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Portraits of Visionary Leaders: Technology Directors' Leadership Characteristics and Experiences in K–12 Independent Schools During the COVID-19 Pandemic

William Jeremiah Womack
wjw16a@acu.edu

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Nannette W. Glenn, Ph.D.

Dr. Nannette Glenn, Dean
of the College of
Graduate and Professional
Studies

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Dissertation Committee:

Simone Elias

Dr. Simone Elias, Chair

S Baily

Dr. Scott Bailey

Kyle Butler

Dr. Kyle Butler

Abilene Christian University

School of Educational Leadership

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Doctor of Education in Organizational Leadership

by

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Dedication

I dedicate this work to my wife, Crystal, and my children, Ella Grace and William. I love you!

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"And God is able to bless you abundantly, so that in all things at all times, having all that you need, you will abound in every good work" (2 Corinthians 9:8). I thank God for blessing me with the right people I needed at the right time to encourage, support, and mentor me. Lord, you gave me all I needed, most importantly your grace and mercy.

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Abstract

This study's goal was to examine technology directors' leadership characteristics and their experiences leading information and communication technologies in K–12 independent schools in Tennessee during the COVID-19 pandemic. As information and communication technologies' use expanded in education, exploring educational leadership characteristics and experiences with information and communication technologies integration in K–12 was critical, especially as teachers and students depended upon remote learning during the COVID-19 pandemic. Using narrative inquiry, this study's findings described experiences and illustrated certain visionary leadership characteristics technology directors used as they navigated information and communication technologies integration in K–12 during the COVID-19 pandemic. Two prominent themes emerged through narrative inquiry thematic analysis: supporting and adapting. Subthemes included (a1) technical support, (a2) training, (a3) encouragement, and (b1) change in the field, (b2) increasing responsibilities, and (b3) challenges of the COVID-19 pandemic. Four key conclusions included (1) leading information and communication technologies requires constant evaluation and adaptation, (2) remote learning due to the COVID-19 pandemic changed information and communication technologies use and management in schools, (3) supporting information and communication technologies in education requires a wide range of both technical skills and interpersonal skills, and (4) the technology directors in this study exhibited the leadership behaviors of visionary leadership. This study provides school administrators and professional organizations a guide for best practices among independent school technology directors, especially in a time of crisis such as the COVID-19 pandemic. Further, this study contributes to advance leadership theory by looking into the leadership of technology directors during a pandemic.

Keywords: technology directors, independent schools, visionary leadership, information and communication technologies (ICT), ICT integration, K–12 education

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Chapter 1: Introduction

Information and communication technologies (ICT) use has grown in K–12 classrooms in the United States (Bulman & Fairlie, 2016; National Science Board, 2018). Each year, educators face increased pressure to provide students with the technological skills necessary to thrive in a 21st-century workforce (Harris, 2016). Despite the many barriers that prevent ICT integration (Ertmer, 1999; Hew & Brush, 2007), effective school leaders can support and empower teachers to integrate ICT into their curriculum effectively.

The context of this study is inherently tied to the realities of the COVID-19 pandemic. Acknowledging the everyday challenges associated with classroom ICT integration, the shift to remote learning caused by the COVID-19 pandemic forced educators and school leaders to adopt new programs quickly in early 2020 (Gaudet, 2020). Instead of merely including technology as a strategy to enhance learning, teachers relied on ICT for instruction and interaction with students. While vaccines may offer schools the hope to move back to full-time in-person education, school leaders and teachers may have to continue to provide remote learning options into the near future (Mukherjee, 2020; Strauss, 2021).

Background and Context

Technology in K–12 Schools in the 21st Century

Within K–12 education, information and communications technologies (ICT) refers to electronic tools, such as laptop computers (PCs), tablets, and smartboards used to access and share information (United Nations Educational, Scientific and Cultural Organization, 2009). As Richardson and Sterrett (2018) explained, “In today’s K–12 schools, learning and technology cannot be seen as separate silos” (p. 591). Claro et al. (2017) found that 94.3% of principals and 94.1% of teachers perceived ICT as an essential learning tool in school settings. Further, when

Heitink et al. (2016) examined teachers' reasoning for ITC use, they found teachers believed ITC strengthened both pedagogy and content understanding in their classrooms. In a survey of principals, Waxman et al. (2013) discovered that principals believed ICT was an effective tool for communication and student instruction.

In addition to teachers' and principals' positive beliefs about student ICT use, the literature reports numerous academic benefits. Soparat et al. (2015) determined that these tools assist K–12 teachers' efforts to improve student engagement, collaboration, and research skills. Information and communications technologies increase communication skills and thinking capacity (Soparat et al., 2015) while also providing expanded opportunities for problem-based, constructivist assignments and collaborative learning opportunities between students (Davis & Fullerton, 2016; Neutzling et al., 2019; Wade et al., 2013). Despite the demonstrated benefits of ICT integration, teachers have identified barriers that prevent them from fully embracing the potential of ITC in their classrooms (Ertmer, 1999; Hsu, 2016; Inan & Lowther, 2010; Kopcha, 2012).

Barriers to Integration. Although there are many positive aspects of ICT in K–12 education (Soparat et al., 2015), teachers often hesitate to use technology in their classrooms or do not use ICT in ways that enhance learning (Burns, 2013; Mama & Hennessy, 2013). According to Davies (2010), merely providing adequate technology does not necessarily change teachers' instruction. Multiple barriers to ICT integration, such as a lack of access to technical support and insufficient professional development, prevent teachers from readily adopting new types of technology in their classrooms (Ertmer, 1999; Ertmer et al., 2012; Hsu, 2016; Kopcha, 2012; Nelson et al., 2019; Park & Ertmer, 2008). Administrative support and technology leadership for teachers are critical influences in their technology integration practices (Anderson

& Dexter, 2005; Inan & Lowther, 2010; Park & Ertmer, 2008). Together with principals, technology directors serve as administrators to support teachers' integration of ICT in their classrooms (Chen, 2013; Sugar & Holloman, 2009).

Technology Directors. In response to the increased investment and presence of ICT in classrooms, school administrators began adding new staff positions to support teachers' technology integration (Frazier & Hearrington, 2017). Although job descriptions vary widely, school technology directors facilitate teaching and learning with ICT (Sugar & Holloman, 2009). In their Technology Coordinator Issues Model (TCIM), Frazier and Hearrington (2017) provided an outline of the responsibilities of a school technology director, which included (a) technical support, (b) network operations, (c) planning and budgeting, (d) teaching and learning, and (e) administrative computing. In addition to providing daily technical support and providing professional development, technology directors also contribute to developing a vision for technology use throughout a school or district (Frazier & Hearrington, 2017).

Visionary Leadership. Hew and Brush (2007) wrote that a shared vision helps school leaders overcome other common barriers to ICT integration. Taylor et al. (2014) defined visionary leadership as "the ability to create and articulate clear visions providing meaning and purpose to the work of an organization" (p. 567). In their Standards for Educational Leaders, the International Society for Technology in Education (International Society for Technology in Education [ISTE], 2018) identified visionary planning and empowerment as critical elements for successful ICT integration. Further, Frazier and Hearrington (2017) asserted that developing a vision for ICT integration within a school is a primary responsibility of school technology directors. Although primarily thought of as gifted communicators, visionary leaders also exhibit other leadership characteristics that influence their followers. They serve as coaches and role

models who motivate, encourage, and empower their followers to implement the vision they communicate (Kirkpatrick, 2004; Nanus, 1992).

As leaders who direct the vision for ICT integration and provide support, technology directors serve in an influential role. Therefore, a better understanding of their leadership characteristics and experiences could help school administrators refine the technology directors' position to better support teachers and positively influence ICT integration. Additionally, examining technology directors' leadership throughout the COVID-19 pandemic could provide a guide for future educational ICT leaders in the event schools must return to at-home learning.

Statement of the Problem

The lack of ICT use in many classrooms spurs researchers to identify barriers that inhibit as well as what encourages integration (Ertmer, 2016; Inan & Lowther, 2010). Although individual teacher's characteristics impact ICT integration (Gil-Flores et al., 2017; Inan & Lowther, 2010), teachers identify school leaders as an important influence (Claro et al., 2017; Ertmer et al., 2012; Hsu, 2016; Nelson et al., 2019; Waxman et al., 2013). Prior studies on the influence of school leaders and ICT use primarily focused on school principals' leadership of ICT integration processes (Chen, 2013; Gençer & Samur, 2016; Waxman et al., 2013). However, in a surprising discovery, Chen (2013) found faculty perceptions of technology directors as more influential in fostering ICT use. One way to better explore school leaders' influence on ICT integration is to examine school technology directors' leadership experiences in technology-related schools, such as K–12 independent schools.

Purpose of the Study

The purpose of this narrative study was to examine technology directors' leadership characteristics and their experiences leading ICT in K–12 independent schools in Tennessee

during the COVID-19 pandemic. School leaders, including technology directors, serve a vital role in overcoming barriers to effective technology integration (Inan & Lowther, 2010; Nelson et al., 2019; Skues & Cunningham, 2013; Sugar & Holloman, 2009; Vermeulen et al., 2015). This narrative study is significant as it provides a perspective often neglected in this context. Additionally, the findings provide a holistic view of school technology directors' leadership, which may strengthen classroom teachers' ICT integration. Finally, the findings of this study serve as a guide to define the roles and leadership practices of independent school technology directors.

Research Question

One broad question guided this study:

RQ1. How do technology directors perceive their leadership characteristics and experiences with ICT integration in K–12 independent schools in Tennessee during the COVID-19 pandemic?

Positionality

According to Kincheloe and Steinberg (1998), "positionality involves the notion that since our understanding of the world and ourselves is socially constructed, we must devote special attention to the differing ways individuals from diverse social backgrounds construct knowledge and make meaning" (p. 3). Therefore, as I present the stories of other technology directors, I must be aware of how my own background influences the interpretation and presentation of other independent school technology directors' stories. My personal experiences as a teacher and technology director shaped my interactions and interviews with the participants. As an active collaborator and participant in the research process, the researcher's relationship to the research is an integral part of the study (Creswell & Poth, 2018).

