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Tech-Savvy School Principals Leveraging Crisis Leadership to Support Teaching and Learning in Their Schools Through COVID-19 Pandemic

Abstract

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The findings of this study indicated that tech-savvy principals were not stuck in the structural rut that most principals found themselves in during the COVID-19 crisis. Four main themes emerged from the data. The first theme addressed how recognized tech-savvy principals demonstrated decisive decision making during the COVID-19 crisis to maintain the safety of their students. Theme two was about how recognized tech-savvy principals demonstrated flexibility during the crisis to maximize their schools functioning. Third theme addressed the recognized tech-savvy principals' creativity. The fourth theme focused on how recognized tech-savvy principals used communications to encourage family engagement to strengthen students' learning.

Based on these findings, the new knowledge established in this study contributes to the literature of school technology leadership and crisis leadership as important factors to supporting teaching and learning process during the time of crises through leveraging the crisis leadership attributes.

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Tech-Savvy School Principals Leveraging Crisis Leadership to Support Teaching and
Learning in their Schools Through COVID-19 Pandemic

A Dissertation

Presented to

the Faculty of the Morgridge College of Education

University of Denver

In Partial Fulfillment

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Mohsen Alzahrani

June 2022

Advisor: Dr. Kristina Hesbo

Title: Tech-savvy school principals leveraging crisis leadership to support teaching and learning in their schools through COVID-19 pandemic
Advisor: Dr. Kristina Hesbol
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Chapter One: Introduction

In the first few months of 2020, the COVID-19 pandemic changed how schools are run and how students are educated across the world. The COVID-19 pandemic upended schools and forced a total or partial school closures starting from the spring of 2020 which was a historic shutdown. Most governments across the world closed schools temporarily to limit and contain the spread of the COVID-19 pandemic. As of March 2020, The Organization for Economic Co-operation and Development (OECD) estimated that over 421 million K-12 students were affected due to total or partial school closures in more than 60 countries across the globe (World Economic Forum, 2020). During the first half of 2020 year, uncertainty was dominating the situation everywhere because the pandemic spread rapidly, and most schools struggled to react quickly and adequately (Grissom & Condon, 2021; McLeod & Dulsky, 2021; Mutch, 2020). Schools were going through one of the most difficult challenges in our lifetime, which might have a fundamental change on the education systems around the world (World Bank, 2020). “It was evident that the global pandemic has created an unprecedented challenge for school leaders” (McLeod & Dulsky, 2021, p. 2).

Uncertainty has been the main challenge that makes the COVID-19 pandemic crisis unique and different from all other crises that have happened in schools such as

natural disasters and mass shootings (Lieberman, 2020; McLeod & Dulsky, 2021). This uncertainty made many schools stumble, unsure of what to do. During the COVID-19 crisis, school principals played vital roles in helping their schools adjust to the new norm. Principals found themselves dealing with uniquely difficult situations and responding to evolving, changing, and ambiguous circumstances. They were expected to lead their schools and protect students and teachers while keeping teaching and learning going during crises (McLeod & Dulsky, 2021; Mutch, 2020; Thornton, 2021). Therefore, during the COVID-19 crisis, school principals turned to instructional technology to provide an immediate solution for this crisis and to keep the teaching and learning processes going and their teachers and students safe. Whether they liked it or not, using technology was the only option they had to ensure continuity of learning in their schools. While some schools were ready for this radical shift, other schools struggled because they did not have the capacity and the infrastructure in place for instructional technology (McLeod & Dulsky, 2021). In fact, educational technology can help educators keep the teaching and learning process going during school closure as well as to minimize learning loss and the consequences of school closure on students. But first, school principals must understand the capacities and benefits of new technology and focus on building the capacity of their schools in order to promote a school culture that encourages exploration of new digital tools and techniques in teaching and learning (Schiller, 2003). Creating such an environment in schools is mainly the responsibility of principals because they can provide access and support to students and teachers, and most importantly lead by example to encourage digital practices in their schools (Raynor et al., 2015). Being a

tech-savvy school leader is essential today because school leaders are key factors in the implementation of instructional technology in schools as they can build the capacity of their school community and influence the work and ideas of their teachers, students, and staff to encourage technology use by modeling and leading by example (Gardner, 2011; Leithwood et al., 2010; Raynor et al., 2015).

As mentioned above, a vast majority of schools were struggling and operating from fear, particularly in the early days of the COVID-19 crisis, whereas other schools rose to the occasion because they had been prepared for this moment by building their capacity. The capacity of a school is dependent on how well equipped its community can adapt to meet their needs. Capacity building is a great way to strengthen schools to meet student and community needs in this rapidly changing world (Darling-Hammond, 1993). Harris (2001) defined capacity building as creating a learning environment, opportunities, and fostering collaboration and mutual learning. In fact, capacity building is a leadership task. This means school principals are expected to strengthen their schools' abilities by providing resources and opportunities to learn for whole school community. There is no doubt that the work of school principals is always complex because it involves many aspects of school. However, one of the main responsibilities of school principals is building their school capacity as Leithwood, Day, Sammons, Harris, and Hopkins (2006) stated that school principals are responsible for building their school's capacity and revealing the abilities of their teachers. School principals should build their school's capacities by creating and fostering a collaborative learning environment for the whole school community to prepare them for future events and even possible unforeseen crises.

Problem Statement

The COVID-19 crisis exposed and revealed the weaknesses of many schools and education systems, including the lack of digital infrastructure in schools and the lack of principals' preparation to use digital tools for crisis management (Anderson, 2020; Thornton, 2021). Many education specialists were calling to legislate new policies, investing more in digital and remote learning to minimize the impact of the pandemic on schools (Anderson, 2020). Schools were facing tough times, and the situation in schools represented a real and compelling research topic. Therefore, many researchers started to explore what was happening in schools. However, many studies were conducted during the first few months of the COVID-19 pandemic (Anderson, 2020; McLeod & Dulsky, 2021; Sawchuk, 2020) which is not sufficient time to review what happened throughout the crises. Mutch (2015b) noted that we need at least one year after a crisis to start to review what happened and how schools responded to it. This aligns with what Harris and Jones (2020) found that "a new chapter is being written about school leadership in disruptive times that will possibly overtake and overshadow all that was written before on the topic" (p. 246). Therefore, I believe there was a need to wait at least a year to explore the effective practices that tech-savvy principals enacted to support teaching learning process during the crisis.

An important gap that I found in the literature regarding this topic was that many studies explored the schools' experiences and responses to the COVID-19 crisis in general (Grissom & Condon, 2021; Mutch, 2020; Thornton, 2021). Other studies focused on one type of school, such as Wodon (2020) who focused on Catholic schools in

particular. There were no studies focused on the effective practices that tech-savvy school principals used to support teaching and learning during the crisis, and I believe this gap in the literature needed to be explored. Therefore, this study examined these issues and addressed these gaps through an exploratory case study of the effective practices that tech-savvy principals enacted to support teaching and learning in their schools during the first academic year of the COVID-19 crisis. Due to the limited availability of research on this topic as well as the challenges most schools faced during the COVID-19 pandemic, I strongly believe the study of how tech-savvy principals supported teaching and learning in their schools during the first academic year of the COVID-19 pandemic is an important and timely topic.

Significance of the Study

No one can expect when the next crisis will strike. Therefore, school principals must be ready and equipped with the necessary digital skills as well as crisis leadership skills to lead their schools, especially in difficult times. Drawing on the research problem, this study was designed to bridge the gap in the literature by exploring the effective practices that tech-savvy principals enacted to support teaching and learning in their schools during the first academic year of the COVID-19 crisis. Waiting for a whole academic year before conducting the study enabled me to get a bigger picture of what was really happening in schools. Moreover, unlike many other studies that tried to explore the schools' responses to the COVID-19 crisis, this study was specific in terms of its goals by focusing on the way tech-savvy principals leveraged crisis leadership to support teaching and learning in their schools during the first academic year of the

COVID-19 crisis. Because of the limited research on this topic, I believe this study will contribute to the body of the literature by providing crucial information and details regarding the ways in which tech-savvy principals leveraged crisis leadership to support teaching and learning in the first academic year of the COVID-19 crisis.

Purpose of the Study

The purpose of this exploratory case study is to learn about the effective practices that tech-savvy principals enacted to support teaching and learning in their schools during the first academic year of the COVID-19 crisis. It ultimately aimed to understand and detail how tech-savvy principals leveraged crisis leadership to support teaching and learning in their schools during the first academic year of the pandemic. This study serves as a wake-up call to leadership preparation programs to focus on preparing school principals as tech-savvy principals so they can focus on teaching and learning practices.

Research Question

How did nationally recognized tech-savvy school principals leverage crisis leadership to support teaching and learning in their schools during the first academic year of the COVID-19 pandemic?

Organization of the Study

In this exploratory case study, I explored the roles of recognized tech-savvy principals to support teaching and learning during the first year of the COVID-19 pandemic. Chapter one introduced the study, including the background of the problem, problem statement, the purpose of the study, the research question, the importance of the

study, and the organization of the study. While the literature and research relevant to school leadership, school technology leadership, and crisis school leadership were reviewed and synthesized in the second chapter, chapter three addressed the methodology and design of the study. Chapter four provided details on the findings of this study, and the fifth and final chapter discussed the findings and their relevance and implications for both application to schools and for future research.

Chapter Two: Review of the Literature

While there is a consensus on the importance of leadership in organizations, little consensus exists around its definition. As Stogdill (1974) noted, “there are almost as many different definitions of leadership as there are persons who have attempted to define the concept” (p. 7). For many centuries, leadership was viewed as a personal trait (Silva, 2016). However, in the 1950s, scholars began looking at leadership as a process of influence upon others. For example, Stogdill (1950) defined leadership as the process of influencing the activities of a group of individuals to achieve a common goal. This is consistent with Yukl’s (2006) definition of leadership as “the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives” (p. 8). Since the goal of this study is to look at how tech-savvy school principals supported teaching and learning in their schools during the COVID-19 crisis, I define leadership as the process of influencing teachers, staff, and the whole school community to support teaching and learning. Thus, the present literature review focused on three main clusters: school leadership, school technology leadership, and crisis leadership.

School Leadership

Since the late of 20th century, scholars have been investigating the roles of effective school leadership on school improvement. For example, Blase (1987) interviewed 40 teachers about their interactions with their principals and identified 14 dimensions of effective school leadership. According to Blase (1987), nine of these factors were related to the tasks and duties of the principals (tasks-related factors). These factors were knowledge, accessibility, consistency, decisiveness, clear expectations, clear objectives, follow-through, problem-solving skills, and time management skills. However, the other five factors were related to principals' consideration and caring about teachers (i.e., consideration-related factors) such as support in conflict, consultation, equitability, recognition, and willingness to hand over and share authority. Blasé (1987) noted that these factors have varying degree of influence on teachers and their relationship with principals. The main takeaway from this study was that effective school principals contribute to the development of associative, social, and cultural patterns in schools.

Later, Leithwood et al. (2008) summarized findings from the empirical research concerning school leadership. The review revealed seven “strong claims” about successful school leadership, noting that they were not all equally supported. Rather, they reflected different levels of empirical research (Leithwood et al., 2008). The strong claims are as follows:

1. Only classroom teaching has a greater impact on student learning than school leadership.

2. Almost all successful leaders draw on the same range of basic leadership practices.
3. The ways in which school leaders employ these basic leadership practices demonstrate responsiveness to the contexts in which they work.
4. School leaders improve teaching and learning indirectly through their influence on staff motivation, competency and working condition.
5. School leadership has a greater influence on schools and students when it is widely distributed.
6. Some distribution strategies are more effective than others.
7. A small number of personal characteristics account for a significant amount of the variation in leadership effectiveness. (Leithwood et al., 2019, p. 27)

A decade later, Leithwood et al. (2019) revisited the seven claims. The findings of the more recent article revealed that the empirical research significantly supported and reinforced four of the original claims which are claims number 2, 3, 5, and 6. Moreover, the findings of the revisit showed that the empirical research caused modest revisions to two claims that are claims number 1 and 7. However, the empirical research suggested that claim number 4 was not feasible anymore, so it was significantly improved. The new claim 4 reflected the considerable literature on the contribution of parental engagement to improved learner outcomes:

School leadership improves teaching and learning, indirectly and most powerfully, by improving the status of significant key classroom and school

conditions and by encouraging parent/child interactions in the home that further enhance student success at school. (Leithwood et al., 2019, p. 12)

These findings suggest that principal duties and responsibilities are always changing.

Davis (2005) argued that principals are required to perform a variety of tasks to help schools improve in a dynamic and changing environment. Likewise, Rice (2010) noted that “the principal’s job is complex and multidimensional, and the effectiveness of principals depends, in part, on how they allocate their time across daily responsibilities” (p. 2). For example, the modern roles of school leaders have expanded to cover all aspect of schools, such as recruiting new teachers and staff, and crafting school visions and missions. Failure to adapt to the changing role of school principals could result in a gap between the needs of the schools and the skills of the principal. By contrast, Richardson et al. (2016) reviewed 279 principal job advertisements from seven states for one calendar year (October 2011–October 2012). Analysis revealed that most advertisements focused on traditional responsibilities such as management and administrative tasks, and failed to mention specific needs that stem from a particular school’s characteristics. The findings identify a disconnect between the advertised responsibilities for principals and the actual demands of the job.

Since the 1980s, principals’ roles have become more dynamic to meet the needs of their schools (Anderson, 2005; Black, 2008; Mackey, 2006). Part of this shift includes becoming more involved in teaching and learning as instructional leaders. Murphy (1988) defined instructional leadership as the leadership model that supports classroom teaching and student learning. Gumus et al. (2018) conducted a systematic review of studies on

leadership from 1980 to 2014 to learn about the most popular leadership models. The findings revealed that instructional leadership was one of most studied models of school leadership. Moreover, Hallinger and Murphy (1985) conducted a study to develop a research-based definition of the principals' roles as instructional leaders, as well as to describe the instructional leadership behavior of these 10 principals in terms of specific job behaviors. Findings suggested an instructional leadership framework that includes three dimensions for instructional leadership: defining the school mission, managing curriculum and instructions, and promoting school learning climate. Each dimension has several specialized task functions which involve principals' behavior diversity and practices as they are showed in Table 1.

