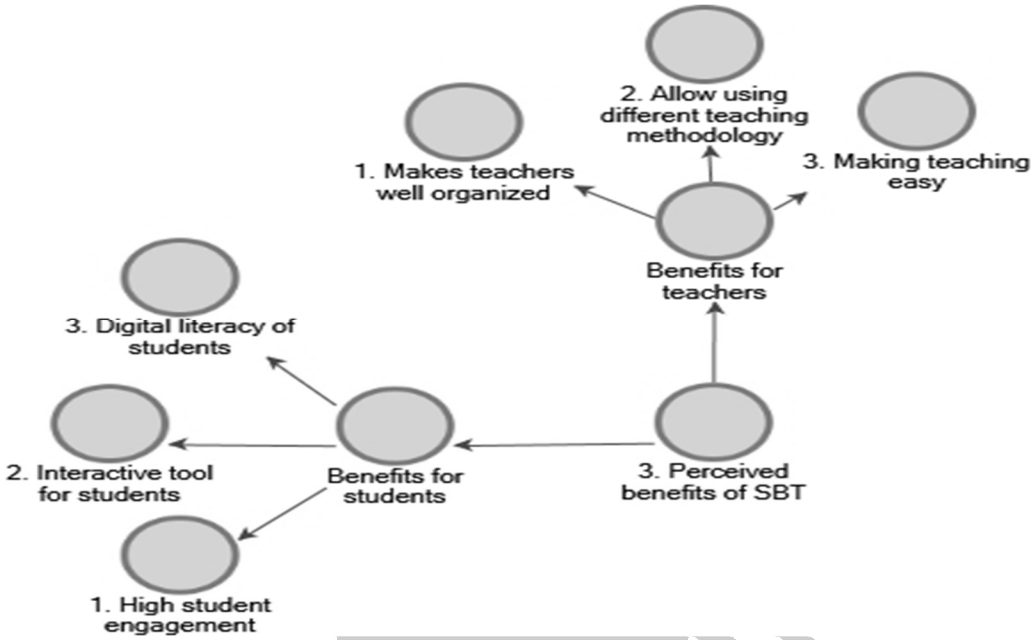

Fig. 3 Perceived benefits of SBT

Theme # 4: Perceived Challenges in use of SBT

Perceived Challenges in use of SBT was the fourth theme of this study, and it showed the categories and themes that emerged from coding the data which directly relates to Research Question1. The categories emerged were *technical challenges and capacity related challenges*. Among the challenges, the participants agreed 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.