My position as an insider brings benefits to the study and offers opportunities to glean insights those not in the field could miss. My professional experiences in education impact the manner in which I relate to this topic. I began my teaching career as a band director. Throughout the first 15 years of teaching, it was the only constant in my schedule. Although I only ever dreamed of teaching band and music, I found myself also teaching Bible, business, entrepreneurship, and personal finance. Throughout my time in the classroom, I sought ways to use the ICT my school provided to enhance lessons and enrich students' learning experiences.

In 2011, the administration of my school began a program that drastically increased teachers' and students' access to classroom ICT. The school purchased MacBooks and iPads for all teachers, as well as an iPad for every sixth through 12th-grade student. Additionally, elementary teachers were provided carts of tablets to share between classrooms. As a teacher, I was thrilled to hear we were increasing our access to ICT. At the time, I could not foresee how much this program would also change the course of my career.

Planning for a new ICT program, the head of school determined that teachers and students would need access to technology support that was available throughout the day. Due to budget constraints, a new full-time staff member could not be hired. A member of the technology committee mentioned in passing that I often used technology in class and that my personal computer was a MacBook. I was asked to provide technical support for half of the school day while continuing to teach band during the afternoon hours.

Before the next school year began, I helped teachers learn to use their new computers while also helping set up the background systems to manage the new devices. I quickly discovered a passion for helping teachers learn to use ICT tools. I also enjoyed learning about device management and how our school's network supported the devices. Serving in the

technology program provided me with the opportunity to develop new skills and learn more about integrating technology into my instruction. I also became interested in the technical side of the program, including device repair, network management, and systems administration. In each of the following years, I assumed more responsibility within the technology program and instated new cloud-based programs to help manage our technology program.

Over the past nine years, I assumed management roles within our technology department, including overseeing our Google and Microsoft accounts. Three years ago, I moved into a network management role as the school upgraded its wireless network and infrastructure. I also continued developing skills as a trainer for our faculty on ICT use in their classrooms. As I continued to work with ICT in education, I decided I wanted to pursue leadership opportunities in the field, so in the fall of 2016, I enrolled in the EdD program at Abilene Christian University.

Throughout my doctoral studies, I continued to teach band and business classes; however, I often struggled to balance my roles as a teacher and technology specialist. Late in the 2018–2019 school year, the current head of school and I began planning a transition out of the classroom and into a new full-time technology position. After spending one final year as the band director and in a transitional technology leadership role, I became the director of technology and now manage all aspects of our ICT program. In my new position, I oversee network operations, device management, instructional software, and technology training.

As I worked through my first year in the position in 2019–2020, I was excited to assume new responsibilities and begin expanding our technology program. As the second semester started, school leaders and I began to think about the evolving pandemic and what could happen if it began to spread in our area. Throughout February, I worked with other administrators to develop a contingency plan for month-long school closure in late spring or even during the next

school year. As March began, we evaluated video-conferencing software and started developing training sessions to guide teachers through taking their classes online. By mid-March, our school closed for the remainder of the school year.

I began this research prior to the COVID-19 pandemic. As I began this study, my interest focused on better defining and understanding the role of the technology directors and their leadership in a school setting. As I talked with my peers at conferences and through emails, I found that often our jobs were vastly different, even though we shared a similar title in similar schools. As the COVID-19 pandemic expanded in March 2020, the context for this study drastically changed. As such, the pandemic significantly influenced the findings of this study. Every conversation with the participants ultimately led back to how the pandemic dramatically altered their roles within their schools and influenced their actions.

Definitions of Key Terms

First-order barriers. External obstacles that prevent teachers from adopting ICT, such as a lack of equipment, Internet access, or training (Ertmer, 1999).

Hybrid learning. A combination of face-to-face and remote learning. May be referred to as blended learning (Gaudet, 2020).

ICT integration. The purposeful use of computers that helps students learn how to use computers in a meaningful way. Also, incorporating computers within the curriculum in a way that enhances student learning (Dockstader, 1999).

Independent schools. Schools not governed or funded by a local school board. In Tennessee, independent schools are also referred to as nonpublic or private schools (Tennessee Department of Education, 2019).

Information and communication technologies (ICT). A set of technological tools, including computers and the Internet, used to access, store, or share information (United Nations Educational, Scientific and Cultural Organization, 2009).

Narrative research. A research tradition that begins with participant's experiences as expressed in stories and presenting those stories as research texts. There are a wide variety of procedures for data analysis and presentation in the narrative approach (Creswell & Poth, 2018).

Remote learning. Learning occurring over the Internet with no face-to-face, in-person interaction between the teacher and student. May be referred to as online learning or distance learning (Gaudet, 2020).

Second-order barriers. Personal barriers that prevent technology, including their beliefs about learning and teaching, as well as their technical knowledge and skills (Ertmer, 1999).

Student-centered learning. Pedagogical models where student learning is self-directed and students are actively involved in the learning process (Bechter et al., 2019).

Technology director. An individual employed by a school or district who oversees the implementation and integration of ICT. Also known as technology coordinators or technology facilitators, technology directors are involved in the planning, acquisition, monitoring, and use of technology within the school or district (Frazier & Hearrington, 2017).

Technology integration. The purposeful use of computers that helps students learn how to use computers in a meaningful way. Also, incorporating computers within the curriculum in a way that enhances student learning (Dockstader, 1999).

Visionary leadership. The ability to create and articulate clear visions providing meaning and purpose to the work of an organization (Kirkpatrick, 2004; Nanus, 1992; Sashkin, 1988a; Taylor et al., 2014).

Chapter Summary

As school administrators continue to invest in ICT with the goal of enhancing student learning, leadership is required to ensure teachers have the necessary resources to overcome barriers to successful ICT integration. As the COVID-19 pandemic forced teachers and students to adopt new forms of ICT quickly, leadership in ICT became more critical than ever (Gaudet, 2020). As some students and teachers returned to physical classrooms, technology directors' leadership aided in establishing hybrid learning environments and facilitating continued remote learning (Gaudet, 2020; Tamez-Robledo, 2020). Chapter 1 introduced the context of ICT in education and the technology director's position as a leader in schools. Chapter 1 also presented the purpose and research questions of this study. A statement of my positionality within the study and definition of key terms concluded the chapter. Chapter 2 further explores the background and context of ICT integration in schools and the literature concerning the leadership of school technology directors. Chapter 3 describes the narrative research methodology, while Chapter 4 presents the findings. The implications of the study complete Chapter 5.

Chapter 2: Literature Review

The integration of ICT in education is a complex process involving multiple stakeholders within a school community (Inan & Lowther, 2010). While many studies have examined the role of leadership in the integration of ICT in schools, the literature has largely focused on the principal's role (Chen, 2013; Gençer & Samur, 2016). Yet, Chen (2013) found that teachers identified the school technology director as an essential leader in the promotion of technology integration. This identified gap in the literature presents an opportunity to understand better the technology director's role. The purpose of this narrative study was to examine technology directors' leadership characteristics and their experiences leading ICT in K–12 independent schools in Tennessee during the COVID-19 pandemic. The research question at the heart of this investigation was: How do technology directors perceive their leadership characteristics and experiences with ICT integration in K–12 independent schools in Tennessee during the COVID-19 pandemic?

This chapter reviews the extant literature and serves as an introduction to ICT in the context of education and ICT leadership in education, specifically the leadership of school technology directors. According to Creswell (2012), the literature review's role is minor in narrative studies, and the researcher "seeks to minimize the literature and focus on the individual's story" (p. 506). Further, Clandinin and Connelly (2000) argued that rather than beginning with theory, narrative researchers should start with "experience as expressed in lived and told stories" (p. 40). In some studies, narrative researchers may even omit a specific literature review chapter, instead choosing to "weave the literature throughout the dissertation from beginning to end" (Clandinin & Connelly, 2000, p. 41). Finally, Creswell (2014) suggested that the literature in inductive qualitative studies may also be used as a basis for supporting,

comparing, and contrasting the findings. Yet, to maintain the convention of educational research, this chapter presents the literature to articulate a common context through which the narratives were interpreted.

The first section describes the landscape of education throughout the 20th and early 21st century that led to increased ICT investments by school leaders. A description of independent schools follows. In the second section of the chapter, the focus moves to barriers to ICT integration and school leaders' role in promoting and supporting ICT integration. The school technology director's position is then presented in detail, using Frazier and Hearrington's (2017) TCIM. Finally, the chapter concludes with a discussion of visionary leadership theory and visionary leadership among school technology directors.

The literature search strategy primarily used EBSCO at the Margarett and Herman Brown Library at Abilene Christian University, with Google Scholar serving as another resource for gathering sources. Initially, search terms focused on technology directors, including *technology director(s)*, *technology facilitator(s)*, and *technology coordinator(s)*. The search expanded to include *educational technology*, *technology (ICT) in education*, and *technology (ICT) integration* to provide context for the current state of ICT use in education. Finally, based on the emergence of vision development and shared vision in the literature, additional search terms included *visionary leadership* and *visionary leadership theory*. Throughout the search, each article's references section was reviewed to identify additional sources. Initially, results focused on the years 2010–2016, which expanded to 2021 as the dissertation developed.

Background and Context

Although work changed dramatically over the past 50 years, many educational institutions still utilize learning models based on 20th-century industry needs (World Economic

Forum, 2020). Globalization and technology advancements change the economic landscape, and schools serve an essential role to provide students with the skills necessary to succeed in the rapidly evolving workforce (World Economic Forum, 2020). As traditional labor-oriented jobs disappear due to artificial intelligence and automation, advocates for education reform argue that schools must adapt in providing students the skills needed to thrive in modern economic conditions (Cevik & Senturk, 2019; Cobo, 2013; Stoller, 2015; World Economic Forum, 2020).