Table 1

Instructional Leadership Framework

Dimension	Function
Defining the school mission	Framing school goals Communicating school goals
Managing instructional programs	Supervising and evaluating teachers' classroom instructions Coordinating curriculum Monitoring Students' progress
Promoting school learning climate	Protecting teaching and learning time Promoting professional development Maintaining High Visibility Enforcing academic standards Providing incentives for teachers Providing incentives for learning

Note. Adapted from Hallinger & Murphy (1985)

In 1998, Blasé and Blasé surveyed more than 800 teachers to look at how their principals promote teaching and learning in their schools. Participants were asked to answer open-ended questions and write detailed descriptions of their principals' positive and negative attributes, and how such characteristics affected their performance in the classroom. Findings suggested three interrelated aspects to effective instructional leadership behavior: talking with teachers, promoting teachers' professional growth, and fostering teacher reflection. Even though these findings are important and valuable to the field of education leadership, there was a lack of evidence regarding the utilizing of these aspects to effective instructional leadership behavior in different school levels (i.e., elementary, middle, and high schools) (Blasé & Blasé, 1998). Similarly, Southworth (2002) conducted a study of instructional leadership in schools through two sources of evidence. The first source was Blasé and Blasé (1998), and the second was a study Southworth conducted about successful leadership in schools (Southworth, 1999a). Southworth (2002) suggested that both empirical studies did not provide sufficient evidence to establish strong evidence-based instructional leadership. Therefore, Southworth (2002) argued that there was a need for many more studies of instructional leaders to meet the demands of differentiation.

As discussed above, the school principal's role has evolved in the education landscape. While many studies suggest that instructional school leadership influences classroom instruction through the school's culture, some studies examine direct involvement and supervision of teaching by principals (e.g., Burch & Spillane, 2003; Stein & Nelson, 2003). As a result, much research is devoted to studying effective

principals and their effect on student learning and achievement (e.g., Day et al., 2009; Davis, 2005; Louis et al., 2010; Witziers, et al., 2003). The next section covers literature related to the impact of school principals on student learning and performance.

School Principals Impact on Student Learning

The impact of school principals on student learning has been a prominent research area since 1980. Hallinger and Heck (2010) asserted, for example, that the school principals' primary duty should be improving students learning. Researchers have found the role of the school principal is often one of the most important in making a school's outcome successful (e.g., Leithwood et al., 2008). By itself, this finding is enough to inspire attention to building, supporting, and maintaining strong leadership in schools. While some researchers argue that school principals' effect on students' learning is direct (e.g., Burch & Spillane, 2003; Stein & Nelson, 2003), others have shown that successful school principals influence student learning indirectly through the support and development of teachers, and through improving the school environment (e.g., Day et al., 2009; Davis, 2005; Louis et al., 2010; Witziers, et al., 2003). For example, Leithwood et al. (2004) reviewed the literature related to school leadership to learn about the ways school leadership influences student learning. Evidence from their review revealed that the impact of leaders on student learning is indirect, through influencing teachers, staff, and other factors of the organizations (Leithwood et al., 2004). Additionally, Marzano et al. (2015) conducted a meta-analysis of 70 studies to examine different principal leadership practices such as including providing teachers with necessary resources, building a sense of community, and advocating for school stakeholders. The analysis of

the 70 studies revealed that an average effect size of 0.25 for leaders' impact on student success. This is a strong influence—especially when it depends on the abilities of a single person.

Hallinger (2005) looked at the direct and indirect roles of instructional school principals over the past two and a half decades. The main goal of the study was to identify what the field of education leadership had learned about the role of the school principals as instructional leaders from theoretical developments, empirical studies, and practice. To do this, Hallinger (2005) explored several reviews of instructional leadership (i.e., Hallinger, 2001, 2003b; Hallinger & Heck, 1996b; Southworth, 2002) and tied together evidence drawn from all these studies. The review yielded rich findings concerning different aspects of instructional leadership. One of the most important findings was concerning the direct and indirect influences of instructional school principals on students' learning and school outcomes. Hallinger (2005) noted that the “preponderance of studies...suggested that the principals' effects on classroom instruction operate through the school's culture and by modeling rather than through direct supervision and evaluation of teaching” (p. 230).

Contrasting effects of instructional leadership practices on student learning have been found in a study in Hong Kong secondary schools. Lee et al. (2012) tested the effects of different dimensions of instructional leadership—specifically the impact of instructional management and direct supervision of instruction on student learning—through examination of standardized test scores and staff member perceptions of leadership practices. Results showed that leadership practices based on instructional

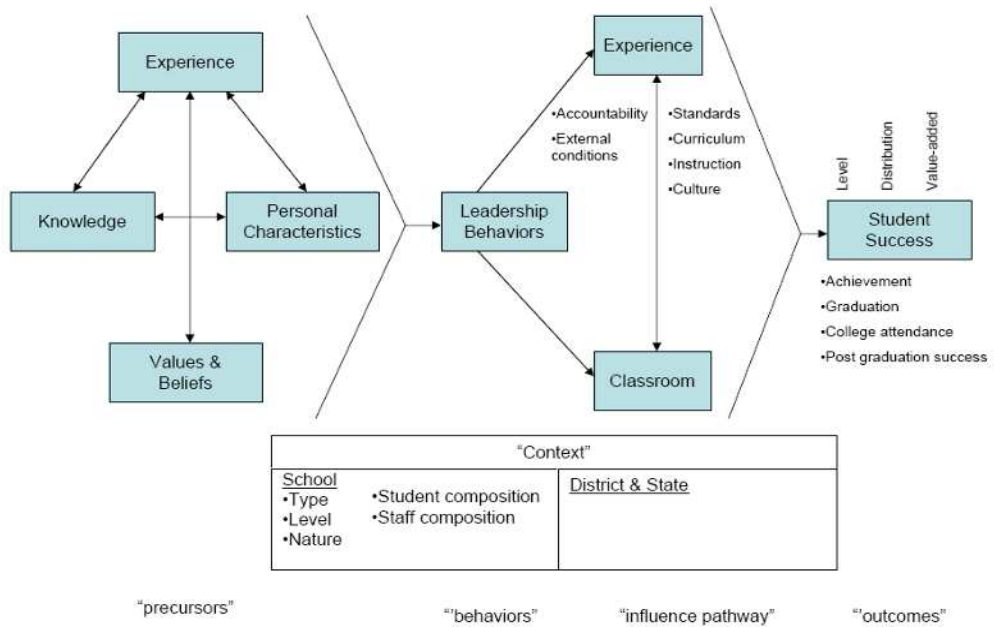
management improved student learning by enhancing the positive effect of students' attachment to their school on academic achievement. On the other hand, a negative moderating effect of direct supervision of instruction on student learning was found, as the direct supervision of instruction undermined the positive effect of students' attachment to their school on academic achievement. This finding supports the previously stated argument that for the indirect effects of school principals on students learning.

Common Frameworks of Effective School Leadership Practices

Many researchers have developed frameworks for the effective practices of school leaders on students learning (e.g., Hitt & Tucker, 2016; Leithwood, 2012; Murphy et al., 2006; Sebring et al., 2006). For example, Murphy et al. (2006) reviewed the literature to examine the influence of leadership on student achievement as a part of a larger Vanderbilt Assessment of Leadership in Education project to design a 360° assessment tool for school leaders. The review yielded the Learning-Centered Leadership framework. As detailed in Figure 1, the framework comprises eight major domains and 31 dimensions.

Figure 1

Learning-Centered Leadership framework



Note. Adapted from Murphy et al. (2006)

In the same year, Sebring et al. (2006) reviewed data from Chicago public schools from 1990 through 1996 to establish a comprehensive, empirically grounded, practice framework that could be used to improve student learning: the Essential Supports framework. As detailed in Table 2, the framework consists of five domains and 16 dimensions.

Table 2*Essential Supports Framework*

Domain	Dimension
Leadership	Inclusive leadership focused on instruction Faculty/parent/community influence Strategic orientation
Parent-community ties	Teachers learn about student culture and local community Staff engages parents and community in strengthening student learning
Professional capacity	Quality of human resources Values and beliefs about teacher responsibility for change Quality of professional development Professional community
Student-centered learning environment	Safety and order Press toward academic achievement coupled with personal concerns for students
Ambitious instruction	Curricular alignment Intellectual challenge

Note. Adapted from Sebring et al. (2006)

Leithwood (2012) reviewed the literature to capture his definition of effective leader behaviors in the Ontario Leadership Framework (OLF) that was developed based on a review of 47 empirical studies. The framework comprises 21 dimensions, grouped into five domains. The five domains are (a) setting directions, (b) building relationships and developing people, (c) developing the organization to support desired practices, (d) improving the instructional program, and (e) securing accountability. There are 21 dimensions that bring specificity to these five overarching domains.

In 2016, Hitt and Tucker reviewed the literature from 2000 to 2014 to lay out the body of knowledge and to synthesize the empirical research on how leadership influences student achievement. The review examined 56 empirical studies and the three frameworks (Leithwood, 2012; Murphy et al., 2006; and Sebring et al., 2006) discussed above. After reviewing the related literature, Hitt and Tucker (2016) identified 28 effective practices found to influence student learning. These 28 effective practices grouped into five domains to make the final model (see Table.3)

Table 3*Hitt and Tucker (2016) Unified Model of Effective Leader Practices*

Domain	Effective Practices
Establishing and conveying the vision	Creating, articulating, and stewarding shared mission and vision, implementing vision by setting goals and performance expectations, modeling aspirational and ethical practices, communicating broadly the state of the vision, promoting use of data for continual improvement, and tending to external accountability.
Facilitating a high-quality learning experience for students	Maintaining safety and orderliness, personalizing the environment to reflect students' backgrounds, developing and monitoring curricular program, developing and monitoring instructional program, and developing and monitoring assessment program
Building professional capacity	Selecting for the right fit, providing individualized consideration, building trusting relationships, providing opportunities to learn for whole faculty, supporting, buffering, and recognizing staff, engendering responsibility for promoting learning, and creating communities of practice
Creating a supportive organization for learning	Acquiring resources strategically for mission and vision, considering context to maximize organizational functioning, building collaborative processes for decision making, sharing and distributing leadership, tending to and building on diversity, maintaining ambitious and high expectations and standards, and strengthening and optimizing school culture
Connecting with external partners	Building productive relationships with families and external partners, engaging families and community in collaborative processes, and anchoring schools in the community

Note. Adapted from Hitt & Tucker (2016)

As discussed above, school leadership is vital to school success and outcomes.

However, in the 21st century, technology is changing and challenging the role of school

principals (Parker, 2013; Richardson & McLeod, 2014; Sheninger, 2014). New instructional technologies have the potential to increase teaching and learning efficiency, save learning time, and complement the teaching and learning process. Therefore, school principals need to be tech-savvy principals to be able to support technology integration in their schools and cope with the new digital school culture's demands. The following section covers literature related to school technology leadership.

School Technology Leadership

The advancement of technology is becoming more universal and has a very profound impact on students' academic lives (Hakansson, 2019; Wagner, 2008). This radical change has a significant impact on teaching, learning, and the school culture in general (Wagner, 2008); consequently, there are greater demands for school principals to keep their digital skills updated to meet their students' needs and remain relevant in the everchanging school environment (Cho, 2016; Couros & Jarett, 2012; Merriam & Bierema, 2014). However, research on educational technology in schools often focuses on how teachers integrate and implement educational technology into their classrooms' instructions to improve teaching and learning (e.g., Harper & Milman, 2016; Hew & Brush, 2007). This focus comes at the expense of the focus on school leadership roles and practices to form a system of support for technology integration in schools.

McLeod and Richardson (2011) conducted a content analysis to learn about how school technology leadership is discussed, framed, and given voice in the field of educational leadership. The researchers collected data from conference programs of three leading professional organizations as well as professional journals covering the period from 1997 to 2009. The data revealed that only 2.12% of the American Educational

Research Association presentations, 2.94% of the University Council for Educational Administration presentations, and 7.40% the National Council of Professors of Educational Administration presentations focused on technology leadership respectively. The data also showed only 43 published articles in professional journals had a focus on technology leadership during the same period. The findings suggested that there is limited research around school technology leadership in the fields of school leadership. McLeod and Richardson stated that “we simply do not have enough high-quality research to inform best practice. We need more researchers and more research” (p. 263).

One of the pioneer principals in adopting educational technology in schools is Eric Sheninger. In 2009, he joined Twitter when he was a high school principal in New Jersey because, as he said, he realized the great advantages that new digital tools could bring to him professionally and to his school (Sheninger, 2014). He stated that:

“Digital leadership is not an add-on, but a complement to everything that I do” (Sheninger, 2014, p. xxxv).

In 2014, he wrote a book titled *Digital Leadership* to share his experience as a digital school leader with other teachers and education leaders. In his book, he defined digital leadership as “establishing direction, influencing others, and initiating sustainable change through the access of information, and establishing relationships to anticipate changes pivotal to school success in the future” (p. 1). Sheninger suggested that it is important for school principals to embrace the new digital tools to keep up with the digital age requirements and to move their schools' culture forward. Sheninger, continued that principals need to understand that, in the 21st century students' needs and learning

styles are different because they have easy access to tremendous information that is taking place outside of school thanks to new technologies.

Sheninger (2009) listed seven key elements of digital leadership that represent fundamental factors that can help principals embrace and improve new digital practices to improve their schools' environment. They are listed below:

1. Communication
2. Public relations
3. Branding
4. Professional growth and development
5. Opportunity
6. Student engagement and learning
7. Learning environment and spaces (p. 78)

Dexter, Richardson, and Nash (2016) analyzed 83 peer-reviewed articles to capture and lay out the body of knowledge related to school technology leadership and to learn about effective leadership practices for integrating technology into instruction. Hitt and Tucker's (2016) Unified Model of Effective Leader Practices was used as a conceptual framework to organize the findings of this review (see Table 4). To bridge the findings to the larger body of knowledge about school leadership, the researchers discussed each domain based on the multiple dimensions it comprises to align each technology leadership practice with those identified as effective by previous research.

Table 4*Domains and Dimensions of the Unified Model of Effective Leader Practices*

Domain	Effective practices
Establishing and conveying the vision	Creating, articulating, and stewarding shared mission and vision, implementing vision by setting goals and performance expectations, modeling aspirational and ethical practices, communicating broadly the state of the vision, promoting use of data for continual improvement, and tending to external accountability.
Facilitating technology use as part of a high-quality learning experience	Maintaining safety and orderliness, personalizing the environment to reflect students' backgrounds, developing and monitoring curricular program, developing and monitoring instructional program, and developing and monitoring assessment program
Building professional capacity for technology integration	Selecting for the right fit, providing individualized consideration, building trusting relationships, providing opportunities to learn for whole faculty, supporting, buffering, and recognizing staff, engendering responsibility for promoting learning, and creating communities of practice
Creating a supportive organization for technology integration	Acquiring resources strategically for mission and vision, considering context to maximize organizational functioning, building collaborative processes for decision making, sharing and distributing leadership, tending to and building on diversity, maintaining ambitious and high expectations and standards, and strengthening and optimizing school culture
Connecting with external partners	Building productive relationships with families and external partners, engaging families and community in collaborative processes to strengthen student learning, and anchoring schools in the community

Note. Adapted from Dexter, Richardson, and Nash (2016)

To build on the previous study, Dexter and Richardson (2020) analyzed 34 relevant peer-reviewed journals articles related to the intersection of leaders, teachers, and technology in K-12 schools from 1998 to 2018. The researchers used the following research question to guide the review “what does the technology integration literature identify as key leadership practices that support teachers’ technology integration efforts?” Again, the study was framed by the Unified Model of Effective Leader Practices (Hitt & Tucker, 2016). The researchers found that domain three (building professional capacity) yielded the most practices for leading for technology integration. The findings emphasized leadership practices for building professional capacity including providing teachers with opportunities to learn, creating communities of practice for them, considering their individualized needs, and addressing issues of access and support.