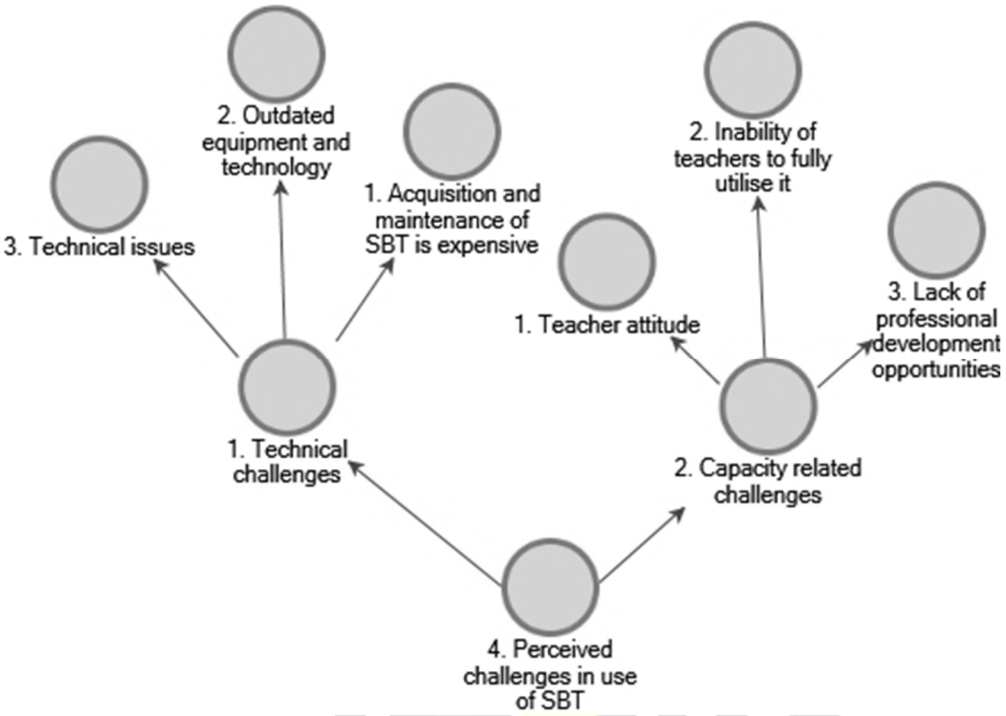

Fig. 4 Perceived Challenges in use of SBT

Research Question 2:
Research Question 2 asked, how do principals develop policies and practices that support teachers in the effective use and integration of SBTs in their schools? They 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 following two themes were identified:

- Strategies to support use of SBT
- Status of effective use of SBT

Theme # 1: Strategies to Support use of SBT

Strategies to support use of SBT was the first theme that emerged from participants' responses. *Ensuring availability of resources, technology committee, and technology teacher leaders* were codes that emerged. Supports for teachers are central to the effective use of SBT to enhance student learning and is a major strategy needed. One principal mentioned that supporting teachers, making sure the technology is working appropriately, and making decisions were integral to a successful SBT integration.

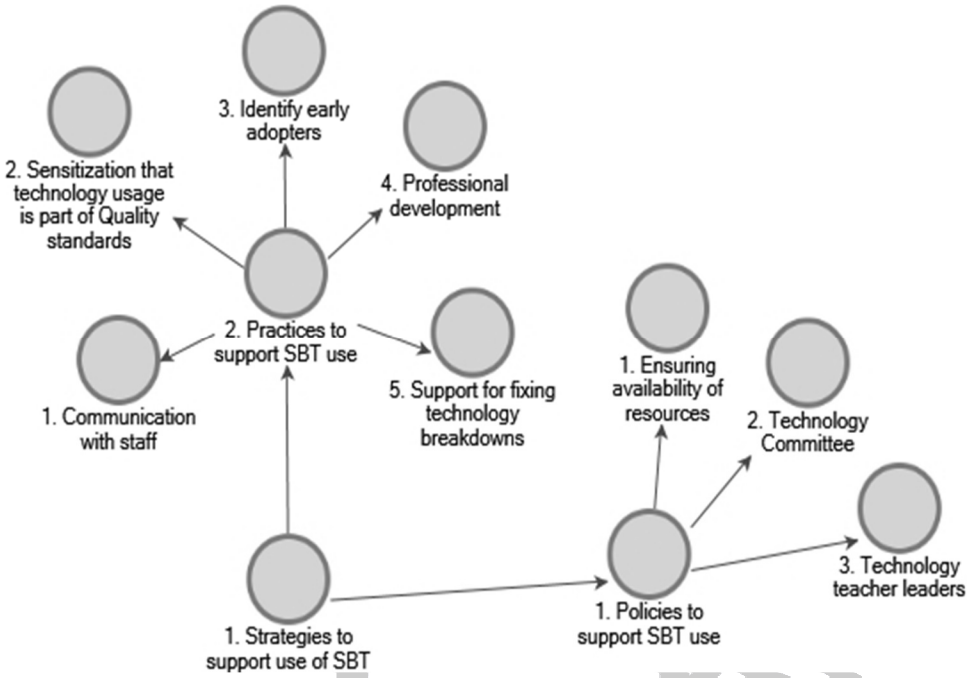

Fig. 5 Strategies to Support use of SBT

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. *Interactive, pre-made lessons, and using full options of SBT* were codes that emerged under the theme of status of effective use of SBT. An effective use of the SB is to utilize the pre-made lessons with the software package. There are other useful options of the SB that teachers can navigate and use, providing they know how. Participants mentioned that, actively supervising teachers is one method to ensure the proper use of the SB. Offer professional development for teachers who were not including the use of the SB was imperative for teachers to comfortably and skillfully use SBTs.