Throughout the 20th century, educational reforms focused on meeting industry needs while also maintaining the United States' competitive standing in the world (Cevik & Senturk, 2019; Cobo, 2013). Weyand (1925) stated that "industry and education are correlated. They are both variables. A change in one makes necessary a change in the other. Popular education is a variable apparently dependent upon industry" (p. 653). Throughout the 20th and early 21st centuries, classrooms adapted to the industrial concepts developed by Frederick W. Taylor (Cobo, 2013; Stoller, 2015; Young, 2018). Educational practices such as standardized assessment, row seating in classrooms, and incentive systems are a modern connection to the ideas Taylor developed in the early 1900s. Despite the continued presence of industrial principles, education in the United States has undergone numerous changes over the past century.

In 1957, the launch of a Soviet satellite, Sputnik I, sent shockwaves through American society. The launch of Sputnik created the perception that education in the United States had fallen behind. As American politicians grappled with this new reality, the blame fell at the education system's feet, which prompted a series of federal education interventions, beginning with the National Defense Education Act (Wissehr et al., 2011).

Another significant federal intervention in education occurred after a Reagan administration commission published the report A Nation at Risk in 1983. This report emphasized substantial declines in student outcomes across the country and outlined deficiencies between United States students and those in other industrialized nations worldwide (United States National Commission on Excellence in Education, 1983). Based on A Nation at Risk, President Reagan prioritized education reform as a central policy issue (Maranto, 2015). Data collection through standardized tests quickly became the conventional measure of student success (Maranto, 2015).

The Elementary and Secondary Education Act of 2001, also called No Child Left Behind (NCLB), further emphasized standardized testing and data collection. No Child Left Behind legislation increased the importance of standardized test scores as federal funding became tethered to measuring adequate yearly progress based on student's scores (Maranto, 2015). Building on the reliance on standardized testing and the teacher and student accountability features of NCLB, Race to the Top (RTTT) began in 2009 under the Obama administration's guidance (Finch, 2017). The RTTT program utilized a competition-based environment for states to receive federal grants based upon meeting the Obama administration's educational priorities (Finch, 2017).

Throughout the changes brought about by each presidential administration's educational reform programs, corporations and special interest groups advocated for their schools' priorities (Stoller, 2015; Young, 2018). As education evolves in the 21st century, some organizations assert a need for schools to train students for a global and technologically advanced society (Cevik & Senturk, 2019). These organizations are advocates for educational preparation for timely skills, including critical thinking, problem-solving, collaboration, communication, and

digital literacy (Cevik & Senturk, 2019; Cobo, 2013). As presidential administrations continued broad sweeping initiatives, the independent school movement provided parents alternatives to government regulation and testing requirements (Carper, 2001).

Independent Schools

Independent schools serve a significant portion of the student population, with 10.2% of students in the United States and 9.2% of students in Tennessee (National Center for Education Statistics, 2019). There are 128 independent schools in Tennessee approved by the state board of education or accredited by state-recognized accrediting associations (Tennessee Department of Education, 2019). Catholic schools comprised most of the independent school sector in the mid-20th century, but the latter half of the century saw significant declines in this category (Carper, 2001). During this decline for Catholic schools, other Christian and nonreligious private schools opened at a prolific rate, with enrollments increasing throughout the end of the century (Carper, 2001).

The reforms implemented at the federal level primarily impacted public schools; however, independent schools faced indirect governmental policy changes (Carper, 2001). Legal challenges mounted questioning whether independent schools should meet the same government regulation levels, despite their independence from government funding (Carper, 2001). The policy requirements and testing mandates placed public schools presented independent schools as an alternative for parents (Carper, 2001). School vouchers, where the government offsets the cost of independent school education for parents, have increased in many states. This so-called ‘school choice’ movement created by voucher program proliferation created the possibility of increased regulation and mandates for independent schools that accepted taxpayer funding (Carper, 2001).

Independent schools are as varied as the communities they serve, but there are general stereotypes and commonalities ascribed to the sector. This context is critical to the narratives shared in this work. Often independent schools serve all students on one campus, and in some cases, one building. Independent schools commonly have students in PreK through 12th grade, supervised by a single group of administrators. Technology directors in these settings must serve teachers across all grade settings, which requires knowledge of a wide range of ICT devices and programs appropriate to this range of learners' needs. Technology directors in independent schools often perform tasks that would be spread out among several specialists in public school systems. Roles include network specialists, computer technicians, and classroom technology specialists.

ICT in Schools

Classroom use of ICT expands each year. In 1984, schools used one ICT device for every 125 students (Bulman & Fairlie, 2016), but increased financial investments and technology advancements fostered exponential growth of ICT devices in classrooms. The most recent statistics from the National Center for Education Statistics indicated a ratio of one device for every three students (Snyder et al., 2009), yet this is dated and probably not reflective of current use. A 2016 study from the Organisation for Economic Cooperation and Development showed the ratio moving toward one device for each student (Bulman & Fairlie, 2016). E-Rate, a United States government program that provides funding for telecommunications upgrades and services, recently increased funding from $3.9 billion to $4.15 billion, demonstrating an increased governmental focus on ICT in schools (Federal Communications Commission, 2019).

One recurring theme was how teachers' integration of devices within instruction impacted the effectiveness of ICT use (Comi et al., 2017). Using technology in a lesson is not

enough; rather, technology must enhance learning (Carver & Todd, 2016). Teachers do not use ICT to contribute to higher student achievement (Carver & Todd, 2016; Lei & Zhao, 2007); instead, it was used to replicate tasks previously achieved without technology (Hayes, 2007). The literature also suggested that once the initial enthusiasm over an ICT program waned, teachers' use became inconsistent and sporadic (Liu et al., 2017; Mama & Hennessy, 2013). Munro (2010) summarized many critics' arguments stating, "ICT has supported and enhanced practice but has failed to transform education" (p. 46). This thread of the literature allowed proponents and critics to continue to debate the positive and negative effects of ICT while other researchers turned their attention to barriers that hinder teacher adoption and methods to overcome those barriers, such as effective ICT leadership.

Barriers to Integration

As ICT became more prevalent in schools, researchers began to explore what factors inhibited technology use among teachers (Ertmer, 1999; Ertmer et al., 1999; Hew & Brush, 2007; Hsu, 2016; Inan & Lowther, 2010; Kopcha, 2012). Ertmer (1999) categorized the factors as either first-order or second-order barriers, while others refer to them as school-level factors and individual-level factors (Inan & Lowther, 2010) or extrinsic and intrinsic barriers (Makki et al., 2018). Throughout the research, barriers are divided based upon a teacher's external environment and the intrinsic characteristics of teachers that prevent ICT integration.

First-Order Barriers

First-order barriers include environmental or external influences that prevent teachers from using ICT (Ertmer, 1999; Hew & Brush, 2007). First-order barriers fall out of the realm of teachers' control; therefore, school leaders must take action to mediate these obstacles. The

obstacles include a lack of adequate technology, technical support, administrative support, and insufficient training.

Adequate Technology. Teachers often cited a lack of devices and poor technology infrastructure as primary concerns (Ertmer, 1999). However, increased investments in ICT substantially reduced this barrier in many classrooms (Ertmer & Ottenbreit-Leftwich, 2013). Although schools continue to provide more access to technology, teachers continued reporting frustration with lost instructional time due to the need for repairs and poor network connectivity (Lindqvist, 2015).

Technical Support. Throughout early studies on barriers to ICT integration, teachers identified a lack of technical support personnel to maintain and troubleshoot equipment as a significant barrier (Hew & Brush, 2007; Inan & Lowther, 2010; Makki et al., 2018). When a device fails mid-lesson, it becomes difficult for teachers to recover and continue learning seamlessly. Whether providing immediate technical support when a device fails or providing ongoing maintenance of computers, technical support personnel serve a vital role in a technology program (Inan & Lowther, 2010; Sugar & Holloman, 2009).

Administrative Support. Teachers often identified a lack of administrative support as a significant barrier to ICT integration (Inan & Lowther, 2010; Kopcha, 2012; Park & Ertmer, 2008; Peled et al., 2011). Teachers report a need for clear guidance, feedback, and expectations throughout the implementation (Park & Ertmer, 2008). In some cases, administrators' resistance to ICT programs disheartened even the most technology-adept teachers (Peled et al., 2011).

According to Park and Ertmer (2008), teachers sometimes face conflicting visions about how ICT should be used in the classroom. Further, the administrative vision must be shared throughout the school to avoid confusion and frustration (Park & Ertmer, 2008). Once a program

is started, teachers desire clear expectations for the use of ICT in their classrooms. Also, researchers found supportive feedback aids in teachers' ability to learn how to implement new ICT (Park & Ertmer, 2008).

Insufficient Training. Another common first-order barrier is a lack of training opportunities for teachers on how to use ICT, as well as how ICT can enhance student learning (Carver & Todd, 2016; Ertmer & Ottenbreit-Leftwich, 2013; Hsu, 2016; Kopcha, 2012; Semerci & Aydin, 2018). Many teachers mentioned that technology anxiety is a significant concern throughout the implementation of new technology (Semerci & Aydin, 2018). Kopcha (2012) found that long-term professional development opportunities promoted positive teacher beliefs about ICT use in their classrooms. Recent research indicated that first-order barriers decreased in the past two decades (Ertmer, 2016; Ertmer et al., 2012), which increases the need to address second-order barriers.

Second-Order Barriers

Second-order barriers include teachers' internal or intrinsic issues with ICT in their classrooms (Ertmer, 1999; Hew & Brush, 2007; Inan & Lowther, 2010). Researchers identify individual teachers' beliefs about learning and technology as one of the most significant barriers to technology integration (Ertmer, 1999, 2016; Ertmer et al., 2012; Kopcha, 2012). Even as teachers' beliefs change, their ICT self-efficacy can still hinder integration (Hsu, 2016; Kopcha, 2012; Park & Ertmer, 2008).