Shepherd and Taylor (2016) analyzed the factors regarding high school leaders’ readiness and confidence to provide digital instructional leadership in their schools. The researchers used the Digital Instructional Leadership Readiness Instrument (DILRI) to collect data from 76 high school principals and assistant principals to learn about their self-perceived factors of influence, knowledge, and confidence in providing digital instructional leadership in their schools. Findings of the study suggested that school leaders lack the knowledge and confidence to lead and integrate digital instructions in their schools. Based on this finding, the researchers suggested that graduate educational leadership programs should include preparation of digital instructional leadership to better prepare future school leaders.

Richardson and Sterrett (2018) interviewed district superintendents who were recognized as tech-Savvy superintendents and compared data from superintendents who were awarded between 2001 and 2010 in contrast to those who were awarded between 2011 and 2014 to understand how discussions within this population had changed over 15 years. The researchers organized the results around changes in themes that appeared between the two groups of technology-savvy superintendents (see Table 5).

Table 5*Challenges and Successes of Being a Technology-Savvy Superintendent.*

Group I: 2001 to 2010 Technology-Savvy Award- Winning Participants	Group 2: 201 to 2014 Technology-Savvy Award- Winning Participants	Change
<ul style="list-style-type: none"> • Creating shared vision <ul style="list-style-type: none"> ○ School board buy in ○ School level buy in • Infrastructure development <ul style="list-style-type: none"> ○ Funding to begin initiatives • Ongoing communication to stakeholders • Ensuring professional development <ul style="list-style-type: none"> ○ District wide • Being a risk taker 	<ul style="list-style-type: none"> • Creating shared vision <ul style="list-style-type: none"> ○ Shifting mind-sets about learning ○ Community buy in • Infrastructure development <ul style="list-style-type: none"> ○ Funding to improve initiatives • Ongoing communication with stakeholders • Ensuring professional development <ul style="list-style-type: none"> ○ Individualized and just-in-time • Overcoming fear 	<ul style="list-style-type: none"> • Foster a broad shared vision • Constant improvement of infrastructure • Embrace dialogue through modern communication tools • Focus on individualized development • Accepting the unknown

Note. Adapted from Richardson and Sterrett (2018)

Comparing and contrasting the findings of Richardson and Sterrett (2018) to Hitt and Tucker's (2016) model of effective leader practices that was discussed earlier, it is

clear that both sets of practices have similar practices, but they also differ on other practices. For example, the first finding of Richardson and Sterrett (2018) is “fostering a broad shared vision”. According to Richardson and Sterrett (2018), the focus of technology-savvy district leaders shifted from securing initial technology hardware to focusing on teaching and learning and on the classroom needs. This is similar to the first domain of Hitt and Tucker’s (2016) of effective practices which is “establishing and conveying the vision”. Hitt and Tucker’s (2016) argued that effective school leaders focus on performance, promote use of data for continual improvement, and tend to external accountability. Moreover, Richardson and Sterrett (2018) found that technology-savvy superintendents focus on individualized development. This is similar to one of the domains in Hitt and Tucker’s (2016) model which is “building professional capacity”. Hitt and Tucker’s (2016) stated that effective school leaders provide opportunities to learn for whole faculty with individualized consideration. Also, Richardson and Sterrett (2018) found that technology-savvy superintendents focus on constant improvement of infrastructure in their schools. This is similar to the finding of Hitt and Tucker’s (2016) who claimed that effective school leaders focus on creating a supportive organization for learning by acquiring resources strategically for mission and vision. On the other hand, Richardson and Sterrett (2018) found that technology-savvy superintendents focus on communications with stakeholders through modern communication tools. However, Hitt and Tucker’s (2016) argued that effective school leaders focus on collaboration and building collaborative processes to influence students’ learning.

It is clear that school principals are increasingly called upon to lead the technological change in their schools because they are the cornerstone of the school improvement (Anderson & Dexter, 2005; Fletcher, 2009; Gerard, Bowyer, & Linn, 2008; McLeod, 2008; Slenning, 2000). However, principals who work in schools that serve disadvantaged and underserved communities face significant challenges that hinder their efforts to integrate technology effectively in their schools. Richardson and McLeod (2011) conducted a study to look at technology leadership within the context of K-12 schools serving Native American students. The researchers conducted interviews with nine principals of schools that serve Native American students to explore various topics related to technology leadership as described by the National Educational Technology Standards for Administrators (NETS-A). Even though the findings of the study showed that the principals in this unique were meeting many components of the NETS-A in unique ways, they were missing many components of the standards entirely. The researchers recommended that “the field of educational leadership must respond to the needs of the marginalized communities to meet their unique demands by focusing on relevant technology leadership training through preparatory and in-service training” (p.1)

During crises, technology can help in keeping the school operations going as well as to connect teachers and students. Technology can play a crucial role in a school’s ability to respond and adapt quickly and efficiently when disasters strike to maintain teaching and learning continuity. For example, in the context of the COVID-19 pandemic, schools with a strong digital infrastructure and tech-savvy teachers and staff responded to the crisis and adapted faster than other schools (McLeod & Dulsky, 2021).

Hamzah et al. (2021) surveyed about 400 teachers to investigate the effects of principals' digital leadership on teachers' digital teaching during the COVID-19 pandemic. The findings of the study revealed that there is a strong correlation between the level of digital leadership displayed by principals (principals' digital citizenship in particular), and teachers' digital teaching. The findings also showed that the technology school leadership can help improve students' academic performance, despite the COVID-19 pandemic crisis. Therefore, there are greater demands for school principals to embrace and integrate education technology in their schools to help them run their schools not only during normal times, but during crises too. The following section covered the literature related to school crisis leadership.

School Crisis Leadership

The U.S. Department of Education (2007) defined a crisis as “a situation where schools could be faced with inadequate information, not enough time, and insufficient resources, but in which leaders must make one or many crucial decisions” (p. 5). While some crises occur in school, events outside of school can have a profound impact on the school community (Kerr, 2009). Indeed, to understand how schools and principals respond to emergencies, multiple scholars have studied schools in communities impacted by natural disasters (e.g., Lee et al., 2008; Mutch, 2015; Potter et al., 2021; Stough, 2018). For example, Mutch (2015) interviewed members of school communities hit by the 2010 earthquake in Canterbury, New Zealand to learn about the responses and actions of school principals during the earthquake crisis. The study highlighted three sets of factors that impact school principals' actions during crises: dispositional, relational, and

contextual (Mutch, 2015). Dispositional factors include the values, beliefs, qualities, personality traits, and skills school principals bring to a crisis. Relational factors indicate the way in which school principals build strong relationships, develop a sense of community, and foster collaboration to face a crisis. Contextual factors include the way school principals assess the crisis, make timely and decisive decisions, utilize resources, and adapt to change. Similarly, Potter et al. (2021) conducted a case study on one principal's response to the tornadoes that hit Dallas in 2019. Findings suggested that the principal's response to the crisis fell into two categories: short-term and long-term responses. Immediately following the tornadoes, the school principal focused on two main domains: operations and communication. The principal reported:

Although I consider myself an instructional leader, I also needed to prioritize operations and engage in a series of managerial and logistical concerns such as around transportation and the floor plan. I also had to manage my communication to media, families, and staff (Potter et al., 2021, p. 104).

However, later, the principal's focus shifted to long-term goals, including assessing family needs and incorporating family voice into governance and decision-making processes. As the principal described:

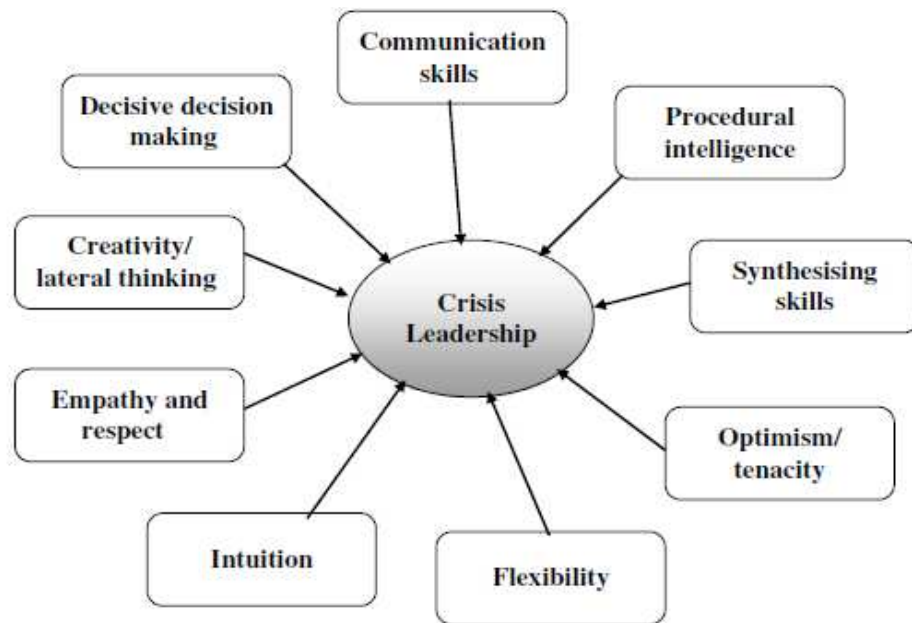
I had to lead around parent and community voice. I also had to manage critiques from parents on the quality of school response to the crisis. It was particularly important that parents saw that I listened to them and delivered on their needs. Yet, I was sometimes expected to have solutions to problems such as a homeless

encampment nearby, traffic concerns, and industrial smells, which was far beyond my own authority as principal (Potter et al., 2021, p. 103).

By contrast, other scholars have examined principal responses to crises through more systemic problems such as homelessness. For example, Shields and Warke (2010) conducted a multi-family case study with unhoused families to learn about the principals' role in ensuring the continuity of their children's education. Findings suggested that school leaders must become more involved in the lived experiences of their school families, and "engage in direct and supportive communication with families and not simply rely on others, such as the school counselor or social worker" (Shields & Warke, 2010, p. 814). Shields and Warke (2010) highlighted the critical role school principals play during crises, as they support their schools communities. As Mutch (2015) noted, "in disaster situations, children and young people look for guidance from supportive adults. If a major crisis happens at school, they look to their principals and teachers" (p. 186). Researchers have sought to identify the qualities and skills required of school leaders during crises. As Smith and Riley (2012) noted, the "leadership attributes and skills required of school leaders in times of crisis are fundamentally different from those generally required as part of the normal school environment" (p. 57). In a review of six databases, for example, Smith and Riley (2012) located nine major attributes for effective crisis leadership (see Figure 2). They found these nine key crisis leadership attributes were evident in most of research regarding crisis leadership (Smith & Riley, 2012).

Figure 2

Smith and Riley's Key Attributes for Crisis Leadership



Note. Adapted from Smith and Riley (2012).

Decisive Decision Making

Decisive decision is one of the most important attributes of effective school principals in times of crisis times—especially in the early stages (Pearson & Mitroff, 1993; Smith & Riley, 2012). Azadegan et al. (2021) collected data from 176 leaders from different sectors using surveys and focus groups to empirically determine the stages and leadership styles that enhance effectiveness of organizations' response to different phases of crises. Findings highlighted the importance of decisive decision-making during the response and recovery phases (Azadegan et al., 2021). Even though decisive decision-making is vital during crises, school principals often experience difficulties in making quick and critical decisions due to a lack of relevant information. Essentially, principals face high-stakes choices between different courses of action amid uncertainty and limited

information. This complicates the process of decisive, wise, and quick decision-making, as choosing among alternatives requires sufficient information and deep understanding of option and potential outcomes.

Creativity

Creativity is an asset to all effective school principals, but it is vital during crises. Indeed, recommendations from Devitt and Borodzicz's (2008) study of effective crisis leaders indicated that criteria for organizational leaders should include serious consideration of their capacity for creativity and effective decision making in the face of uncertainty. This finding was supported by Stoll and Temperley's (2009) discussion of creative leadership in schools, who showed a need for creative leadership in schools to avoid crises or at least reduce their effects on school community. In this study, the researchers drew from a research and development project (the Creative Leadership Learning Project) that they worked on from September 2006 until February 2008. Data were collected from 274 school administrators and teachers. The findings showed that there is a need for creative leadership in schools to avoid crises or at least reduce their effects on school community. The researchers claimed that creativity does not only involve problem solving; rather, it also involves actively scanning the school environment for possible threats which could cause challenges disrupt the improvement efforts in schools (Stoll & Temperley, 2009).

Empathy

Empathy is the ability to understand and experience what others are going through from their own reference point (Combs et al., 2018). DuBrin (2013) argued that

principals should rely on their emotional intelligence including empathy and compassion in times of crisis to help their school community. Some studies highlighted the importance of showing empathy during times of crises. For example, Hayes et al. (2020) reviewed the literature about the most important qualities of organizations leaders in times of crisis. The researchers identified the most important qualities of a leader in times of crisis: presence, transparency, and empathy. They argued that the best way to show empathy is through the leaders' presence and availability and through their transparency with their community. Similarly, Wibowo and Paramita (2022) found that empathetic leadership increased practitioner resilience in a study of 188 nurses dealing with COVID-19 patients. This suggests that empathetic leaders are crucial in supporting organizations during crises.

Flexibility

During crises, effective school principals use flexibility to adjust and navigate ambiguity and disorder (Koehn, 2020). Furthermore, Koehn (2020) asserted that the COVID-19 crisis was a powerful opportunity for organizations to learn how to adjust and adapt to future changes. This finding aligns with DuBrin (2013) who highlighted the importance of adaptability and flexibility during crises. DuBrin (2013) also argued that leaders should view crises as opportunities to make organizational changes. Some studies addressed the significance of making a quick response and adjustments to face the COVID-19 crisis (e.g., Chan et al. 2021; Johnson & Suskewicz, 2020). Chan et al. (2021) collected data from 151 U.S. school teachers to better understand their perceptions of support they received from their schools during the COVID-19 crisis. A primary finding

of this study was that teachers felt supported by resources to develop competence in distance learning, workplace emotional support, and flexibility during COVID-19.