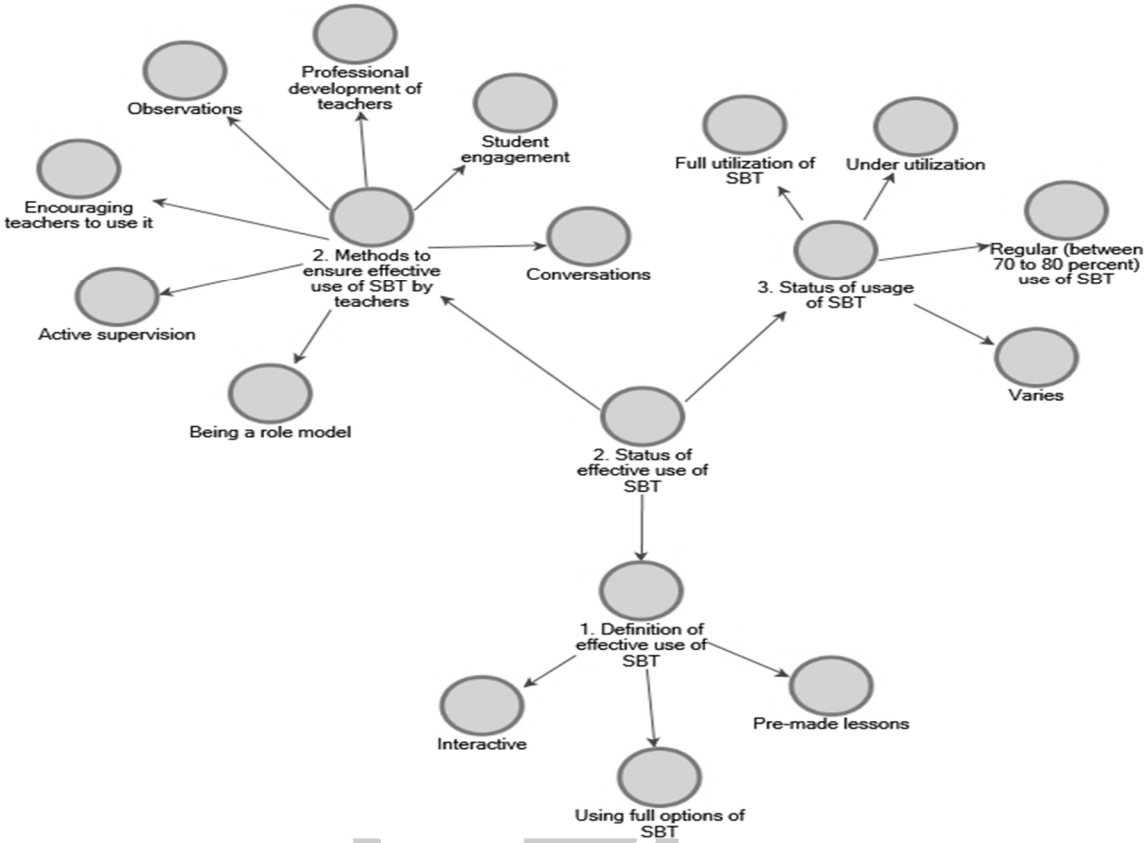

Fig. 6 Status of Effective use of SBT

An integrated map of themes and subthemes are shown in Fig. 7.