Teacher Beliefs. Although many schools and districts eliminated most first-order barriers, many teachers still resist ICT adoption. Teacher's individual beliefs about ICT and learning significantly impact their decision to adopt new technology in their classrooms (Ertmer, 1999; Ertmer et al., 2012; Hew & Brush, 2007; Park & Ertmer, 2007). Hew and Brush (2007)

found that when teachers do not see added value from the use of technology, they will only use it for limited purposes. Several past researchers developed models to aid in measuring individuals' beliefs and acceptance of technology (Davis, 1989; Davis et al., 1989; Lee et al., 2003; Venkatesh et al., 2003).

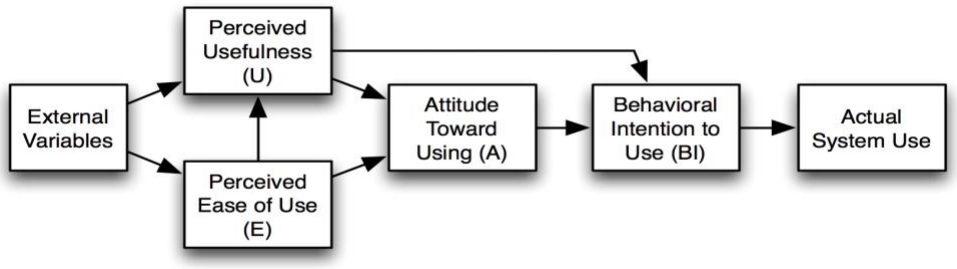
Technology Acceptance. As researchers tried to explain an individual's adoption of technology in the workplace, the technology acceptance model (TAM) emerged as a strong framework (Davis, 1989). The technology acceptance model serves as an information systems evaluation model adapted from a general psychological model called the theory of reasoned action (TRA; Ajzen & Fishbein, 1980). According to TRA, behavioral intentions are antecedents to behavior, which are formed through beliefs about how performing behaviors will lead to a specific outcome (Madden et al., 1992). Beliefs are influenced by an individual's positive or negative attitudes toward a behavior (Davis et al., 1989). Subjective norm involves an individual's perception that those important to them believe they should engage in a specific behavior (Cheng, 2019; Davis et al., 1989; Madden et al., 1992). Since its development, researchers from many subject areas have applied TRA to study predicted behavioral intentions and help form strategies for changing behavior (Davis et al., 1989; Madden et al., 1992).

Davis (1989) adapted TRA to evaluate an individual's acceptance and adoption of technology and information systems. According to TAM, individuals base their acceptance of technology on the perceived usefulness (PU) and the perceived ease of use (PEOU) of the technology (Davis, 1989). Perceived usefulness refers to the "degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320). An individual's acceptance of any technology partially relies on their belief that using the technology will eventually benefit them. Perceived ease of use refers to "the degree to which a

person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). A technology user's adoption can rely on their perception that they can easily learn to use and integrate the technology into their daily routine. Since its development, TAM became a widely used model to explain an individual's intention to use and their actual use of information technology (Lee et al., 2003). Figure 1 outlines the components of TAM.

Figure 1

Technology Acceptance Model (TAM)



Note. Reprinted with permission from "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models," by F. D. Davis, R. P. Bagozzi, & P. R. Warshaw, 1989, *Management Science*, *35*(8), p. 985 (https://doi.org/10.1287/mnsc.35.8.982). Copyright 1989 by the Institute for Operations Research and the Management Sciences, 5521 Research Park Drive, Suite 200, Catonsville, Maryland 21228 USA.

Clear communication of a shared vision is one method to promote positive beliefs and promote acceptance of ICT in the classroom (Kopcha, 2010). School leaders must communicate a shared vision for ICT use if they expect teachers to value and embrace it. Cho and Littenberg-Tobias (2016) stated, "it is how people make sense of technologies that determines how they will be used in practice" (p. 655). In other words, if teachers find value in ICT use, they will integrate

it into their classroom practices. Education leaders play a vital role in promoting a vision for ICT use that leads teachers to adopt it.

Technology Leadership

School leaders serve a significant role in overcoming the obstacles most often cited and identified by teachers. First, clear communication of a shared vision is one method to promote positive beliefs toward ICT in the classroom (Kopcha, 2010). School leaders should communicate a shared vision for ICT use if they expect teachers to value and embrace it. Cho and Littenberg-Tobias (2016) stated, "it is how people make sense of technologies that determines how they will be used in practice" (p. 655). In other words, if teachers find value in ICT use, they will integrate it into their classroom practices. Therefore, a clear vision's development and communication serve a critical role in promoting ICT integration in schools.

School Administrators

School leaders establish the culture and climate around ICT programs through their support, planning, and vision (Burns, 2013; Hew & Brush, 2007; Liu et al., 2017; Park & Ertmer, 2008; Vermeulen et al., 2015). Teachers in the extant literature often cited the need for supportive leadership as a factor in their use of ICT in the classroom (Hew & Brush, 2007; Peled et al., 2011). Teachers who strongly believed in using ICT in their classrooms eventually abandoned it in the presence of a resistant and unsupportive administration (Peled et al., 2011). However, Anderson and Dexter (2005) found that strong technology leadership significantly impacted ICT use and integration. Chen (2013) described how multiple school personnel could create supportive leadership in ICT programs. Multiple researchers have explored the principal's role in school ICT programs (Anthony & Patravanich, 2014; Brown & Jacobsen, 2016; Chen, 2013; Petersen, 2014). However, technology directors also serve a vital role in promoting ICT

use (Chen, 2013; Rodríguez-Miranda et al., 2014; Skues & Cunningham, 2013; Sugar & Holloman, 2009). While principals influence school culture and assist in establishing the vision for ICT programs, technology directors also significantly influence ICT programs.

Technology Directors

Technology directors (also called technology coordinators or technology facilitators) provide leadership of all aspects of a technology program within a school (Frazier & Hearrington, 2017). The International Society for Technology in Education (ISTE, 2018) and the Consortium for School Networking (Consortium for School Networking [CoSN], 2018) are professional organizations that promote ICT in education. Each organization established standards to guide school technology directors in encouraging ICT use in their schools.

In an ISTE publication, Frazier and Hearrington (2017) provided the Technology Coordinators Issues Model to guide the work of school technology directors. In it, they outlined the essential functions of a school technology director. The model divides the responsibilities of school technology directors into (a) teaching and learning, (b) supporting teaching, learning, and computing, (c) network operations, (d) administrative computer, and (e) planning and budgeting. Each of these areas also corresponds to the ISTE Standards for Educational Leaders and the CoSN Framework of Essential Skills of the K–12 chief technology officer.

Teaching and Learning

Although technology directors provide technical support and management of technology hardware (Chen, 2013), they also often oversee professional development programs designed to foster higher ICT integration levels (Frazier & Hearrington, 2017; Sugar & Holloman, 2009; Sugar & Kester, 2007). Technology directors play a vital role in teachers' ICT skills

development through technical training, modeling best practices, or mentoring (Frazier & Hearrington, 2017; Sugar & Kester, 2007).

Computer Support

Technology directors primarily focus on providing technical expertise and device support for an ICT program (Sugar & Holloman, 2009; Sugar & Kester, 2007). A lack of technical support often prevents teachers from fully embracing ICT (Hew & Brush, 2007); however, the presence of technology staff who respond swiftly to technical requests and provide ongoing technical support foster higher levels of teacher ICT use (Frazier & Hearrington, 2017; Hew & Brush, 2007; Sugar & Kester, 2007). Past research indicates that teachers, administrators, and technology directors view technical support as one of the top priorities for successful implementation (Rodríguez-Miranda et al., 2014; Sugar & Holloman, 2009).

Network Operations

As the ratio of ICT devices to students increases, schools must maintain a more robust network infrastructure to support increased Internet traffic (CoSN, 2018; Frazier & Hearrington, 2017; ISTE, 2018; Sugar & Holloman, 2009). Modern networks include school-based equipment, such as routers, switches, servers, and access points, as well as cloud-based services. In addition to infrastructure management, technology directors administer email accounts, ensure proper data archiving practices, and maintain a secure and safe computing environment (Frazier & Hearrington, 2017).

Students' online safety and privacy continue to concern legislators, parents, and school leaders (Peterson, 2016). Therefore, technology directors must ensure compliance with federal and state laws, including the Family Educational Rights and Privacy Act of 1974 (FERPA), the Children's Online Privacy Protection Act of 1998 (COPPA), and the Protection of Pupil Rights

Amendment (PPRA; United States Department of Education, 2014). As phishing attacks, ransomware, and viruses continue to evolve, network and computing security become a more substantial part of ICT administration.

Administrative Computing

In addition to student- or teacher-centered technologies, technology directors often manage other complex systems within a school environment. Many schools task technology directors with the administration of student information systems (SIS) and human resources software (Frazier & Hearrington, 2017). Often, technology directors also assist in the development and management of school websites. Whether locally hosted or cloud-based, technology directors often serve as site managers for many school critical software programs.

Planning

Planning and preparing for new ICT programs requires the technology directors to evaluate network infrastructure, school policies, and teachers' technical skills and create plans to address any deficiencies (Rodríguez-Miranda et al., 2014; Sugar & Holloman, 2009). A vital part of the planning and implementation process is securing and managing the funds for devices, network operations, and technical support. Additionally, technology directors often serve as program evaluators of any new ICT implementation, aiding in assessing the success of devices and programs (Frazier & Hearrington, 2017). Technology directors serve as a vital member of an administrative team throughout the design, implementation, and evaluation of a school ICT program.