Communication

There is no doubt that effective communication is crucial for all leaders. It only becomes more urgent in times of crisis (Kerrissey & Edmondson, 2020). Striepe and Cunningham (2021) argued that communication is a major characteristic that can help leaders provide direction and optimism during a crisis. Effective communication can explain the crisis, its effects, and the plans to minimize the consequences (Boin et al., 2013). Many studies focus on communication during crisis. Striepe and Cunningham (2021) reviewed empirical research from 2010 to 2020 on educational leadership during crises to identify key characteristics and attributes of educational leadership. The review revealed six important characteristics and illustrated how school principals enacted them during different types of crises.

One characteristic was the need for effective and multi-dimensional communication. This finding aligns with Sutherland (2017) and Mutch (2015b, 2018) in demonstrating the need to establish clear and open channels of communication between leaders, staff, and the school community. Furthermore, different communication methods meet the different situational aspects of a crisis as Striepe and Cunningham (2021) suggest. As noted by Garran (2013), during times of crisis, “communication rarely should be one-size-fits-all” approach (p. 18).

Intuition

Cholle (2016) defined intuition as a process that grants leaders the ability to know and expect what is about to happen in their organizations without analytic reasoning. However, Lagadec (2009) pointed out that crises are rarely entirely new—rather, they have occurred before in terms of nature and impact. Based on Lagadec’s definition, intuition combines both analytical and intuitive styles of thinking. Even though intuition is driven more by gutfeel, it draws on observed indicators and trends from the internal and external organization environment to reach strategic decisions. Indeed, Yuguo Li et al. (2021) position crises response as the sum of intuition and blind spots, a blend of facts, and facts missed or ignored.

In a similar study of intuition, Okoli (2021) examined intuition as a cognitive tool in crisis decision-making. Examining the Hudson River incident (the A320 jet that was safely landed in the Hudson River after a bird strike in 2009), findings suggested that intuition is critical in high-stake situations. The authors argued that the study highlighted the importance of training leaders and personnel to become better intuitive thinkers.

Procedural Intelligence

Murphy (1996) argued that leadership can be defined and described as a form of intelligence. About 13 years later, Lagadec (2009) conducted a study to renew the understanding of leadership intelligence and to create a better response to the emerging challenges the world faces. Lagadec (2009) argued that crises are becoming more dynamic and unexpected because the environment is becoming more complicated. Therefore, Lagadec (2009) identified three different types of leadership intelligence to

deal with different crises: procedural, intuitive, and creative. Lagadec (2009) defined procedural intelligence as the information of what works best for crises that have occurred previously in similar form. However, intuitive intelligence was defined as the ability to deal with large crises that are not entirely new (Lagadec, 2009). Procedural and intuitive intelligence require leaders to have prior knowledge or information about the crisis for them to deal with it. Since the world is becoming more complex and organizations are exposed to more complicated crises, procedural intelligence and intuitive intelligence are not sufficient. Therefore, creative intelligence is most needed to deal with totally new crises. Leaders with creative intelligence are able to deal with completely new and surprising events and crises. As Lagadec (2009) noted, creative intelligence means operating beyond prescribed procedures.

Synthesizing Skills

Gardner (2007) argued that effective school leadership for the future depends on ways of thinking rather than ways of doing, offering five “minds” for the future: the disciplined mind, the synthesizing mind, the creating mind, the respectful mind, and the ethical mind. Extending this list, Smith (2008) suggested a new type of mind for the future: the reflective mind. According to both researchers, each different type of mind works best in a certain context and environment. Therefore, school leaders need these synthesizing skills to respond to different types of school crises. This is in line with Lagadec (2009), mentioned earlier, regarding the type of problems we face, and the type of intelligence leaders need to respond to crises.

Optimism

During crisis, people often feel scared and hopeless. It is the responsibility of organizational leaders to provide hope and help. Even though crises are sometimes devastating with profound impacts on organizations, leaders should demonstrate optimism in their actions and behaviors, and lead their organizations by example (Stoller, 2020). Crises represent tough times for people. Therefore, individuals look for hope and support from their leaders. As Mutch (2015) noted, “in disaster situations, children and young people look for guidance from supportive adults. If a major crisis happens at school, they look to their principals and teachers” (p. 186).

The COVID-19 Crisis

Reflecting on the definitions and characteristics of a crisis above, it is clear that the novel coronavirus pandemic represented a real crisis in schools and all other aspects of life. Furthermore, confusion and uncertainty surrounding the virus made it particularly difficult to manage. During the COVID-19 crisis, principals dealt with the crisis itself, the safety of their staff and students, the emotions of stakeholders, and the need for complex, quick decisions to minimize harm and keep schools open. School leaders had to make quick decisions with limited information. In order to maintain continuity of teaching and learning, many school leaders turned to technology during the crisis.

Because of its impacts on learning, COVID-19 has become an important research topic, with many researchers studying schools’ experiences during the crisis. Some studies were conducted in the first a few months of the crisis (e.g., Anderson, 2020; McLeod & Dulsky, 2021; Sawchuk, 2020). However, Mutch (2015b) recommends

waiting at least a year after a crisis to review what has happened. Other studies were general in their focus as they did not investigate one particular aspect of school. For example, Grissom and Condon (2021) conducted a study of the general experiences of school and districts leaders during the crisis. However, other studies focused on one particular aspect of school. For example, Hamzah et al. (2021) investigated the effects of principal digital leadership on digital teaching during the COVID-19 pandemic. Other studies focused on one type of school, such as Wodon (2020) who focused on Catholic Schools.

While there is already considerable literature on experiences and responses to the COVID-19 crisis, a gap remains in literature on crisis leadership attributes and effective leader practices used to support teaching and learning during a crisis.

Conceptual Framework

The conceptual framework of this study was positioned around two frameworks. The first framework was Hitt and Tucker's (2016) model of effective leader practices. Hitt and Tucker reviewed the literature on how leadership influences student achievement. They reviewed all related literature from 2000 to 2014 and identified 28 effective practices that found to influence students learning (see Table 2). This framework was used to guide this study as the conceptual framework. It was used in three different phases in this study. First, it was used in creating the interview protocol. It was also used during the data analysis phase especially during the second phase of the coding which was a deductive coding. Finally, it was used to discuss the findings.

The other framework that was used to create the conceptual framework of this study was Smith and Riley's (2012) key attributes for crisis leadership (see Figure 1). Smith and Riley reviewed previous literature related to crisis management to learn about the key attributes required of school leaders when confronted with crisis in their schools. They identified nine key attributes that should be enacted by school leaders in time of crisis to better respond to crisis. This framework was also used to guide this study. It was used in three different phases. First, it was used to create the interview protocol. It was also used during the data analysis phase, during the second phase of deductive analysis in particular. Finally, it was used to discuss the findings.

Chapter Three: Methodology

This chapter focused on the methodology used in this qualitative study.

Information detailing the research design, setting, population, sampling, data collection instruments, procedures, data analysis, and validation strategies were outlined. The ethical considerations of the study and the role of the researcher were also detailed in this chapter.

Research Question

How did nationally recognized tech-savvy school principals leverage crisis leadership to support teaching and learning in their schools during the first academic year of the COVID-19 pandemic?

Choosing an Exploratory Case Study Approach

Exploratory research is a research method that explores a phenomenon or an issue which has not previously been studied in depth. Yin (1984) mentioned that there are several types of case study, one of which is explanatory case studies. He defined it as a study that aims to explore any new phenomenon which will eventually serve as a starting point for future research. Given the descriptive nature of this study, I suggest that this is an exploratory study of a point in time. With this method, I have a window into my case that is current and has not been studied before. This study is one of the first studies

related to tech-savvy school principals' effects on students' learning during the COVID-19 crisis, serving as a jumping-off point for future research.

Setting and Population

This study took place in the United States of America. The population of the study was a group of tech-savvy principals in American secondary schools who were recognized and honored by the National Association of Secondary School Principals (NASSP) for their creative leadership in their drive to connect the potential of new technologies to further learning goals.

Sample Selection

A purposeful sampling technique was used in this study which is a common approach in qualitative studies. It enables the researcher to select sites or individuals because they can inform the research question and provide rich details about the case (Creswell, 2013). Patton (2002) described purposeful sampling as a sampling strategy used in qualitative research that yields important details about the case based on the individuals and sites selected for the study. Therefore, the researcher used the list of the awarded tech-savvy school principals by NASSP to study for this research because “these principals serve as examples of how to lead schools in the digital age” (Richardson et al., 2021, p. 18). Thus, this study involved purposeful sampling of tech-savvy school principals who were identified as effective school leaders at the national level. The criteria for selecting the sample were the following:

- High or middle school principal.
- Awarded the NASSP Digital Principals of the Year award.

- Working as a school principal for at least three years (since 2018).

Sampling Procedures

Thirty digital principals have been awarded over the years by NASSP at the time of this study. The researcher checked the NASSP's websites to compile the awarded principals' names. Then, the researcher utilized social networking sites, such as Twitter, LinkedIn, and Facebook to locate the principals' contact information. After checking out the award recipients' social media accounts, platforms, only 17 principals met the inclusion criteria of the study. 13 awarded principals were excluded from the study because they did not meet the inclusion criteria of the study. After that, I reached out to the 17 eligible principals and invited them to participate in my study. I explained to them the nature of the study and purpose of it and offered them an incentive to participate. Only six principals responded to me, however, one principal stopped responding to me after our initial emails. I emailed him twice to see if he was still interested in participating in the study but still did not get any response. I also sent a second invitation email to the rest of the principals but did not get response. Therefore, the sample of this study included five recognized digital school principals.

After receiving the responses of the five principals, I emailed the consent forms to them. After that, I contacted them to arrange online meetings for the interviews via Zoom. I conducted an hour-long interview with each principal. There were follow up questions via email or short online meeting for clarification as needed. Each interview was recorded for transcribing purposes. At the end of each interview, I asked to be

directed to any publicly facing documents and social media channels to collect more details that might help answer the research question.

Participants

Five tech-savvy school principals participated in this study (see Table 3). All five principals were interviewed via Zoom while they were in their school offices during mutually convenient times. The following table shows more details about the participants.

Table 6*Participants Profile*

Principal pseudonym	Degree	Gender	Experience	Recognition by NASSP	School demographic	Free /reduced lunch
Adriana	Ed.D.	Female	6 years	2018	Majority white, Hispanic:12%, Black: 3%, and Asian Americans: 20%	40%
Travis	Ed.D.	Male	5 years	2021	White 90 %, Hispanic: 5%, and Black: 1.3%	17%
Lindy	M.A.	Female	21 years	2021	White middle class: 90% Different races: 10%	60%
Ronald	Ph.D.	Male	23 years	2020	Hispanic:35%, African American: 30%, white: 12%	70%
Thomas	Ed.D.	Male	11 years	2017	White:75%, African American: 9%, Hispanic: 4%, Asian: 3%	15%

Data Collection

The main tool for collecting data was a semi-structured interview with school principals (see Appendix C). The purpose of using a semi-structured interview was to allow new ideas to be brought up during the interview as a result of what the participants say (Merriam & Tisdell, 2016). Based on the research question, the semi-structured interview was an appropriate tool to learn about the digital school principals' ideas and effective practices that they applied to support their schools during the first academic year of the COVID-19 pandemic. The interview questions were designed to gather information related to the research question. The interview questions were influenced by Hitt and Tucker's (2016) unified model of effective leader practices as well as Smith and Riley's (2012) key attributes for crisis leadership.

In order to develop the interview questions, I piloted the instrument to determine the best phrasing and order for the questions. In this phase, I interviewed one school principal and got her feedback about the way I worded the questions. Then I refined the questions based on her feedback. After refining the interview questions, I utilized relevant secondary sources and materials such as meeting agendas and the school's social media posts to corroborate the findings from the interviews

Data Analysis

To analyze the data, four coding phases were conducted. First, I started with inductive coding to identify general practices that were undertaken by participants to support their schools during the COVID-19 crisis. During this inductive phase, I was open to any new practices or evidence relevant to my research question because I did not

want to force the emerging codes under pre-existing domains that might not be the best fit for them (Creswell, 2013). I examined the transcripts and data line by line as described by Fraser (2004), which allowed me to connect and compare responses from participants to discover areas of agreement and disagreement between the interviews (Fraser, 2004).

Next, I conducted deductive coding using Hitt and Tucker's (2016) unified model of effective leader practices to find effective practices that were used by principals during the crisis. According to Patton (2002), deductive analysis is important because it tests and confirms the accuracy of the findings of the inductive analysis. The goal of this phase was to identify the effective leader practices out of the general practices that had been identified in phase one. Therefore, during this phase, I tried to group the codes of the general practices that I found from phase one into different groups, based on Hitt and Tucker's (2016) model.

Once I was clear about effective practices, I started a third phase of coding which was deductive coding, using Smith and Riley's (2012) key attributes for crisis leadership framework. The goal of this phase was to identify the key attributes for crisis leadership that were enacted by tech-savvy principals during the crisis. Therefore, I went back to the transcripts and data and did a deductive coding using Smith and Riley's framework. I searched the data and identified codes that provided evidence of Smith and Riley's key attributes for crisis leadership.

Next, I started a fourth phase of coding where I connected the codes of the effective practices that had been found in the second phase with the key attributes for crisis leadership that had been discovered in the third phase (see Table 4). The main goal

of this phase was to combine the effective practices and the key attributes for crisis leadership by determining what effective practices fit into which key attributes. In this phase, I utilized two tables, one for the codes that emerged from the second phase, and the other for the codes that emerged from the third phase. Then I started to look for connections between the two tables and combine the effective practices with the key attributes for crisis leadership that they fit into. Thus, I was able to understand which effective leadership practices the tech-savvy principals enacted during the crisis that got at Smith and Riley's key attributes for crisis leadership.

Validation Strategies

To clarify my biases, I used a reflexivity journal to identify my own biases and assumptions. During the analysis process, I recorded my thoughts and opinions that might have influenced the coding process. This critical self-reflection helped me to mitigate and remove my biases and assumptions that are related to the study so that they do not influence the findings and interpretations.

Moreover, I utilized the member checking technique to ensure accuracy and increase credibility of the findings. This strategy is considered to be the most effective strategy (Lincoln and Guba, 1985) for checking and establishing credibility for the study's findings (Creswell, 2014). It helps the researcher maintain the validity in qualitative research (Creswell & Miller, 2000). Therefore, after analyzing the data, I asked the principals to review the interview transcripts, my interpretations, and the findings of the study to ensure the credibility of the study's findings (Ely et al., 1991; Erlandson et al., 1993; Glesne & Peshkin, 1992; Lincoln & Guba, 1985; Merriam, 1988;

Miles & Huberman, 1994, as cited in Creswell, 2014). I asked them to check the accuracy of the transcripts and interpretations to insure the full context of their responses to the interview questions. I also asked them to examine the language I used and provide alternative language if they wish. Stake (1995) suggested that the study's participants should play important roles in case study research (as cited in Creswell, 2014).