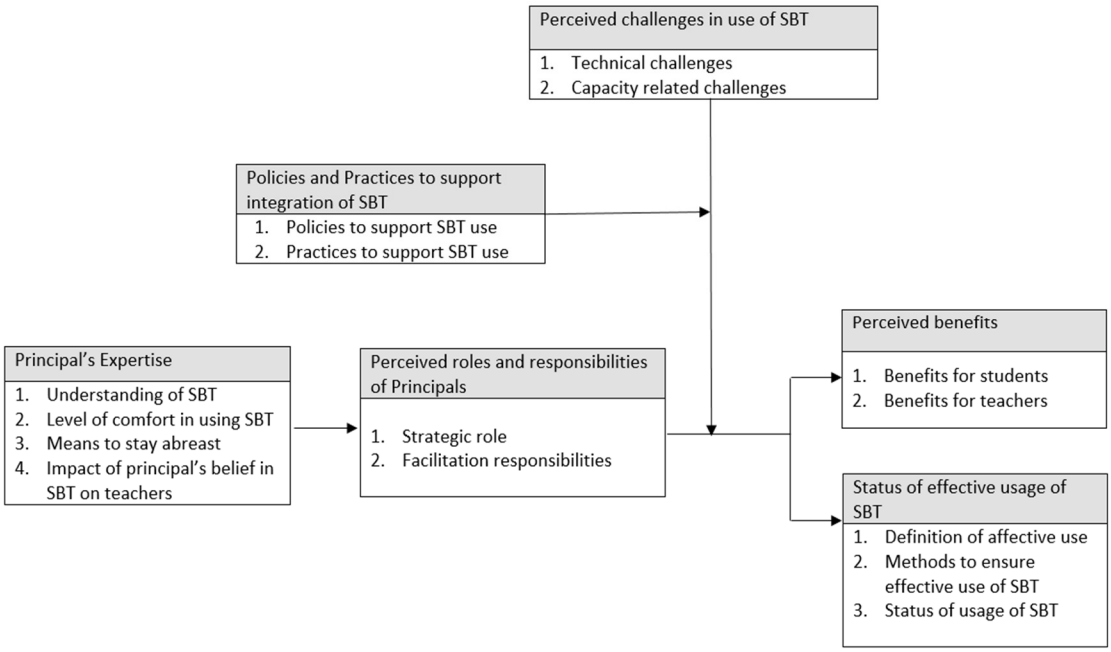

Fig. 7 Integrated Maps of Themes and Subthemes

Interpretation of Findings

To interpret the findings of this study, the two research questions were taken into account. RQ1 allowed for the exploration of principals' perspectives regarding their leadership roles and responsibilities to support teachers in the integration of SBTs. RQ2 allowed for the exploration of principals' perspectives on how they develop policies and practices to support teachers in the effective use and integration of SBTs in their schools. The findings of this study in relation to RQ1 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).

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; which 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 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.

The results suggested that the SB provides benefits for both students and teachers. The review of literature, revealed that for students, the SBT was deemed a highly interactive and an important instructional device in pedagogy (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). 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).

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. 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.

With regards to RQ2, the results were consistent with the review of the literature, where it was 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). 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, including them in decision making and sensitizing staff to the policy standards in the TQS.

Further results in this study 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; and by making unplanned visits to classrooms. 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, and they 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 pedagogy. 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 and 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.

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.

IMPLICATIONS

Significance to Practice

This study 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 SBTs, if used appropriately can support students learning in a positive way and prepare students for the world of work in the 21st century. The SB empowers students to learn and discover new ideas. SBT impacts the way teachers teach and the way students learn (Mun & Abdullah, 2016).

The results of 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. This study may make a positive impact for the integration of educational technologies within K–6 schools.

CONCLUSIONS

The purpose of this basic 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. The perspectives of the principals were influenced by their past experience in their role as teachers and their current roles as principals.

This study 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 learning. This study provided insight that support plans for successful SBT integration to enhance student learning through maximized efficient learning opportunities. 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 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).

The results of this study revealed that principals as part of their roles and responsibilities, must be very knowledgeable with using technology and especially SBTs. The key findings 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. The results indicated that the biggest challenge was the malfunctioning of the SB and the time that was needed to troubleshoot and attend to breakdowns.

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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