Technology Director as a School Leader

As a school leader, the technology director partners with other school administrators in a collaborative effort to establish a clear vision for ICT use within their schools (Frazier &

Hearrington, 2017; Hew & Brush, 2007; Rodríguez-Miranda et al., 2014; Sugar & Holloman, 2009). Park and Ertmer (2008) found that a lack of a clear vision or conflicting visions were a significant barrier to ICT integration; therefore, all school leaders must share a common vision for technology use. However, Hew and Brush (2007) suggested that developing a shared vision provided "a place to begin, a goal to achieve, and a guide along the way" (p. 234). The technology director is a critical member of this vision-setting team.

Visionary Leadership Theory

Visionary leadership theory developed from transformational and charismatic leadership (Kirkpatrick, 2004) and is defined as "the ability to create and articulate clear visions providing meaning and purpose to the work of an organization" (Nanus, 1992; Sashkin, 1988a; Taylor et al., 2014, p. 567). In addition to creating and communicating the vision, visionary leaders also implement the vision throughout their organization.

Although often included as a component of transformational or charismatic leadership, Khatri et al. (2001) found visionary leadership exists as its construct in and of itself, with distinct characteristics and dimensions. While primarily thought of as gifted communicators, visionary leaders demonstrate other leadership characteristics, including serving as role models who coach, support, and empower their followers to work toward the vision they communicate (Kirkpatrick, 2004; Nanus, 1992). According to Khatri et al. (2001), visionary leaders foster higher motivation, commitment, and job performance. Visionary leadership occurs through two main processes: (a) vision development and (b) vision implementation (Kirkpatrick & Locke, 1996). Within those processes, visionary leaders serve in four roles: (a) direction setter, (b) change agent, (c) spokesperson, and (d) coach (Nanus, 1992).

Vision Development

Visionary leaders establish the vision that serves as an inspirational and achievable beacon for all organization members (Kirkpatrick & Locke, 1996; Nanus, 1992). The right vision (a) attracts commitment and energizes people, (b) creates meaning in workers' lives, (c) establishes a standard of excellence, and (d) bridges the present and the future (Nanus, 1992; Sashkin, 1988a). During vision development, visionary leaders act as direction setters for their organization while also serving as a spokesperson who clearly communicates the organization's shared vision.

Direction Setter. As direction setters, visionary leaders select and communicate future target goals. Westley and Mintzberg (1989) stated, "strategic visionaries are leaders who use their familiarity with the issues as a springboard to innovation, who can add value by building new perceptions on old practices" (p. 19). Using a futuristic orientation and their knowledge of their field, they examine their industry for future trends and environmental opportunities (Khatri et al., 2001). Based on those opportunities, they take carefully calculated risks to foster change and innovation (Kirkpatrick, 2004; Nanus, 1992). Visionary leaders consider followers' needs and values when developing a vision for their organization (Kirkpatrick & Locke, 1996). A shared vision must be appealing and ambitious, yet also achievable (Sun & Leithwood, 2015). Once developed, visionary leaders communicate the shared vision across the organization.

Spokesperson. Visionary leaders become the spokesperson for organizational change. They are skilled speakers and embody the change they seek (Nanus, 1992). As gifted speakers, they stimulate followers and external stakeholders to challenge their preexisting beliefs (Kirkpatrick, 2004; Nanus, 1992). Describing the importance of vision communication, Westley and Mintzberg (1989) asserted, "what distinguishes visionary leadership is that through words

and actions, the leader gets the followers to 'see' his or her vision—to see a new way to think and act—and so to join their leader in realizing it" (Westley & Mintzberg, 1989, p. 19). To successfully inspire change among their followers, visionary leaders foster consensus and provide meaning through the shared vision (Kirkpatrick, 2004). Once they develop and communicate their shared vision, visionary leaders must also facilitate the implementation of their vision.

Vision Implementation

Beyond establishing and communicating a vision, visionary leaders work alongside followers to implement the vision successfully. Westley and Mintzberg (1989) stated, "like a performance, a strategy is made into a vision by a two-way current. It cannot happen alone, it needs assistance" (p. 21). Visionary leaders provide their followers with the environment necessary to enact change. They establish the need for change and help followers develop the skills and beliefs needed to enact change.

Change Agent. Visionary leaders act as change agents to create a sense of urgency toward change within their organization. According to Rogers (2003), change agents "facilitate the flow of innovations" while also stabilizing adoption and preventing discontinuance among followers (p. 368). Further, they enact tactical policies and programs, including allocating personnel, resources, and facilities that facilitate followers' ability to carry out the vision (Nanus, 1992; Sashkin, 1988a). As they enact change, they diagnose problems and appropriately adjust innovation to meet their followers' needs (Rogers, 2003). Through flexibility as problem-solvers, visionary leaders adapt to ever-changing landscapes within their field and organization (Kirkpatrick, 2004; Nanus, 1992).

Coach. Visionary leaders coach and empower individuals by serving as role models and mentors for followers who make the vision a reality. According to Kirkpatrick (2004), visionary leaders become visible symbols of what they want their followers to be. They work on a personal level with followers to coach and support the followers' roles in achieving the vision. Kirkpatrick and Locke (1996) found that individualized support, including providing specific instructions as to how to accomplish the vision, increased followers' performance. Taylor et al. (2014) found that effective visionary leaders provide guidance, encouragement, and motivation to their followers.

Followers

Visionary leadership refers to providing an image for followers' collective future (Kearney et al., 2019). Stam et al. (2010) found that visionary leaders also provide visions that focus on their followers. While organizational visions persuade followers, followers are motivated by leaders who communicate a vision for the "future possible selves" of each member of an organization (Stam et al., 2010, p. 461). Further, visionary leaders can adopt principles of empowerment leadership to encourage followers to achieve their individual goals and the group's collective goals (Kearney et al., 2019). Followers often find meaning in a vision they believe in, especially when they believe the vision is achievable (Kirkpatrick, 2004).

Criticisms

Although several studies (Kearney et al., 2019; Stam et al., 2010; Taylor et al., 2014) found positive benefits regarding organizational effectiveness, some find visionary leadership less effective than other leadership styles. Kirkpatrick and Locke (1996) found that merely communicating a vision alone does not produce increased follower results; instead, other leadership actions must also accompany the vision. Further, Stam et al. (2010) found that the

effectiveness of visionary leadership may depend on the follower's personality, while Ateş et al. (2018) highlighted the importance of alignment between various management levels in an organization. A lack of strategic alignment between visionary leaders and middle managers can derail strategy implementation (Ateş et al., 2018).

Visionary Leadership Among Technology Directors

Visionary leaders can inspire followers and promote higher organizational effectiveness levels (Stam et al., 2010; Taylor et al., 2014), provide followers with a clear direction for the future (Kearney et al., 2019), and serve as role models as they embrace change (Nanus, 1992). However, visionary leaders must ensure that their entire organization aligns with the strategic vision they communicate (Ateş et al., 2018).

Throughout all professional frameworks and standards for technology directors, visionary leadership is a recurring theme. The ISTE Standards for Educational Leaders (ISTE, 2018) stated that visionary planning and empowering leaders are critical elements for successful ICT integration. Leaders should "create a culture where teachers and learners are empowered to use technology in innovative ways to enrich teaching and learning" (ISTE, 2018, para. 4). Further, leaders communicate a shared vision while fostering an environment that encourages innovation (ISTE, 2018).

In the Framework of the Essential Skills of the K–12 chief technology officer (CTO), CoSN (2018) outlined 10 essential skill areas for technology leadership in schools. According to the framework, technology directors should work across the organization and establish a vision for successful technology integration. Finally, in the TCIM, Frazier and Hearrington (2017) asserted that developing a vision for using technology within a school is a primary responsibility of school technology directors. Due to its inclusion in the TCIM, ISTE Standards for Educational

Leaders, and the CoSN Framework of the Essential Skills of the K–12 CTO, visionary leadership served as the theoretical framework for this study.

Chapter Summary

Corporations, governments, and special interest groups demand that educators develop a future workforce capable of using 21st-century skills, such as critical thinking, collaboration, and problem-solving (Cevik & Senturk, 2019; Cobo, 2013). The integration of ICT in classrooms emerged as one way to develop students' skills and enhance students' learning outcomes (Davis & Fullerton, 2016; Neutzling et al., 2019; Soparat et al., 2015). Although teachers identify several barriers to ICT integration (Ertmer, 1999), effective ICT leadership can help overcome those barriers and encourage higher levels of integration (Chen, 2013; Inan & Lowther, 2010; Lowther et al., 2008). Although still a relatively new position in schools (Frazier & Hearrington, 2017), technology directors support ICT integration while also aiding in the shared vision for ICT use in their schools (Davies, 2010; Sugar & Holloman, 2009). Knowledge of technology directors' experiences as leaders in K–12 education is lacking, especially in the independent school context. The purpose of this narrative study was to examine technology directors' leadership characteristics and their experiences leading ICT in K–12 independent schools in Tennessee during the COVID-19 pandemic. In the next chapter, I describe the methodology for this study and a detailed description of the research and analysis processes.

Chapter 3: Research Method

The purpose of this narrative study was to examine technology directors' leadership characteristics and their experiences leading ICT in K–12 independent schools in Tennessee during the COVID-19 pandemic. One broad question guided this study: How do technology directors perceive their leadership characteristics and experiences with ICT integration in K–12 independent schools in Tennessee during the COVID-19 pandemic?

Using narrative inquiry, a form of qualitative research (Creswell & Poth, 2018), the experiences of four K–12 independent school technology directors as they led ICT integration efforts during the COVID-19 pandemic were collected. An inductive approach allowed participants to tell stories they felt highlighted their experiences. This chapter begins with an overview of the narrative research tradition and the procedures used to collect and analyze the participants' stories. The chapter concludes with a discussion of ethical considerations, trustworthiness, and limitations of the study.