Researcher Positionality

I have four years of experience in teaching in Saudi Arabia. I taught high school Computer Science and Programming classes. Currently, I am pursuing my PhD in educational leadership and policy studies at The University of Denver. My education experience in the U.S has opened my eyes to the differences and similarities between the education systems in Saudi and the U.S. I love teaching and I believe teaching is an important way to influence the next generation. I think that teachers are always under fire and blamed for things that they have little or no control over. I believe teaching is not the teacher's task alone but is a collaborative process. There are many factors that influence students' learning such as family engagement in schools, schools' environment, students' background, and having effective school leaders in the building. I strongly believe principals can influence students' learning and achievement dramatically. The tasks of school principals exceed daily administration routine to having direct influence on student achievement (Leithwood & Louis, 2011). Therefore, I believe preparing principals to be an effective as well as technology-savvy principal is fundamental for students' success. Clearly, my main biases and experiences are already revealing themselves here, but it is good for me to become aware of them. It is obvious that most of

my biases are linked to the influence of school principals, something I certainly had to keep in mind as I conducted the study. I think dealing with these biases is an issue of self-awareness; even describing them and reflecting on them helps to minimize their potential to undermine the validity of the study.

Ethical Considerations

Considering the nature of qualitative studies, they are very hard and ethically challenging for the researcher as he is deeply involved in different stages of the study (Sanjari et al., 2014). In fact, ethical issues in qualitative research can be categorized based on the time they occur during the research process. While some issues arise prior to conducting the study, other issues occur at the beginning of the study. There are other issues that appear at the data collection and analysis stage, and some occur when reporting the findings (Creswell, 2013). Prior to conducting the study, I applied for the approval of the Institutional Review Board from The University of Denver. At the beginning of the study, I made sure the purpose of the study was stated clearly in the consent form before emailing it to the participants. The form also indicated that participation in the study is voluntary and would not cause any risk to the participants. During the data collection stage, I showed respect and build trust with the participants by discussing the purpose of the study and showed how data would be used. When analyzing the data, I tried to stay as objective as possible by avoiding siding with participants as well as reporting contrary views and findings.

Chapter Four: Findings

The purpose of this case study was to explore how recognized digital school principals leveraged their crisis leadership attributes to support teaching and learning during the COVID-19 crisis. One research question guided this study: How did nationally recognized tech-savvy school principals leverage crisis leadership to support teaching and learning in their schools during the first academic year of the COVID-19 pandemic? After analyzing the data, four themes situated around Smith and Riley's (2012) key attributes for crisis leadership and Hitt and Tucker's (2016) model of effective leader practices surfaced (see Table 4). The themes represent the attributes for crisis leadership that was enacted by participants, whereas the sub-themes represent the effective leader practices that fit into each attribute. All major themes are presented in the following section.

Table 7*Themes and Sub-themes*

Themes (Crisis Leadership attributes)	Sub-themes (Effective Practices)
Theme 1: Tech-savvy principals demonstrated decisive decision making during the COVID-19 crisis.	Making decisive decisions to maintain safety and orderliness
Theme 2: Tech-savvy principals demonstrated flexibility during the COVID-19 crisis.	Being flexible and considering context to maximize organizational functioning Selecting faculty and staff for the right fit
Theme 3: Tech-savvy principals demonstrated creativity during the COVID-19 crisis.	Providing opportunities to learn for faculty Being creative in engaging families to strengthen student learning
Theme 4: Tech-savvy principals used communication during the COVID-19	Using communication to engage families to strengthen student learning

Theme 1: Tech-savvy Principals Demonstrated Decisive Decision Making During the COVID-19 Crisis

The COVID-19 pandemic crisis was a real challenge for schools and required decisive decisions of school principals to help their schools respond to the crisis. After analyzing the data, the decisive decision-making attribute was evident in the participants' decisions during the COVID-19 crisis. This attribute was evident in many aspects, but I looked at it through one effective practice: maintaining safety and orderliness.

Making decisive decisions to maintain safety and orderliness

Even though the participants of this study were recognized tech-savvy and their schools had already been equipped with teaching technologies, it was not easy for them to adapt during the first days of the crisis. They all expressed that their main goal was to maintain the safety of their students and staff and to ensure that students continue learning without disruption. However, they claimed that technology by itself was not enough to make a successful shift to virtual learning. They had to make many hard and quick decisions not only at the school level, but also at their behavior and thinking styles to respond to the crisis. For example, principal Lindy explained her experience during the first week of the school closure:

I think we were more ready than many other schools. We were more prepared than a lot of schools because we already had the foundation ready to go.

She continued by explaining what was happening in her school at that time. She stated the following:

Beside the safety of our students and staff, my biggest thing was that I want students to learn on day one, but there were a lot of things we needed to do before. For example, how do you train them in the technology in the curriculum? And then how do you make sure that gets in the hands of the students? We had to make a lot of decisions.

This aligns with principal Thomas's experience who argued that it was not possible for any school to be ready for something that was so unforeseen and unpredictable, but his school was more prepared than most schools to shift to virtual learning. He also stated that:

There were a lot of important decisions and changes involved in the process of shifting to virtual learning. It was not as easy and smooth as many would expect.

His argument was similar to Adriana's view, who argued that her school was not 100% ready, but they very quickly figured out how to be ready. Principal Ronald claimed that his school did not experience any learning disruption. He said the main goal was to keep everybody safe and to provide learning for students. He also claimed that his school was able to move very quickly and fairly seamlessly into that pandemic, keeping the students and staff safe while ensuring that the continuity of instruction continued on. He stated the following:

We had to make a lot of quick changes to adapt to the crisis. We had to decide on many different things such as what digital tools we would use, and how to provide training to, teachers, students, and families.

Not only that, but the participants argued that they could maintain the safety of their students and the continuity of learning by providing reliable information and informing families about the situation in their schools. They all mentioned that ambiguity was a difficult challenge, and COVID-19 was surrounded by ambiguity and uncertainty. There was a lot of conflicting information surrounding COVID-19 abounds, from the viral infection rate to the disagreement over the effectiveness of face masks in preventing the virus from spreading. Lindy, for example, suggested that she decided to communicate with families and inform them from day one. She also argued that keeping families updated about what was going in their school (related to the COVID-19 pandemic) was critical because there was a lot of misinformation and anxiety surrounding the situation. Lindy's opinion was very similar to Adriana's opinion who claimed that since the first week of the crisis, she decided to encapsulate everything regarding the crisis in her school and communicate it with families on a weekly basis. She stated the following:

Since the first week of the pandemic, I was trying to encapsulate everything that had happened in a week and notify parents. I was trying to reduce the fears and anxiety surrounding the situation in the school.

Principal Travis claimed that one of the first step that he took during the first week of the pandemic was proving reliable information about the crisis to families. He stated that in addition to ensuring the continuity of education, keeping families updated about the COVID-19 crisis and providing them with reliable information about the crisis were among the highest priorities to which he had committed. He stated that:

One of the first decisions that we made was just acknowledging the issue and then letting parents know that we were going to work on something to help their kids and to provide some type of learning for them.... There was no question about what was happening in the school. They knew everything that was happening, and we constantly provided that information to them.

Ronald and Thomas stressed the importance of keeping families updated. They asserted that families were confused because there was a lot of conflicting information, so they decided to provide reliable information about the crisis to families to help reduce their anxiety level and to help them follow reliable safety protocols.

In addition to the answers of the five participants, I checked the schools' social media posts to support the information gathered from participants' interviews. It was very clear that the participants' schools utilized social media frequently to provide information about the COVID-19 crisis in their schools. Also, there were posts about the safety protocols and procedures that should be taken to control the infection rate of the virus. For example, on April 2, 2019, Lindy's school posted a Facebook page containing updates about the situation in their school and updates about what was happening.

Theme 2: Tech-savvy Principals Demonstrated Flexibility during the COVID-19 Crisis

Through my interviews with all participants, flexibility was one of the main themes that I identified from their actions during the COVID-19 crisis. Flexibility was evident in many aspects of the participants' practices during the crisis such as adopting

new approaches and offering flexible school schedules. These flexible practices helped principals to adapt to new situations to optimize their school's functioning. All participants attributed their flexibility during the crisis to many factors, one of which was their staff and teachers. Therefore, I looked at the flexibility attribute through the lens of two effective practices: considering context to maximize organizational functioning and selecting faculty staff for the right fit.

Being flexible and considering context to maximize organizational functioning

Even though the COVID-19 pandemic caused a tremendous impact on schools, most participants of the study approached their schools from a strengths-based perspective which means they saw the best in the crisis. They dealt with the crisis as a learning opportunity that learned from as it was happening. For example, Lindy said:

None of us have ever gone through a pandemic before. We had a lot of questions, but we did not know what the best answer was, so we had to learn and adjust quickly.

She also claimed that she was not afraid to ask questions for clarifying because she was learning, and she has a great network of friends and support who will either cheer her on or help figure out an answer. She added that through this journey, she learned how to be flexible and how to be open to new approaches and ideas.

Lindy's perspective was similar to what Travis mentioned during his interview. He made it clear that the pandemic was hard, but they learned a lot. There were a lot of different opinions and ideas about the way we should operate school. There were many

resources and different technological tools that they needed to choose from. They had a lot of questions because they did not know what was best for their students. So, they had to be flexible and adapt different ideas to get the best of the situation. He suggested that eventually they decided to keep things as simple as possible because they thought that simplifying their resources and communications would make it easy and accessible for their students and families - and that was true.

Principal Adriana claimed that the COVID-19 pandemic represented a great learning opportunity for her school in terms of taking risks and building community. She stated the following:

We learned new ways to engage students. We learned ways to stretch ourselves, we learned ways to try new technologies, we learned ways to do lots of different things that we may or may not have been willing to do before the pandemic.

Another aspect that shows how participants enacted flexibility to maximize their school's functioning was that they offered a flexible class schedule to meet their students' and families' needs. Ronald, for example, stated that he met with a team of his teachers and school administrators and decided to offer asynchronous classes for their students so that they could work asynchronously from anywhere and at any time. He also claimed that his school did not restrict students with daily deadlines to do their schoolwork. Instead, they offered a flexible schedule to log in any time of the day and do their schoolwork. He stated that:

We offered asynchronous classes. We also gave students flexible opportunities to log in. So, if a student was supposed to be logging in to engage in the morning, but they did not, then we gave them the opportunity to do that in the afternoon or early evening.

Ronald's approach was similar to Adriana's approach who stated that during the first months of the crisis, her school offered synchronous classes to meet students and families where they were. She claimed that synchronous classes were good for students because it allowed them to watch lessons at their convenience. She continued:

During the first months, we were doing remote learning. Then, we shifted to a hybrid model where we had students in the building learning every other day. We divided students into two groups, blue and gray groups, so we had blue days and gray days. If we had our blue cohort in building, the gray cohort would be at home doing synchronous lessons. And the next week, it would reverse.

Travis and Lindy argued that that during the crisis, families had too many things to care about. They also claimed that many parents were getting sick or losing jobs, so it was very important for schools to provide families with different class schedule. Lindy added:

Being able to provide families with options was also important.

Selecting faculty staff for the right fit

All participants expressed that having great staff was one of the most significant factors that helped their school to respond and navigate through the COVID-19 crisis. All

participants praised the digital and resiliency skills of their schools' teachers and administrators. They attributed their flexibility during the crisis to many factors, one of which was their staff and teachers. This means participants proactively addressed teacher effectiveness by recruiting and choosing tech-savvy teachers with growth mindset since hiring new teachers was not a common practice during the COVID-19 crisis in the participants' schools. Travis explained how the digital skills of his teachers helped them during the crisis. He indicated that his teachers were fully equipped with the digital skills needed for success in virtual learning environments, therefore, they did not need to spread the staff too thin to learn new skills during the crisis. Instead, they focused on different issues such as communicating with families to encourage them to engage in their child's learning. He also claimed that having tech-savvy teachers in his school gave them a huge advantage to respond to the crisis compared to other schools. This aligned with Ronald's views, who added that his school leveraged the tech-savvy teachers to empower other teachers as well as families who needed help with technology. He recounted:

We have several folks who are technologically savvy. Many of our teachers are not digital immigrants because we have been doing this for a long time. This means that many of our teachers and staff members are digital natives. So, we leveraged folks that were digital natives to help other teachers and families.

Ronald's opinion was supported by Adriana, who looked at the crisis as an opportunity to learn. She mentioned that during the first months of the crisis, great things happened in her school that would not have happened otherwise. For example, she

pointed out that the great part about the COVID-19 crisis was that the pandemic allowed those people who were sort of “out in front” to be real leaders, and real helpers and real assistance to their colleagues, who were not as tech savvy. She claimed that during the crisis, she saw a great collaboration among tech-savvy teachers and other teachers who needed some help. According to her, this was one of the brightest aspects of the crisis.

On the other hand, Thomas looked at this element from a different perspective. He emphasized the importance of hiring and recruiting great teachers in the first place. He argued that the school should hire teachers who are willing to adopt technology to utilize it in their classrooms. He stated that:

We should hire staff that is not technology averse and who are willing to adopt a growth mindset toward technology.

He also argued that having good technology in place was not enough to make the sudden and enormous shift from traditional and virtual learning, but technology must be accompanied by tech-savvy staff and teachers to make things happen. This view was not only supported by all participants in this study, but also by the literature, as discussed in the next chapter.

Not only did the teachers’ digital skills help the principals navigate through the crisis and demonstrate their creative procedural intelligence abilities, but the resiliency skills of teachers and staff played major roles, too. There is no doubt that the magnitude of the COVID-19 crisis was huge and unexpected. The pandemic not only affected the physical aspect of people’s lives, but it impacted their emotional and social lives too.

Ronald suggested that the trauma that was experienced during COVID was not just for

families and students, but for teachers, administrators, security personnel, nurses, support staff, and custodians. So, his school focused on the empathy that needed to take place, and the understanding that it just was not about the people they serve, it was also about the people that serve the people his school serves. He emphasized the importance of the resiliency skills of his teachers and staff during the crisis. He argued that his resilient teachers and staff were a big factor that helped his school respond to the crisis. His perspective about the importance of resiliency skills was similar to Lindy's, who insisted that the number one factor that helped her school during the crisis was the willingness and resiliency of her school's teachers and administrators. When she was asked about things that helped her school in responding to the crisis, she said:

My staff was my number one asset. I was surrounded by fantastic people who were willing to help to get the job done.

Moreover, Travis said his school had what he considers very willing staff who were willing to help students at all costs. He claimed that having the right staff and the right teachers allowed his school to do a great job in responding to the pandemic. He stated:

I think what helped us is just that we had the right people who were resilient and able to cope with the crisis. We did not experience teacher attrition or turnover, and that helped us a lot.