Research Design and Methodology

Qualitative research allows the researcher to develop a "complex, detailed understanding of an issue" (Creswell & Poth, 2018). It involves talking directly with the participants and "allowing them to tell the stories unencumbered by what we expect to find or what we have read in the literature" (Creswell & Poth, 2018, p. 104). As the literature review noted, the influence of principals' leadership has been studied extensively, but little is known about the role of school technology directors' leadership (Chen, 2013; Gençer & Samur, 2016). A qualitative approach was appropriate for this study to explore and expand the understanding of technology directors' leadership in independent schools. Specifically, narrative inquiry was selected to gain a rich and

personal understanding of the leadership experiences and characteristics of technology directors in ICT integration.

Paradigm

An interpretive paradigm served as the interpretive lens for the stories contained in this study. A paradigm is a worldview or framework that a researcher brings to a study (Creswell, 2014). According to Burrell and Morgan (1979), the interpretive paradigm aims to understand the world as it is from the participants' view rather than that of the observer (Burrell & Morgan, 1979). Researchers using the interpretive paradigm seek an "understanding the essence of the everyday world" (Burrell & Morgan, 1979, p. 31). The interpretive paradigm aligns with the narrative approach to this study, seeking to understand the participants' leadership from their perspective through stories of their everyday worlds.

Research Tradition: Narrative Inquiry

Narrative researchers begin with an interest in individuals' experiences and see experience as knowledge for living (Clandinin & Connelly, 2000). They view experience "as a phenomena under study" (Clandinin & Connelly, 2006, p. 477). Narrative research focuses on the stories of participants and each individual's unique experiences (Atkinson, 1998). Atkinson (1998) further explained, "stories help us to understand the universe of which we are a part and how we fit into it" (p. 122). Further, Josselson and Lieblich (2015) stated how "human experience can be understood only in language and that experience itself is shaped in story form. Events of significance to a person are textualized in a way that employs temporality and causation as well as meaning" (p. 324). Stories are a powerful tool for gathering understanding of individuals and their roles within society. A participant's story can convey themes that occur throughout society.

Commonplaces. Narrative studies occur in three commonplaces that define the space for the inquiry: temporality, sociality, and place (Clandinin, 2013; Clandinin & Huber, 2010; Clandinin et al., 2007). The examination of a participant's story in all three commonplaces distinguishes narrative inquiry from other forms of qualitative research. A participant's story reflects the influence of all three commonplaces.

Temporality. According to Clandinin et al. (2007), "In narrative inquiry, it is important to always try to understand people, places, and events as in process, as always in transition" (p. 23). Researchers must study participants' experiences as part of a larger timeline, which in this context is referred to as temporality. Josselson and Lieblich (2015) described how a person "is assumed to be speaking from a specific position in culture and in historical time" (p. 329). All events have a past, present, and future; therefore, researchers must examine their brief interaction with the participant as only part of the entire story (Clandinin & Connelly, 2006; Clandinin & Huber, 2010; Clandinin et al., 2007).

Sociality. Sociality refers to cultural and personal influences that affect a participant's story. Sociality also includes milieu, including cultural, social, and institutional factors (Clandinin, 2013). Technology directors interact with numerous members of the school community. Daily interactions with students, teachers, administrators, and other community members could influence their experiences as a technology director. Further, technology directors work within school and community cultures, affecting their ability to promote ICT use among faculty and students.

Place. The third commonplace, place, "attends to the specific concrete physical and topological boundaries of inquiry landscapes" (Clandinin & Connelly, 2000, p. 51). The location of the participants can shape who they are (Clandinin, 2013). Therefore, narrative inquirers must

examine the influence of place on a participant's experience (Clandinin et al., 2007). External factors tied to a technology director's location exist that may enhance or limit their influence on integration. For example, in rural areas, limited access to high-speed Internet could inhibit the use of ICT.

Rapport. Building rapport between the researcher and participants is of primary importance throughout the process of a narrative inquiry (Caine et al., 2013; Clandinin, 2006; Conway, 2003). Caine et al. (2013) stated that "each story told and lived is situated and understood within larger cultural, social, familial, and institutional narratives" (p. 576). Therefore, relationships created with the participants influence the meaning they make of their experiences. Further, the rapport between the researcher and participant serves as a vital part of any narrative inquiry. Narrative researchers are not just casual observers; instead, they "live in the landscape and are engaging with participants through story or coming alongside participants in the living out of stories" (Clandinin, 2006, p. 47). Further, Riessman (2008) asserted that researchers must be participants in the creation of narratives. The researcher's presence and investment are an essential part of any narrative inquiry (Caine et al., 2013).

Narrative Interviews. One distinction between a narrative study and other qualitative methods is the format of the narrative interviews. Narrative interviews differ as the researcher seeks to "generate detailed accounts rather than brief answers or general statements" (Riessman, 2008, p. 23). Riessman (2008) explained further that "narratives come in many forms and sizes, ranging from brief, tightly bound stories told in answer to a single question, to long narratives that build over the course of several interviews" (p. 23). Researchers in a narrative interview listen attentively and allow participants to take the path that best conveys their story (Riessman, 2008). According to Josselson and Lieblich (2015), "Ideally, a narrative research interview is an

'encounter' in which the listener accepts the story with complete respect and refrains from judging or evaluating it" (p. 327). They welcome extended accounts and digressions through open-ended follow-up questions (Riessman, 2008).

This flexible mindset allows researchers to enter the interview with goals and adjust according to the direction participants' memories take. Clandinin and Connelly (2000) contrast standard qualitative interviews and narrative studies: "The direction of the interview, along with its specific questions, are governed by the interviewer … Even when they begin with the intention of conducting an interview, the interview often turns into a form of conversation" (p. 110). Throughout the open-ended interview process, the researcher relinquishes control of the interview to allow the participant's unique perspective to emerge through their stories (Atkinson, 1998). Throughout the interview, researchers should embrace a conversational approach, relying on the participant to guide the discussion and provide a detailed account of their story (Clandinin & Connelly, 2000; Riessman, 2008), interjecting only when a thought is complete.

Participant's Voice. The interactive nature of narrative inquiries poses a challenge for the researcher as they prepare their findings. Researchers must take care to reflect the participant's voice and experiences accurately (Caine et al., 2013; Clandinin & Huber, 2010; Clandinin et al., 2007; Conway, 2003). They can expand the understanding of participants' experiences; however, the story must accurately reflect the participant's story. Researchers interpret the meanings of participant's experiences through the filter of their own experiences, taking care to present the participant's story as a collaborative reflection of the data (Conway, 2003).

Participants

Although narrative researchers often focus their research on one individual, they may expand a study to explore the experiences of more than one person (Creswell, 2012). In this

study, I purposely selected four independent school technology directors from Tennessee. The sample size allowed for the examination of shared and divergent experiences among participants within a similar context. Creswell and Poth (2018) stated that "in a narrative study, the researcher reflects more on who to sample" and noted that "the individuals need to have stories to tell about lived experiences" (p. 295). Purposeful sampling allows the researcher to "intentionally select individuals and sites to learn or understand the central phenomenon" (Creswell, 2012, p. 206). Homogeneous sampling, selecting individuals based upon belonging to a group with defining characteristics (Creswell, 2012), allowed for the inclusion of participants who met the following criteria: (a) the participant worked at a K–12 independent school, (b) the participant was employed full-time as the technology director (director of technology), and (c) the school was in Tennessee. During the recruitment period, four technology directors volunteered and met the requirements for the study. Therefore, four participants were interviewed.

Recruitment and Selection

Upon receiving approval from Abilene Christian University's Internal Review Board (see Appendix A), potential participants were identified using a list of member schools on the Tennessee Association of Independent Schools' website. I visited the website for each school to identify the technology director and find their contact information. Using this process, I created a list of 27 possible participants to which I sent an initial email requesting participation in the study (see Appendix B). Six participants responded to the initial request, with four meeting the criteria for inclusion in the study.

Once selected, each participant was provided an opportunity to ask questions about participating in the study via email or phone call. Each participant reviewed and signed the

informed consent form using HelloSign, a cloud-based signature service. Once participants affirmed their informed consent, I set appointments for the first study interviews within the protocols described in this chapter.

Data Collection and Analysis

Interviews

Although some narratives include full life histories, narratives in the field of education typically focus on episodes or even single events in a participant's life (Creswell, 2012). For this study, I gathered personal experience stories, which focused on episodes or situations (Creswell, 2012). Due to COVID-19, social distancing guidelines were implemented in March 2020, and accordingly, Zoom, a video conferencing tool, was used for all interviews. All Zoom sessions were password-protected to ensure only the participant and I entered the meeting. All Zoom meetings were recorded as audio and video file formats and stored on a password-protected laptop, rather than using cloud-based storage offered by Zoom.

Initial interviews lasted approximately 45 minutes, followed by at least one follow-up interview to further develop participants' stories. In successive interviews, I asked participants to clarify any questions from an initial review of the transcripts. Participants were given opportunities to expand on the experiences shared in the first interview and provide additional stories they remembered between sessions. Follow-up questions were developed based on responses provided in previous interviews, providing additional detail and depth to the narratives.

Open-ended questions allow the participants' stories to emerge. With each participant, I began the first interview with the question, "Tell me about your experiences as an independent school technology director." After the initial question, participants guided the conversation, and I

employed follow-up questions and probes as appropriate to evoke more detailed accounts. As Rubin and Rubin (2012) noted, probes help keep the conversation on topic and reach the desired level of depth in answers. Examples of follow-up questions and probes are provided in the interview protocol in Appendix C.

Transcription and Narrative Research Texts

Transcription. I uploaded interview recordings to TranscribeMe, an online transcription service that complies with privacy protections offered by the Health Insurance Portability and Accountability Act of 1996 (HIPAA). TranscribeMe maintains secure network infrastructure and uses a secure file transfer protocol for uploading recordings and downloading transcripts (TranscribeMe, n.d.). Once transcribed, I reviewed the transcripts with the recording to ensure accuracy. All transcripts were saved on a password-protected laptop.

Temporal Episodes. Conversational interviews are often "discursive, fragmented, filled with halting moments" (Clandinin & Connelly, 2000, p. 153). Therefore, as a researcher analyzes interview transcripts, they must organize them into a narrative story that captures the participants' experiences. Reflecting upon the concept of commonplaces in narrative inquiry, "narratives are understood as stories that include a temporal ordering of events and an effort to make something out of those events: to render, or to signify, the experiences of persons-in-flux in a personally and culturally coherent, plausible manner" (Sandelwoski, 1991, p. 162). Creswell (2012) described this restorying as gathering, analyzing, and rewriting the story in chronological sequence. Initially, I reviewed and then reorganized the transcripts into narrative texts reflecting each participant's stories of experience, then organized them into temporal episodes. Once completed, collaboration with participants ensured the narrative research text accurately reflected the participant's recollection and meaning of their stories.

Thematic Analysis

Narrative research uses a variety of ways to analyze and present research findings. Riessman (2008) argued that "although narrative analysis is case-centered, it can regenerate 'categories' or, to put it differently, general concepts, as other case-based methods do" (p. 13). In thematic analysis, a focus on what is said becomes the basis of the researcher's analysis (Riessman, 2008). The researcher pays attention to the "informant's reports of events and experiences" (Riessman, 2008, p. 54). Thematic analysis was most appropriate for this study seeking to understand technology directors' leadership experiences with ICT integration.

Once composed and verified with each participant, each story served as a case for further analysis. Each story was coded with an inductive approach, allowing for concepts and themes to emerge from the stories. Through inductive analysis, "research findings emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured methodologies" (Thomas, 2006, p. 238). An inductive approach allows narrative researchers to avoid predetermined ideas, theories, or directions for a participant's stories (Josselson & Lieblich, 2015). My analysis followed a six-step process outlined by Braun and Clarke (2006). Table 1 illustrates the six steps of thematic analysis and the corresponding steps taken in this study.

Table 1

Thematic Analysis Process

Phase	Description of steps taken
1. Familiarizing Yourself With the Data	• Transcription (TranscribeMe) • Editing of Transcripts • Initial Reading and Rereading of Transcripts • Organized Stories into Temporal Episodes
2. Generating Initial Codes	• First-Cycle Coding: Initial Coding
3. Searching for Themes	• Second-Cycle Coding: Focused Coding • Examine Relationships Between Codes and Possible Themes • Organizing Codes into Prospective Themes
4. Reviewing Themes	• Define Themes Against Codes and Data Set
5. Defining and Naming Themes	• Identify the Story Each Theme Tells • Provide Concise, Clear Theme Names
6. Producing the Report	• Choosing Excerpts to Illustrate • Provide Evidence of Themes in Data • Write Report

Note. Adapted from "Using Thematic Analysis in Psychology," by V. Braun and V. Clarke, 2006, *Qualitative Research in Psychology, 3*(2), pp. 77–101. (https://www.tandfonline.com/doi/abs/10.1191/1478088706qp063oa). Copyright 2006 by Taylor and Francis.

Coding. According to Saldaña (2016), a code represents and captures a datum's primary content and essence. Vogt et al. (2014) stated that codes translate data into symbols used to conduct analysis. I used Delve to aid in the coding, organization of codes, and analysis of the transcripts. Delve is a cloud-based, computer-assisted qualitative data analysis software (CAQDAS) program that aids in analyzing qualitative data (Delve, n.d.). A sample printout of the codes and interview snippets from Delve is provided in Appendix D. Computer-assisted

qualitative data analysis software aids the researcher by storing and organizing data in a way that allows for analytical reflection (Saldaña, 2016). After composing and verifying the narrative research texts, I used a two-cycle coding process, which included initial coding and focused coding.

For first-cycle coding, I utilized initial coding, which is also referred to as open coding. Saldaña (2016) described how initial coding could employ multiple coding methods, including in vivo and process coding. Through initial coding, the researcher breaks down the data, in this case stories, and looks for similarities and differences (Saldaña, 2016). In this study, initial coding allowed for the assignment of codes to short quotes or longer texts in an open format, provided a starting point for further analysis, and provided direction for further exploration (Saldaña, 2016). Since open coding allowed for in vivo and process codes, my analysis captured both the participants' words and actions.

After three passes of first-cycle coding, second-cycle coding allowed me to reorganize data and establish a thematic organization from the first-cycle codes (Saldaña, 2016). Saldana (2016) stated that the second cycle "further manages, filters, highlights, and focuses the salient features of the qualitative data record for generating categories, themes, and concepts" (p. 8). In this second cycle, I used focused coding, which allows the researcher to search for frequent and often-used codes to develop categories and themes (Saldaña, 2016). Using Delve, I grouped the initial codes into clusters based on commonality. After establishing categories by examining the clusters, I further analyzed the categories to identify the prominent themes that emerged through the individual participant's stories and across all participants' stories (see Appendix E).

According to Braun and Clarke (2006), "themes capture something important about the data in relation to the research question and represent some level of a patterned response or

meaning within the data set" (p. 85). In this study, by organizing categories based on the participants' common actions and beliefs, two prominent themes and six subthemes emerged. I present these thematic findings in Chapter 4.

Trustworthiness

Trustworthiness refers to the validity of qualitative research. I established trustworthiness for this study through multiple means. Member checking ensures the research texts accurately portray the participants' accounts (Creswell, 2014). Lincoln and Guba (1985) described member checking as an essential procedure for establishing credibility in a qualitative study. In some cases, participants almost become cocomposers of the research texts with the narrative researchers (Clandinin, 2013; Clandinin & Huber, 2010). Participants reviewed texts to ensure that transcripts, drafts, and final research texts accurately reflected their experiences.

Another tactic to establish validity is using rich, thick descriptions of the participants and settings under study (Creswell & Poth, 2018; Geertz, 1973, Shenton, 2004). This method involves providing enough detail that readers feel they experienced the events described in the text (Creswell & Miller, 2000). Using the commonplaces of sociality, temporality, and place as a basis for telling each story provides the expansive details necessary to contextualize the participant and their setting (Creswell & Miller, 2000; Clandinin et al., 2007).

Researcher Role

In a narrative study, researchers establish a conversational tone and climate during interviews. Clandinin and Connelly (2000) stated, "the way an interviewer acts, questions, and responds in an interview shapes the relationship and therefore the ways participants respond and give accounts of their experience" (p. 110). Throughout each interview and member checking process, I embraced a conversational tone, allowing the participant to tell stories of their

experiences without interruption. When necessary, I used open-ended follow-up questions and probes to evoke more detailed responses on topics that needed further exploration.

This study's research is of personal interest, as I currently work as a technology director at a K–12 independent school. Throughout interviews and analysis, I took care to accurately portray the participants' experiences, rather than allowing my own experiences to shape or influence the analysis. Carefully analyzing the transcripts for accuracy and allowing participants to verify their stories' portrayal aided in removing any of my personal bias.

Ethical Considerations

Before conducting this study, I obtained permission from Abilene Christian University's Institutional Review Board (IRB). Upon IRB approval, I sent individual invitations to possible participants identified through a search of independent schools in Tennessee. As previously described, I provided participants with an informed consent form outlining the study's purpose and procedures. Participants had the option to leave the study at any time and for any reason. Participants' names and identifiable information were removed from transcripts, and I assigned them a pseudonym in the final research texts.

Data Security and Participant Protection

Data security and participant protection were important considerations within the study design. Because of social distancing requirements due to the COVID-19 pandemic, I used Zoom, an online video conferencing service, for all interviews. I stored all interviews conducted through Zoom on an encrypted, password-protected laptop. I recorded sessions in a password-protected Zoom meeting room to prevent outside participants from entering. Although Zoom offers cloud-based storage, I saved all recordings on an encrypted, password-protected laptop. I uploaded

audio recordings of Zoom interviews to TranscribeMe, a HIPAA-compliant web application, for transcription using a secured, private Internet connection (TranscribeMe, n.d.).

I downloaded all transcriptions to an encrypted, password-protected laptop to complete restorying, coding, and analysis. I assigned pseudonyms and removed personally identifiable information from narrative research texts before uploading the texts to Delve for analysis. Upon completing the study, I will destroy all transcriptions, audio, and video recordings using digital shredding software.

Protecting Participants' Stories

Beyond the security measures described, special care was taken to preserve the stories the participants shared. Narrative studies provide more detailed accounts of participants' lives than other qualitative studies; therefore, researchers must carefully and accurately portray participants' stories. Clandinin (2013) stated that "a person's lived and told stories are who they are, and who they are becoming, and that person's stories sustain them. This understanding shapes the necessity of negotiating research text that respectfully represents participants' lived and told stories" (p. 200). For this study, participants were provided the opportunity to review, comment, and request changes to their individual research texts so that their stories accurately reflect their experiences in the final research text.

Assumptions, Limitations, and Delimitations

There is one significant limitation to this study. Although it is assumed that the participants will be honest when providing their stories, they could be guarded when describing interactions with their coworkers. Providing assurances of anonymity and data security alleviate any concerns, prompting participants to share honest accounts of their experiences as technology directors.

Several factors delimit this study. First, the sample size is intentionally small to allow the researcher to collect in-depth stories of the participants' experiences as K–12 independent school technology directors. The study is confined to independent schools in Tennessee, and the results may not be applicable in other geographic areas. Additionally, the study is limited to K–12 independents schools, and the results may not be relevant in higher education or public school settings. Finally, this study only included technology directors as participants. Other members of a school community may have different experiences in the process of ICT integration.