He also claimed that his school was very quick to adapt and get their resources together to support families. He indicated that his students did not experience any

learning disruption because his school was ready to make a radical shift from traditional to remote learning. In addition to the strong digital environment his school had, he insisted that having the right people already in place helped his school to adapt and adjust quickly. He stated the following:

They helped to adapt and adjust pretty quick, and I think what helped us, aside from having the digital tools, was we had the right people already in place.

During my interview with Adriana, I noticed she would get emotional every time she was talking about the first weeks of the crisis. She explained how she and her teachers and staff were committed during the crisis not only to keep the learning and teaching process going, but to help support students and their families socially. She said she felt overwhelmed because she was wearing different hats each time to perform different jobs or roles to keep everything together. She stated:

I think that my main job was just to be there to hold everything up. And everything together, right. I used to say things like, I feel like they were asking me to hold up like the Hoover Dam with scotch tape.

She continued:

Some point in the future, when we look back on all of this, we are going to have big conversations about how resilient everybody was in this situation, because I think there was a lot of resiliency skills and characteristics that are going to come out of this for our students.

In addition to the answers of the five participants, I checked the meeting minutes that I had received from some participants and schools and social media posts to support the information gathered from participants' interviews. The information that I found in these resources confirmed the flexibility of the participants during the crisis. For example, meeting minutes that were sent by Ronald included information about which type of virtual learning the school would offer to students. This meeting was held virtually in March 2019. So, I think the findings of the interviews regarding the flexibility of the participants theme was reinforced by the supporting material.

Theme 3: Tech-savvy Principals Demonstrated Creativity during the COVID-19 Crisis.

Creativity is an important trait for effective school leadership and is especially needed during crises. After analyzing the data, I came to a conclusion that all participants of the study were able to demonstrate their creativity. Creativity was shown in many aspects, but it was mainly enacted in two effective practices. The first effective practice was the way participants provided opportunities to learn for the whole faculty. The second effective practice was engaging families to strengthen student learning.

Providing opportunities to learn

The COVID-19 crisis caused a huge impact and made tremendous changes in many schools. Schools had to adopt new approaches and utilize new digital tools to keep teaching and learning going. The participants of the study considered providing opportunities to learn for all teachers and staff as a way to help them navigate through the crisis. Professional development was the main method that principals used to equip

teachers with new skills and techniques which they needed to face the crisis. All study participants discussed professional development and how it helped them during the COVID-19 crisis. It was a point of focus in all interviews. For example, Travis provided an explanation of how he provided professional development for teachers when he shared:

We spent all summer teaching teachers how to use the new technologies. We did professional learning all summer long. We did it in the spring and in the summer, and that made a huge difference for us.

Adriana emphasized the importance of providing training to teachers. She claimed that the first decision she and her administrative team made right after the school closure was putting together a week's worth of training for their teachers and staff. She stated the following:

We met on Monday morning in person in the school. We were planning for the virtual shift. So, we were basically putting together a week's worth of training for our teachers and staff.

In addition, Ronald expanded on the importance on providing training for teachers during the crisis. He described that during the first year of the crisis, his school created a new position called Technology Resource Specialist (similar to the Instructional Technology Coach position) to provide training for teachers on different digital tools. He stated:

When we adopted Canvas, we got staff trained up in that platform by the Technology Resource Specialist to deliver their synchronous lessons. So that was a facet of that person's role.

He also emphasized the important role of the Technology Resource Specialist in his school during the crisis such as training teachers in new technology and teaming with teachers and staff regarding digital implementation.

Our Technology Resource Specialist played a major role in in the rollout when we went to Canvas through training teachers and staff and teaming with them regarding digital implementation in their classrooms.

Lindy looked at training differently from all the other participants. She discussed how training was important not only for teachers, but for students and families too. She argued that providing training for teachers and staff during such crisis is very vital for students' success. Additionally, she believes that not only school staff and teachers need training in new technologies, but families and students need to be trained on how to utilize these new technologies, too. The COVID-19 crisis was a real challenge for all stakeholders because we had never experienced such a crisis. So, stakeholders, including families, needed training to help them deal with the new form of learning and communications. She explained:

We had to train up not only our teachers and staff, but our parents because so many parents did not know how to use basic digital skills such using Chromebook or taking pictures, and then be able to upload their student's work.

Participants did not only use traditional methods to provide professional development for their teachers; rather, they got creative and came up with new ways to learn. For example, Lindy saw crisis as an opportunity to collaborate with other schools in professional development via technology. She mentioned that since professional development was online, there was a great chance for schools to collaborate with other schools to exchange their experiences. She also stressed the importance of collaboration with other schools in the district to provide professional development in terms of technology and technology integration for teachers. She explained:

We worked with the other schools in professional development. It was a great way to learn from other schools. Sometimes our school had to plan and facilitate professional development, so it was fun.

She claimed that working with the other schools in professional development was a great way to learn from other schools; she wanted to keep doing it even when the crisis is over.

Another example that shows how participants enacted creativity to build their teachers professional capacity was drawn from Travis's interview. He explained that he collaborated with other principals from the state to learn from each school experience and provide best practices for their teachers. This aligns with Ronald's view when he mentioned that his school was able to invite speakers from outside the district to train teachers and equip them with the skills needed to teach during the crisis. He claimed that inviting speakers was something that he never thought about before in his school. He stated the following:

We were able to bring in some experts from outside of the division to meet with teachers and provide tips and tricks and best practices. We were able to have staff Zoom in with teachers and administrators from other school districts to talk about what they were doing, and the areas of growth and strength they were seeing in their delivery.

Engaging families to strengthen student learning

The COVID-19 pandemic showed how engaging families in their children's education is an essential element for student learning. The transformation to virtual learning put an extra burden on families because they had to become more involved in their children's education compared to their involvement during the traditional form of learning. For that reason, families needed more support and resources (e.g., advising and training) to be able to help their children. All participants of the study agreed on the importance of engaging families in school. Therefore, they came up with many ways to support families and encourage them to be engaged. For example, Adriana provided hotspots for families who did not have reliable internet access. She admitted that she was not able to provide everything students and families needed, but at least she was able to provide the minimum help that could support students during virtual learning. She also explained how her school reached out to families and asked them what they needed to help their children learn and engage during online learning. She stated:

We started doing surveys of parents, asking do you have what you need? We told them we were not going to supply everything, but we can help. For example, we had hotspots that we provided to families that needed a hotspot.

Like all other participants, Thomas explained how his school provided technical support for families to make it easier for them to engage and to help them keep up with their children's learning. He claimed that his school had specific expectations and requirements from their students for online learning. However, he explained that he understood that virtual learning was a real challenge for some families and students, so he provided support and afforded students and families grace at every turn. He stated:

We had incredibly specific expectations for attendance and online requirements when we were fully virtual. However, we provided support and resources, we were consistent across all content areas, and we afforded students and families grace at every turn. We provided 24/7 support throughout, along with a ticketed support system through the district's technology department.

While providing support and resources for families was not a real challenge for most of the participants of this study, principal Adriana acknowledged that supporting families was too complicated because of the large number of special education and second language students in her school. Nearly 20% of the students in Adriana's school qualified for special education services. She stressed that she had to provide extra supports for those students and their families. She even stated that her school would invite special education and second language students and their families to the school one at a time to provide support for them and walk them through different assignments. Despite the difficulties she faced in order to support all families, during the interview, I noticed that she emphasized the importance of supporting families because she believes

that the more involved the families are, the more involved their children are going to be. She stated the following:

When the school was fully virtual, we had students like our special education students who were really were not comfortable doing digital learning, so we would invite them with their families in the building on an increased frequency to provide extra support for them. We really needed to kind of take all of our resources and put it into that support.

Lindy approached the issue of supporting families differently. She stated that most parents in her school were working parents. Virtual learning made the engagement of those parents even harder. She stated that it was hard for families to juggle between work schedules and their children's virtual school schedules. She shared that the primary caregiver for her students were often grandparents who were not very familiar with technology. This fact, according to her, put an extra burden on the school to provide and supply more resources for grandparents to bridge the generation gap. She stated the following:

We had grandparents serving as the primary caregiver for their students, so we had a generational gap in terms of using technology. We met with those grandparents. We had guides for them on how to use the Chromebooks, how to upload a picture, and even how to push the home button.

In addition to the answers of the five participants, I checked the schools' social media posts to support the information gathered from participants' interviews. It was very

clear the participants' schools utilized social media frequently to provide different resources and information for families. Some posts provided guidance and taught families about different Learning Management Systems and digital tools. For example, Thomas' school posted information on the school's Facebook page to teach families how to upload their children's work to Flipgrid. I think the finding of the interviews regarding the providing support and resources theme was supported by the information on the schools' websites and social media accounts.

Theme 4: Tech-savvy Principals Used Communication during the COVID-19

Almost all participants expressed communication as a way to engage families to promote better learning for their students. Using communication to engage families to strengthen student learning was demonstrated in all interviews. Participants argued that communication with families was critical because families were stumbling and did not know what to do to keep their children safe and learning at the same time. For example, Travis discussed how he reached out to families to update them about any new changes or plans in the school. He explained that it was very important to meet families where they are by using different communication tools to make sure the message is delivered. Adriana's perspective on the importance of communicating with families was similar to Travis' opinion. She suggested that it was very important for her to keep the families in the loop. She claimed that virtual learning was not easy for schools and teachers because it required more collaboration from families. Thus, schools needed to communicate more with families to encourage and foster more family engagement. She stated the following:

I think that we tried to communicate with our families because we needed their help. I felt like it was so important to keep parents in the loop and make sure that they were involved in their children's education.

Travis also argued that communicating with families and informing them about the situation in the school helped in clearing the ambiguity of the crisis and building trust between the school and the families. Travis' position about the importance of communication between schools and families during tough times was supported by Ronald, who claimed that communication helped his school build bridges of trust. He stated the following:

Communication really helped, particularly with some of our newer students and families to really build those bridges of trust.

Moreover, when Ronald was asked about what helped him most in responding to the crisis, he said "communication". He recognized the value of communication in such a crisis, so he spent a lot of time focusing on communication, he said. He elaborated more:

Our ability to leverage communication quickly helped us in responding to the crisis quickly. Communication was pretty solid. So that certainly helped me in my role to support our families as we were going through the pandemic. It was the number one factor.

There is no doubt that communication was an important element during the COVID-19 crisis. But low-income families and families from minority groups are usually left out these communications because of such factors as their limited ability to

communicate in English. The impact of the COVID-19 crisis on students has been uneven. Low-income and minority students are more likely to experience learning losses. Unfortunately, most of the families in the schools that took part in this study were white, middle-class families. The only principal who could speak about his experience with communicating with diverse families was Adriana because her school was very diverse. She explained what her school did to engage families from different minority groups. She stated the following:

We had bilingual staff that would call, and we would do the walkthroughs and instruction in Spanish and other languages. We were making a great effort to meet our kids and families where they were, in their native first language. So that we found that was very helpful on many levels.

Since physical meetings were limited due to the pandemic, social media platforms and Zoom were the main tools of communication that were utilized by principals. All principals mentioned using Facebook Live and posts to share information with families. Travis claimed that his school provided all possible ways to reach out to families.

We found every possible avenue to communicate with parents. Whether that was through Facebook, video, through phone calls, through emails, through newsletters, we were constantly communicating with our families.

Lindy explained how her school was communicating with families via different strategies such as online chat, video calls, phone calls, and emails. Her ideas were almost

similar to those of Adriana who also mentioned utilizing social media to communicate with families:

I also used social media platforms and sent a Friday message every week, just with updates like, Where are we now? What's happening? and What have your students been doing?

While virtual one-on-one meetings with families were used by all principals, they differed on the time they scheduled these meetings. They all provided flexible schedules to meet the needs of their working families. Some meetings were held in the morning, while other meetings were held in the evenings. In some cases, meetings were held on Saturdays, too. Ronald explained how his school provided flexible schedules to meet with their families:

One of the things that we did is we set up opportunities for virtual sessions with the parents in different times, to walk them through how the students would use the technology.

In addition to the answers of the five participants, I checked the schools' social media posts to support the information gathered from participants' interviews. It was very clear the participants' schools utilized social media frequently to communicate with families. There was information about meetings and updates on the schools' situations. The findings of the interviews regarding using communication to engage families to strengthen student learning theme was supported by the information on the schools' websites and social media accounts.

Chapter Five: Discussion

A growing body of research has focused on the role of school principals during the time of crises (Harris & Jones, 2020; McLeod & Dulsky, 2021; Smith & Riley, 2012; Whitla, 2003), but given the magnitude of the COVID-19 crisis, there have been only a few researchers who examined the role of recognized tech-savvy principals during this crisis (e.g., Hamzah et al., 2021). This current study adds to existing research around the topic of tech-savvy principals by examining the roles of recognized tech-savvy principals to support teaching and learning in their schools during the first academic year of the pandemic. It is important to mention that this study did not focus on schools' digital environment or the digital practices of principals. Since the participants were recognized as tech-savvy principals, it is assumed that they had technology sorted out in their schools. During the interviews, all participants stressed that they had been building technology capacity in their schools way prior to the onset of the COVID-19 pandemic hit. They also claimed that their schools did not experience any significant learning disruption during the first days of the pandemic thanks to the strong technology capacity they already had in their schools. This means, in terms of technology, they were more prepared to respond to the crisis compared to other schools. Therefore, the focus of this study was on the way tech-savvy principals used crisis leadership attributes to support teaching and learning in their schools during the COVID-19 pandemic. The research question that was answered through this study was:

How did nationally recognized tech-savvy school principals leverage crisis leadership to support teaching and learning in their schools during the first academic year of the COVID-19 pandemic?

The study's question was answered in the findings described in Chapter 4. Overall, this study makes four contributions to our understanding of the roles of tech-savvy principals to support teaching and learning in their schools during a crisis. Emerging themes were analyzed in light of the research question and the literature with a focus on the Smith and Riley (2012) key attributes for crisis leadership and the Hitt and Tucker (2016) model of effective leader practices. The findings of this study added, corroborated, and expanded the limited prior research in the field.

Significance of the Findings

No one can expect when the next crisis will strike. Therefore, school principals must be ready and equipped with the necessary digital skills as well as crisis leadership skills to lead their schools, especially in difficult times. The research question that was answered through this study was: How did nationally recognized tech-savvy school principals leverage crisis leadership to support teaching and learning in their schools during the first academic year of the COVID-19 pandemic? Drawing on the research problem, this study was designed to bridge the gap in the literature by exploring the effective practices that tech-savvy principals enacted to support teaching and learning in their schools during the first academic year of the COVID-19 crisis. Waiting for a whole academic year before conducting the study enabled me to get a bigger picture of what was really happening in schools. The findings of this study indicated that recognized

tech-savvy principals were able to lead their schools during the COVID-19 crisis successfully. Since they were ready technology wise, they were not stuck in the administration rut during the crisis. Instead, they were able to focus on supporting teaching and learning through demonstrating crisis leadership attributes and enacting effective leader practices. The study's question was answered in the findings described in Chapter 4. Overall, this study makes four contributions to our understanding of the roles of tech-savvy principals to support teaching and learning in their schools during a crisis. The four themes are discussed below.

Finding 1: Tech-savvy Principals Demonstrated Decisive Decision Making during the COVID-19 Crisis.

Smith and Riley (2012) defined decision making as “the process of making a choice among alternative courses of actions” (p.65). One major attribute that is required for a school leader is to be able to make decisive decisions (Wong et al., 2020), especially in times of crisis (Brecher, 1993; Janis,1989; Smith & Riley, 2012). The real challenge that faces school principals when making decisions in crises is the lack of information (Brecher, 1993; Janis,1989). Ambiguity, uncertainty, conflicting information are fear amplifiers during crises. This was very clear during the COVID-19 crisis. The study's participants had to choose among alternative options and make many decisions with little information. They all expressed that all the decisions they made during the crisis were situated around two main points which are maintaining the safety of their teachers and students as well as ensuring the continuity of learning. For example, one principal noted that her highest priority during the crisis was the safety of her students and staff. Once

everybody was safe, her biggest goal was that she wanted students to learn on Day One. This practice is directly linked to Hitt and Tucker's (date?) model of effective leader practices that argued that effective leaders protect their students and learning environment by applying safety measures to help them learn (Hitt & Tucker, 2016). The safety of students has been a dominant theme in the literature because it is argued that the sense of safety affected student learning. For example, Robinson et al. (2008) found that maintaining the safety of students has a major impact on students learning. This is in line with the findings of Maslow (1943) who argued that the sense of safety is fundamental for students' success.

During crises, school principals should demonstrate their flexibility to operate through difficult times. Principals need to be able to navigate through ambiguity and disorder to adjust quickly (Koehn, 2020). Koehn (2020) asserted that the COVID-19 crisis was a powerful opportunity for organizations to learn how to adjust and adapt to sudden new changes that might happen in the future.

Theme 2: Tech-savvy Principals Demonstrated Flexibility during the COVID-19 Crisis.

Smith and Riley (2012) defined flexibility as “the ability to make quick and decisive changes in behavior and thinking in response to a rapidly changing environment” (p.68). Even though each crisis is unique and requires different levels of flexibility by school principals, most crises take schools by surprise and leave principals with little to no response. It is for this reason that effective crisis leadership requires school principals to be flexible and make quick decisions in difficult times (Smith &

Riley, 2012). In the context of the COVID-19 crisis, “schools were caught flatfooted” (McLeod & Dulsky, 2021, p.1) due to the rapid spread of the virus. School principals had to deal with and operate in a totally new context that they had never experienced before. During the crisis, effective principals had to be flexible and consider the new context to maximize their schools’ functioning (Leithwood, 2012; Murphy et al., 2006; Sebring et al., 2006). Flexibility was a point of focus for all the study’s participants. They demonstrated flexibility to maximize their schools’ performance and get the best out of the crisis. This practice is directly linked to Hitt and Tucker’s (2016) model of effective leader practices which asserts that effective school principals adapt to context to get the best out of the situation (Hitt & Tucker, 2016). For example, one participant noted that during the crisis, he had to be flexible and adapt different ideas and practices to get the best results during the crisis. This is supported by Tschannen-Moran (2011) who argued that effective school principals approach their schools from a strengths-based perspective so that they can get the best in people and situations.

Selecting Faculty Staff for the Right Fit

All participants argued that one of the most important factors that helped change and adapt quickly was their staff and teachers. They stressed that their teachers and staff were the number one asset for them during the crisis because they were flexible and resilient. Even though all participants stated that the selection of teachers and staff was critical prior to the crisis, their selections and recruiting requirements at that time helped them even more significantly during the crisis. This is supported by Hitt & Tucker (2016) who stressed that school principals should “proactively address teacher effectiveness by

recruiting and choosing strong and capable candidates” (p.19). There is no doubt that the role of teachers is constantly changing based on the time and changes that are taking place (Hargreaves & Goodson, 2006). For example, in ordinary times, beside their traditional teaching roles, teachers are required to perform a wide range of roles such as improving social relationships (Rogoff, 1990) and improving the life skills of their students (Apeloig & Shalev-Visiger, 2010). However, during a crisis, teachers are required to maintain the safety of their students and provide emotional support (Webb & Volimi, 2002). This means the role of teachers during the COVID-19 crisis was different from their roles during normal times. The shift to virtual learning affected teachers and raised important questions about their roles in the new virtual environment. During the COVID-19 crisis, teachers had to adjust to the crisis to fulfill their new roles including, but not limited to maintaining the safety of their students, providing emotional support, and maintaining continued learning (Weisblai, 2020; OECD, 2020). Many studies have shown that teachers’ emotional connections with their students in normal times enable them to connect and provide ongoing support to their students in times of crisis (Baum, 2005; Moscardino et al., 2014). Thus, selecting the right teachers who fit the school’s goals and complement the existing teachers is an effective leadership practice (Hitt & Tucker, 2016) that the participants of this study utilized effectively to keep operations going in their schools during the crisis.

Theme 3: Tech-savvy Principals Demonstrated Creativity during the COVID-19 Crisis.

Leadership intelligence is one of the most critical leadership attributes for effective crisis management. Lagadec (2009) identified three different forms of leadership intelligence: procedural, intuitive, and creative. Creative leadership intelligence refers to the ability to handle completely new crises that have never happened before (as cited in Smith & Riley, 2012, p.67). This means that leaders are required to navigate a totally new crisis without prior preparation or experience using their own creativity which is most needed when confronted with difficult times. It is one of the attributes that is most needed in the face of ambiguity and uncertainty (Smith & Riley, 2012). Even though creativity is a very important leadership attribute that helps leaders respond to crisis in an effective way, it is not often included in the hiring and selecting process of organization leaders (Devitt & Borodzicz, 2008). In a school context, creative school leadership is needed because it helps schools make radical changes and overcome major challenges that they might encounter (Smith & Riley, 2012). It is most needed when schools are facing a crisis because most leaders rely on established roles and procedures when confronted by a crisis (Smith & Riley, 2012). Stoll and Temperley (2009) argued that creativity is vital in schools in order to avoid crises or at least reduce their impact. Reflecting on the COVID-19 crisis, it is clear that it was unique and new for all schools across the United States (and the world). The majority of school principals had never experienced a similar crisis before. Therefore, creativity was an important attribute that school principals used during the COVID-19 crisis. Principals had to be able

to navigate through ambiguity and disorder to adjust quickly (Koehn, 2020). They were able to navigate successfully through such a crisis because they were able to operate beyond prescribed processes and practices. In this study, creative leadership of the participants is directly linked to two of Hitt and Tucker's effective leader practices which are providing opportunities to learn for the whole faculty and being creative in engaging families to strengthen student learning (Hitt & Tucker, 2016). According to the participants, these three practices played major roles in their ability to operate beyond their experience and respond efficiently to the crisis.

Providing Opportunities to Learn

Providing professional development for all teachers and staff is vital to address the needs of the teachers to meet the high expectations level placed on them (Leithwood, 2012). This aligns with Odden and Picus (2011) who argued that effective professional development not only allow staff and teachers to succeed, but it also contributes significantly to students' success. Participants realized the importance of providing effective professional development for teachers on students learning, as Zepeda (2013) highlighted that students' learning depends on teachers learning. Therefore, during the crisis, professional development was used by principals as a way to equip teachers with the cutting-edge technologies and skills that were needed to support their students in the crisis. This is supported by McLeod and Dulsky (2021) who argued that professional development became an important strategy for building teachers' capacity during the crisis. Providing professional development to help teachers grow is a practice of effective

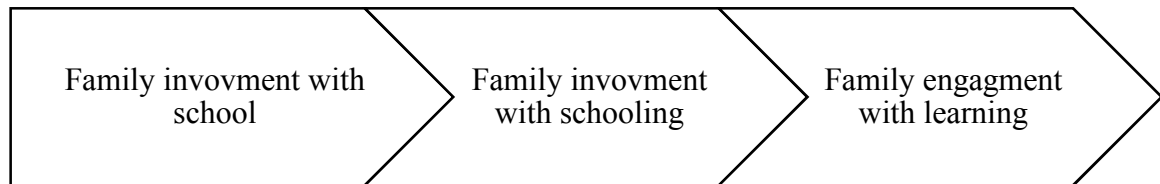
school leaders (Grissom & Loeb, 2011; Hitt & Tucker, 2016), and the participants utilized this practice effectively to operate their schools during this unprecedented crisis.

Being Creative in Engaging Families to Strengthen Student Learning

Engaging families to strengthen student learning is another aspect that shows the participants' creative intelligence during the COVID-19 crisis. Family engagement has been a hot topic in education over the past two decades (Savage & Petree, 2015). "The evidence is consistent, positive, and convincing: families have a major influence in their children's achievement in school and through life" (Henderson & Mapp, 2002, p. 2). In 2014, Goodall and Montgomery created a continuum for the levels of family engagement (see Figure 2). In the left of the continuum is "family involvement" with school which considered as the lowest level of involvement. Then comes "involvement with schooling" in the middle of the continuum. In the right of the continuum comes "family engagement with children's learning" which is the highest level of involvement. Therefore, effective school principals try to create opportunities not only to engage families in school, but to foster their engagement in their children's learning.

Figure 3

Family Engagement Continuum



NOTE. Adopted from Goodall and Montgomery (2014).

Due to the spread of the COVID-19 pandemic, schools had to close and move to fully virtual learning. This radical shift made a huge change in the role of families in their children's education. Families were forced to assume a new role in the education of their children. They had to wear a teacher hat and perform the roles of teachers or at least perform the roles of learning facilitators (Carrión-Martínez et al., 2021). Therefore, schools had to come up with creative ways to engage families to continue developing the teaching–learning processes (Ire Rojas, 2020). All the participants stressed that they had understood the importance of engaging families especially during the crisis, so they created tremendous opportunities to foster their engagement. Fostering family engagement is an effective leadership practice (Hitt & Tucker, 2016) that the participants of this study utilized effectively during the crisis to help their students learn at the highest level.

Theme 4: Tech-savvy Principals Used Communication during the COVID-19

Communication is at the cornerstone of family-school relationships. Lunts (2003) argued that constant communication is associated with a strong relationship between schools and families. When school principals communicate constantly with families to foster collaboration, encouraging outcomes and results may occur (Sanders & Sheldon, 2009). Therefore, promoting appropriate methods of communication can help foster family engagement (Epstein, 2001; Sanders & Sheldon, 2009). Effective school principals leverage all possible methods including a growing number of digital communication tools to foster family engagement which will eventually support students' learning. This practice is directly linked to Hitt and Tucker's model of effective leader

practices, highlighting the fact that effective leaders encourage family engagement to support students' learning (Hitt & Tucker, 2016).

In times of crisis, a clear communication to establish trust between schools and families is crucial. Smith and Riley (2010) stated that in times of crisis, it is very important that the school principals focus on communications to reduce the impact of misinformation surrounding the crisis. Reflecting on the impact of the COVID-19 crisis on school communications with families, it is clear that the way school communications have changed dramatically because schools had to close and limit their physical connections with all families during the crisis. The high infection rate and the protective measures that were imposed to control the spread of the virus such as social distancing and face masks posed challenges on daily face-to-face communication (Mheidly et al., 2020). Consequently, schools turned to digital tools and social media to communicate with families. All participants of the study indicated that social media platforms such as Facebook and TikTok were used to connect with families. This is supported by (McLeod & Dulsky, 2021) who argued that the utilization of technology during the crisis for school communications with community was growing rapidly as an additional means of two-way communication. As education leaders, school principals are essential factors in fostering family engagement through ongoing communications (Sanders & Sheldon, 2009). They can create a healthy and encouraging environment for communications with families. They also can influence their teachers and motivate them to embrace this notion (Anderson & Minke, 2007; Leithwood, 2012). This is in line with Sanders and Sheldon

(2009) who argued that effective school principals create a positive school climate and implement practices that foster relationships with families.

Missing Key Crisis Leadership Attributes

Four out of nine crisis leadership attributes were evident in the data: decisive decision making, flexibility, creativity, and communication. However, five attributes did not emerge from the data, which are empathy, intuition, procedural intelligence, synthesizing skills, and optimism. I believe some of the crisis leadership attributes did not emerge from the data because of the nature of the research question and the purpose of the study. This study looked at how tech-savvy principals supported the teaching and learning process in their schools during the COVID-19 crisis. Therefore, attributes such as empathy and optimism do not fit the context of the study. Even though having an empathetic and optimistic school leader is crucial in supporting schools during crises in general (Smith & Riley, 2012; Wibowo & Paramita, 2022), I believe these two attributes do not impact the process of teaching and learning directly.

On the other hand, intuition, procedural intelligence, and synthesizing skills did not appear in the data because they do not fit the COVID-19 crisis context. For example, Lagadec (2009) defined procedural intelligence as the information of what works best for crises that have occurred previously in similar form. However, intuitive intelligence was defined as the ability to deal with large crises but not entirely new ones (Lagadec, 2009). Those two types of intelligence require that leaders have prior knowledge about the crisis for them to deal with it. This means that procedural intelligence and intuitive intelligence do not fit in the context of the COVID-19 crisis because this crisis was totally new to

schools. Lagadec (2009) identified a third type of intelligence, creative intelligence. Leaders with creative intelligence are able to deal with completely new and surprising events and crises, as Smith and Riley (2012) noted that creative intelligence means operating beyond prescribed procedures. This type of intelligence was needed during the COVID-19 crisis because it fit the crisis context.

Limitations

The first and most obvious limitation is relying heavily on interviews to collect data and learn about the case. In a normal scenario, the researcher utilizes different tools for collecting data such as focus groups. However, at the time of collecting data, schools were doing virtual learning because of the COVID-19 pandemic. So, it was hard to interview students and teachers.

Another limitation of the study is the small number of participants. Even though there were about 30 school principals in the NASSP award list, only 17 principals met the inclusion criteria of this study. Out of those 17 principals, only five principals showed interest to participate in the study. Collecting data from more participants is recommended for future studies.

Implications for Practice

This study might not come up with totally new evidence for the importance of utilizing crisis leadership by tech-savvy principals in school to support teaching and learning. The findings of this study, however, contribute to the existing literature on this topic. Since this study is a qualitative case study and it only involved five participants, I understand the implications of the study need to be substantiated by evidence. Based on

the findings of the study, school principal preparation programs should focus on preparing school principals as tech-savvy principals to help them run their schools efficiently in a world that is operated by technology. Equipping school principals with digital skills would enable them to keep the focus on implementing effective leadership practices that can impact their students' learning positively. Therefore, this study serves as a wake-up call to leadership preparation programs to focus on preparing school principals as tech-savvy principals so they can focus on teaching and learning practices.

Implications for Policy

The finding of this study emphasized the importance of integrating technology in schools. During the COVID-19 crisis, school principals turned to instructional technology to provide an immediate solution for this crisis and to keep the teaching and learning processes going and their teachers and students safe. Educational technology can help educators keep the teaching and learning process going during school closure as well as to minimize learning loss and the consequences of school closure on students. However, technology cannot change schools on its own. Rather, technology initiatives require planning of schools and districts to foster and accommodate change. The findings of this study highlighted the importance of building principal' capacity to help them integrate technology in their schools and foster technology use. Therefore, this study serves as a wake-up call to education leaders at district, state, national levels to legislate new policies that require all aspiring principals to take at least one course that would prepare them to be tech-savvy principals.

Implications for Future Research

As an exploratory case study, the goal of this study was to explore the effective practices that tech-savvy principals enacted to support teaching and learning in their schools during the first academic year of the COVID-19 crisis. Therefore, this study may be replicated in order to gain a deeper knowledge of the response of tech-savvy principals to the COVID-19 crisis to support teaching and learning in their schools during the pandemic. I expect that if this study is replicated, the findings of the new study would support the finding of this research. If replicated, it is recommended that more participants should be involved to better understand the case. Offering incentives and delivering invitations and follow-up emails should be consistent until responses are received. It is also recommended that beside using semi-structured interviews, different data collection tools should be utilized to validate the findings.

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Appendices

Appendix A: Consent Form

University of Denver

Consent for Online Interview

You are invited to participate in a research study of Teaching and Learning: Digital school Principals' Responses to Support the Teaching and Learning Process During the First Academic Year of the COVID-19 Pandemic. The study will involve online interviews via Zoom. The purpose of this study is to understand the responses of school principals who were well experienced in digital technology in the United States during the first academic of the pandemic. It ultimately aims to understand and detail how digital school principals leveraged crisis leadership to support the teaching and learning process in their schools during the first academic year of the COVID-19 pandemic. From that, the field can learn how preparing school principals on technology and crisis leadership can help schools through a crisis. You were selected as a possible participant in this study because you were recognized by the National Association of Secondary School Principals (NASSP), as a digital school leader.

If you decide to participate, please understand your **participation is voluntary** and you have the **right to withdraw and discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled. The alternative is not to participate.** If you decide to participate, complete the following survey. Your completion of this survey indicates your consent to participate in this research study. The interview is designed to understand the responses of school principals who were well experienced in digital technology in the United States of America during the first academic of the pandemic.

It will take about one hour to complete the interview. You will be asked to answer questions about your response to the COVID-19 pandemic and how you supported teaching and learning process.). No benefits accrue to you for participating in this

interview, but your responses will add to the body of research by focusing on the responses of digital school principals to support the teaching and learning process in their schools during the first academic year of COVID-19 pandemic.

You might feel discomfort during the interview, but they are not expected to be any greater than anything you encounter in everyday life. Data will be collected using the Internet; no guarantees can be made regarding the interception of data sent via the Internet by any third party. Confidentiality will be maintained to the degree permitted by the technology used.

Your decision whether or not to participate will not affect your future relationships with current school and district you are working at. If you decide to participate, you are free to stop at any time; you may also skip questions if you don't want to answer them or you may choose not to return the survey.

Please feel free to ask questions regarding this study. You may contact me if you have additional questions at (Mohsen Alzahrani, email: Mohsen.Alzahrani@du.edu, phone: 7209654698) Or you can the Faculty Mentor:

Kristina Hesbol, email: Kristina.Hesbol@du.edu, phone : 3038712479.

If you are not satisfied with how this study is being conducted, or if you have any concerns, complaints, or general questions about the research or your rights as a participant, please contact the University of Denver (DU) Institutional Review Board to speak to someone independent of the research team at (303) 871-2121, or email at IRBAdmin@du.edu.

With your permission, the interview will be audio taped. If you do not wish to be audio taped, please indicate this to the researcher.

De-identified data from this study may be shared with the research community at large to advance science and health. We will remove or code any personal information that could identify you before files are shared with other researchers to ensure that, by current scientific standards and known methods, no one will be able to identify you from the information we share. Despite these measures, we cannot guarantee anonymity of your personal data.

Thank you for your time.

Sincerely,

Mohsen Alzahrani

The University of Denver

Morgridge College of Education

Educational Leadership and Policy Studies (ELPS)

Dr. Kristina Hesbol

Associate professor

The University of Denver

Morgridge College of Education

Educational Leadership and Policy Studies (ELPS)

By clicking the link below, I confirm that I have read this form and decided that I will participate in the project described above. Its general purposes, the particulars of involvement, and possible risks and inconveniences have been explained to my satisfaction. I understand that I can discontinue participation at any time. My consent also indicates that I am at least 18 years of age. [Please feel free to print a copy of this consent form.]

I agree to participate (link to survey)

I decline (link to close webpage)

Appendix B: Invitation Email

University of Denver

Invitation Email

Dear [insert name],

My name is Mohsen Alzahrani, and I am a student from the [department of educational leadership and policy studies at the University of Denver. I am emailing you to invite you to participate in my research study. This is a study about digital school principals' responses to support the teaching and learning process during the first academic year of the COVID-19 pandemic. You are eligible to be in this study because you were rewarded by the National Association of Secondary School Principals (NASSP) as the principal of the year. I obtained your contact information from NASSP website. I also checked social networking sites, such as Twitter, LinkedIn, and Facebook, to locate your contact information. If you decide to participate in this study, you will engage in about one-hour

interview. I would like to audio record the interview and then I will use the recording to transcribe the interview. Remember, this is completely voluntary. You can choose to be in the study or not. If you'd like to participate, or if you have any questions about the study, please e-mail or contact me at [Mohsen. Alzahrani@du.edu]. Thank you very much.

Sincerely,

Mohsen Alzahrani

Faculty Sponsor: Kristina Hesbol, email: Kristina.Hesbol@du.edu

Appendix C: Interview Protocol

University of Denver

Interview Protocol

Research Question:

How did recognized digital school principals leverage crisis leadership to support teaching and learning in their schools during the first academic year of the COVID-19 pandemic?

Opening Protocol:

1. Provide the Informed Consent Form to the participant and ask that the form be read.
2. After the participant has read the form, ask the participant if he/she has any questions about his/her consent, the research, or the process.

3. Answer any questions the participant may have, and ask the participant if he/she is willing to participate in the study and to sign the two copies of the Informed Consent Form.
4. If willing to participate, give the participant one copy of the informed consent form and retain a signed copy for yourself.

Introduction:

Good morning. My name is Mohsen Alzahrani. Today is --/--/---- and we are talking with The purpose of this explanatory mixed methods study is to learn about how digital school principals leverage crisis leadership to support teaching and learning in their schools during the first academic year of the COVID-19 pandemic. The reason why you were asked to participate in this interview is that you have been awarded by the National Association of Secondary School Principals (NASSP), as the principal of the year.

Your opinions, experiences, ideas, and participation are very important in this study and may lead to adding to the body of research by focusing on the effective practices and crisis leadership attributes that were enacted by school principals during the Covid-19 pandemic to support the teaching and learning in their schools. I want you to feel comfortable about good things as well as critical things. There are no right or wrong answers.

We are going to spend the next an hour to conduct this interview. Because of these efforts to provide protections, the informed consent form signed by you today meets the requirements for human subject research for class projects. The form explains that: 1) All information shared during our conversation will be kept confidential; 2) Your

participation is completely voluntary, and you may stop at any time without penalty if you feel uncomfortable or embarrassed; and 3) there is no harm intended through this study.

We intend to share our findings with researchers through publications and presentations to add to the body of literature on this topic. I also, intend to share the finding with education leaders and policy makers to inform decision making process. We will not put your name or any other identifiable information that can be traced back to you on the final report.

During this time, I have several questions that I would like to ask you. As a follow-up to this interview, I may request additional comments and feedback during the writing of the report to ensure that your opinion, experiences, ideas are accurately reflected.

Now I will ask some questions regarding the study. You may ask me questions at any time during this process. If you would like to follow along, here is a copy of the questions I plan to ask.

Before we continue, do you have any questions?

Interview Questions:

1. When did you respond first to the spread of the COVID-19 pandemic in the US?
2. What were the first steps your school took in responding to the COVID-19 crisis?
3. Do you think your school was ready to prevent such crisis? Why?

4. Was there a gap in learning and teaching process? I mean, did you have to keep students' home while you preparing for the shift to online learning? If yes, how many days?
5. What were the most difficult challenges that faced your school to keep teaching and learning process going during the COVID-19 crisis?
6. What were the factors that you think helped your school in responding to the crisis?
7. How did you create a supportive organization for teaching and learning?
8. How did you facilitate a high-quality learning experience for students during the COVID-19 pandemic?
9. How did you insure students' engagement during remote learning?
10. How did you provide support for technology integration in your school during the COVID-19 crisis?
11. How did you support students and families during the COVID-19 crisis?
12. Did you collaborate with any external partners to support your school during the crisis? How?
13. You personally, as a recognized digital leader. How did you help your school?
How did your crisis leadership skills or attributes helped you support teaching and learning?
14. In terms of the assessment. In general, how was the students' performance? Can you give me some numbers? Is there a big difference in students' performance between last year and previous years?

15. Can you give more details about the demographic of your school students
(socioeconomic, race, ethnicity, free and reduced lunch...etc)?

16. What are the lessons you and your school have learned from this crisis?

Closing Script:

Thank you very much for participating in this study. Your opinions and thoughts are very important and will be appreciated and valued.

Remember, if you have any question regarding this study, you can contact me or contact Dr. Hesbol. As you see, our contact information is provided in the consent form.

Thank you.

Appendix D: IRB Approval Letter



DATE: June 25, 2021

TO: Mohsen Alzahrani, Graduate student
FROM: University of Denver (DU) IRB

PROJECT TITLE: [1778859-1] Teaching and Learning: Digital school Principals' Responses to Support the Teaching and Learning Process During the First Academic Year of the COVID-19 Pandemic

SUBMISSION TYPE: New Project

ACTION: **EXEMPTION GRANTED**

DECISION DATE: June 25, 2021

NEXT REPORT DUE: June 25, 2022

RISK LEVEL: Minimal Risk

REVIEW CATEGORY: Exemption category # 2

Exemption 2: Educational Tests, Surveys, Interviews, or Observations
Research in this category is allowed as long as one of the three criteria is met:

1. Information obtained is not identifiable
2. Disclosure outside of the research would not put subjects at risk of harm
3. Information obtained can be identifiable and a limited IRB review has been conducted which relates to there being adequate provisions for protecting privacy and maintaining confidentiality.

This exemption does not apply to research in the following instances:

- When the research is subject to Subpart D and includes children, Category 2 still does not allow:
 - Surveys
 - Interviews
 - Investigator participating in the activities being observed (public behavior observation without intervention is permitted)
 - Survey cannot be combined or paired with the collection of biospecimens or interventions, as those additional activities would disqualify the research from this category.

Thank you for your submission of Exemption Request materials for this project. The University of Denver IRB has determined this project is **EXEMPT FROM IRB REVIEW** according to federal regulations. This exemption was granted based on appropriate criteria for granting an exemption and a study design wherein the risks have been minimized.

Please note that maintaining exempt status requires that (a) risks of the study remain minimal; (b) that anonymity or confidentiality of participants, or protection of participants against any increased risk due to the internal knowledge or disclosure of identity by the researcher, is maintained as described in the application; (c) that no deception is introduced, such as reducing the accuracy or specificity of information about the research protocol that is given to prospective participants; (d) the research purpose, sponsor, and recruited study population remain as described; and (e) the principal investigator (PI) continues and is not replaced.

If changes occur in any of the features of the study as described, this may affect one or more of the conditions of exemption and may warrant a reclassification of the research protocol from exempt and require additional IRB review. For the duration of your research study, any changes in the proposed study must be reviewed by the University of Denver IRB before implementation of those changes.

Informed Consent Process

Informed consent is an important process when conducting human subject research beginning with providing potential subjects with a description of the project and assurance of a participants understanding. The DU IRB has granted this project exempt status with the use of an Exempt Information Letter. Informed consent must continue throughout the project via the use of the approved Exempt Information Letter. If requested, each participant is entitled to receive a copy of the Exempt Information Letter.

Unanticipated Problems Involving Risks to Subjects or Others (UPIRTSOs)

Any incident, experience or outcome which has been associated with an unexpected event(s), related or possibly related to participation in the research, and suggests that the research places subjects or others at a greater risk of harm than was previously known or suspected must be reported to the IRB. UPIRTSOs may or may not require suspension of the research. Each incident is evaluated on a case by case basis to make this determination. The IRB may require remedial action or education as deemed necessary for the investigator or any other key personnel. The investigator is responsible for reporting UPIRTSOs to the IRB within 5 working days after becoming aware of the unexpected event. Use the Reportable New Information (RNI) form within the IRBNet system to report any UPIRTSOs. All NON-COMPLIANCE issues or COMPLAINTS regarding this project must also be reported.

Continuation Review Requirements

Based on the current regulatory requirements, this exempt project does **not** require continuing review. However, this project has been assigned a **one-year review period** requiring communication to the IRB at the end of this review period to either close the study or request an extension for another year. The one-year review period will be posted in the Next Report Due section on the Submission Details page in IRBNet. During this one-year period, a staff member from the Office of Research Integrity and Education (ORIE) may also conduct a Post Approval Monitoring visit to evaluate the progress of this research project.

Study Completion and Final Report

A Final Report must be submitted to the IRB, via the IRBNet system, when this study has been completed. The DU HRPP/IRB will retain a copy of the project document within our records for three years after the closure of the study. The Principal Investigator is also responsible for retaining all study documents associated with this study for at least three years after the project is completed.

PLEASE NOTE: This project will be administratively closed at the end of a one-year period unless a request is received from the Principal Investigator to extend the project. Please contact the DU HRPP/IRB if the study is completed before the one-year time period or if you are no longer affiliated with the University of Denver through submitting a Final Report to the DU IRB via the IRBNet system. If you are no longer affiliated with DU and wish to transfer your project to another institution please contact the DU IRB for assistance.

If you have any questions, please contact the DU Institutional Review Board (IRB) at (303) 871-2121 or at IRBAdmin@du.edu. Please include your project title and IRBNet number in all correspondence with the IRB.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Denver (DU) IRB's records.