Chapter Summary

This chapter began with a detailed description of narrative studies, which allow researchers to view "experience as the phenomena" (Clandinin & Connelly, 2006, p. 477). The narrative approach allows the researcher to compose a 'fuller' picture of the individual (Riessman, 2008) and was appropriate as the review of the literature found technology directors play an important role in school settings (Chen, 2013), though there is little research as to how they influence ICT integration. Through in-depth, conversational interviews where technology directors could share their leadership experiences, I sought to understand the practices and leadership characteristics that promote ICT integration in independent schools. Using an inductive, two-cycle coding process using qualitative data analysis software, I established categories, which were then further refined into themes and subthemes. Chapter 4 presents the participants' narrative accounts and shares the prominent themes that emerged from the participants' stories.

Chapter 4: Results

This chapter presents the narrative accounts of four Tennessee independent school technology directors. The purpose of this narrative study was to examine technology directors' leadership characteristics and their experiences leading ICT in K–12 independent schools in Tennessee during the COVID-19 pandemic. One broad question guided this study: How do technology directors perceive their leadership characteristics and experiences with ICT integration in K–12 independent schools in Tennessee during the COVID-19 pandemic?

This chapter begins with a description of the current context of K–12 independents schools, particularly concerning the dramatic changes brought about by the COVID-19 pandemic. A timeline (see Appendix F) outlines the societal events that influenced Tennessee independent schools throughout the spring, summer, and fall of 2020. A review of the methodology follows, then participant narratives are presented in two sections. First, the third-person portraits introduce each participant, including a summary of their background and responsibilities as an independent school technology director. After each participants' portrait, first-person narrative accounts, written as temporal episodes, provide stories from their time as independent school technology directors. The chapter ends with an introduction to the emergent themes and subthemes found by analyzing participants' stories of their experiences.

Study Context

Before presenting the participants' stories, it is appropriate to examine the cultural context in which the interviews occurred, especially considering the dramatic changes brought about by the COVID-19 pandemic during the development of this study. The context of the COVID-19 pandemic cannot be separated from the study. It impacted the researcher, participants, and their scope of work, their schools, and their lives.

In the early weeks of 2020, Americans watched a medical emergency begin in Wuhan, China (Mukherjee, 2020). First reported by Chinese government officials on December 31, 2019, a new form of pneumonia spread at an alarming rate through Wuhan (World Health Organization [WHO], 2020). Throughout January, news reports showed new hospitals built in just 10 days and government officials using draconian measures to control a strange new form of pneumonia (Allam, 2020). By January 20, the United States saw its first reported case of the virus in Washington State (Allam, 2020). On January 30, the World Health Organization (WHO) declared COVID-19 a Public Health Emergency of International Concern, demonstrating an increasing concern about the viruses worldwide spread (WHO, 2020).

The world continued to watch as hospitals in China became overwhelmed, and cities locked down to prevent the spread (Allam, 2020). World leaders began enacting travel advisories and restrictions throughout February to try to curb the spread of the virus; however, cases continued to appear across the world (Allam, 2020). Each day new cases began to emerge around the United States, and gradually, cases turned into clusters. By early March, the United States had over 1,000 cases (Allam, 2020). On Wednesday, March 11, the WHO declared the new virus a pandemic, and President Trump addressed the nation from the Oval Office, signifying the true scope of what Americans faced in the coming months (Allam, 2020; WHO, 2020). On March 13, President Trump declared a national emergency, which ultimately led to states beginning to shut down schools and businesses (Mukherjee, 2020).

In March 2020, the COVID-19 pandemic disrupted schools, businesses, and societies worldwide (Gaudet, 2020; Mukherjee, 2020). As the pandemic began in China late in 2019, few could imagine the upheaval the rest of the world would experience in the coming months (Mukherjee, 2020). As health care workers scrambled to treat the sick, governments shut down

most of society, outside of a few businesses deemed essential (Mukherjee, 2020). Despite their crucial role in modern society's fabric, schools were no exception (Education Week, 2020). As Gaudet (2020) stated, "Everything changed. All around the world. Nearly all at once. A deadly virus plunged us into grief, fear, and anxiety. And schools had to continue, somehow" (p. 7). Although students could no longer be on campus, administrators and teachers had to find a way to teach in a way no one could have previously imagined (Gaudet, 2020).

Although some schools began closing early in March, the middle of the month saw schools across the country sending students home (Education Week, 2020). Governors mandated or strongly recommended closing schools and throughout the country (Gonzalas, 2020). Thought to be a temporary shutdown to gain control over the spread of the virus, in some places, the closures eventually turned into the cancellation of classes until the end of the school year (Gaudet, 2020; Testino, 2020). Almost overnight, the pandemic forced educators to completely pivot from in-person learning to teaching virtually from home (Gaudet, 2020; Tamez-Robledo, 2020).

Throughout the remainder of the 2020 school year, teachers adapted to using video-conferencing software and learning management systems to deliver instruction (Gaudet, 2020). In many communities, inequitable Internet access and limited supplies of computers restricted the ability of teachers to work with their students online (Gaudet, 2020). For those able to continue using online instruction, numerous technical and logistical challenges caused increased anxiety for students, parents, and teachers (Gaudet, 2020).

Once the school year ended, school leaders turned their attention to the start of school in the fall of 2020 (Bailey & Schurz, 2020). Throughout the summer, schools planned for multiple possibilities for the fall semester: virtual, hybrid, and in-person scenarios. Additionally,

administrators developed plans for the billions of dollars in CARES Act funding, which provided funds for technology, cleaning, and safety equipment (Mikulski, 2020). However, policies implemented by the Secretary of Education, Betsy DeVos, and court decisions concerning those rules caused confusion and delays in acquiring materials and services in time for the fall semester (Strauss, 2020).

As the fall semester began, many school districts remained virtual while others attempted to bring students back on campus in hybrid or full in-person environments (Mangrum, 2020). In the final months of 2020, several pharmaceutical companies released promising results from vaccine candidate trials, which soon gained emergency use authorization from the Food and Drug Administration (Mukherjee, 2020). Throughout the end of December 2020 and January 2021, states began distributing the vaccine to health care and essential workers (Mukherjee, 2020), with some states including teachers in the initial wave of vaccine recipients (Strauss, 2021). As companies deploy additional doses of the vaccines, students, parents, and teachers hope to return to a typical learning environment in 2021. Appendix F illustrates a timeline of the highlighted events from the beginning of the pandemic through December 2020.

School Technology During a Pandemic

School technology directors became central figures in their schools and districts as administrators sought to move instruction online (Gaudet, 2020). Students needed access to computers and high-speed Internet and access to new software such as Zoom, G Suite, and numerous other websites (Gaudet, 2020). Even as technology directors scrambled to find mobile devices for students and teachers, they also had to ensure programs and devices were secure and safe for everyone to access (Gaudet, 2020). Technology directors provide strict management and control of school networks. Students' access to websites is generally well controlled; however,

within the context of the pandemic, students were taking school-owned devices home and using them on their family's networks (Gaudet, 2020). March and April involved long days for technology directors fielding support phone calls, finding solutions for unforeseen technical problems, and training teachers and students to use programs (Gaudet, 2020; Tamez-Robledo, 2020).

Independent Schools in Tennessee

Throughout the spring of 2020, Tennessee's independent schools remained closed, subject to guidelines set for public schools (Gonzales, 2020; Testino, 2020). Although some Tennessee public school districts remained virtual through the fall of 2020, most independent schools brought students back on campus for in-person instruction (Dickler, 2020; Mangrum, 2020). Despite the perceived advantage of many students returning to campus, private schools still faced hybrid learning situations due to student and teacher quarantines, along with new classroom orientations due to social distancing requirements (Hooker, 2020).

Methodological Organization of the Findings

Before presenting participants' narratives and emergent themes, it is appropriate to revisit the methodology outlined in Chapter 3. I used an inductive analysis approach to allow themes to emerge from the participants' narratives. I conducted open-ended, narrative interviews with four participants. I reviewed each transcript with the recording to ensure the accuracy of the transcription and then composed and organized each participant's transcripts into individual, temporal episodes. Once written as a narrative research text, these temporal episodes served as the basis for further coding and thematic analysis. Coding followed an initial, open-ended approach, followed by second-cycle focused coding.

Two themes and six subthemes emerged. After naming the themes, I chose interview excerpts to support each theme and subtheme. Appendix E provides a sample of the coding and analysis process, with a sample printout of codes and interview snippets included in Appendix D.

Role of the Narrative Researcher

Similarly, it is important to review Chapter 3's examination of the researcher's role in the collection of stories and process of analysis. Although narrative researchers enter their research with their backgrounds and interests in the topic in mind, they engage with participants as listeners, "open to the surprising variations in their social worlds and private lives" (Josselson & Lieblich, 2015, p. 324). Narrative researchers engage with participants to learn from their experiences (Josselson & Lieblich, 2015). Narrative researchers engage the participants in conversational interviews and allow them to guide the direction of the interview and tell the stories they find consequential (Riessman, 2008).

Participants

Participants served as technology directors at K–12 Tennessee independent schools at the time of the study. Each participant's specific title and role within their school varied slightly; however, they all served as the senior technology official in their school, meeting inclusion criteria. Table 2 presents the participant's pseudonyms, years of experience as a technology director, and the grade levels included in their independent school.

Table 2

Participant Information

Pseudonym	Years as a technology director	Grade levels at school
Sarah	7	K–12
John	11	K–5
Sam	20	K–8
Mike	10	K–12

Portraits

For the purposes of this study, a portrait is a third-person introduction of each participant, summarizing their background and describing their responsibilities as an independent school technology director. Each is followed by their story.

Portrait of Sarah

In her seventh year as a technology director and 25th year in education, Sarah serves at a K–12 independent school in middle Tennessee. Sarah holds an undergraduate degree in elementary education and a graduate degree in educational technology. Before serving in her role as a technology director, she taught in elementary and middle school settings.

After graduating with an undergraduate degree in elementary education, Sarah began her career teaching fifth grade in a public school. As a new private school formed in the area, the administrators recruited Sarah as a fourth- and fifth-grade teacher. Sarah spent 11 years at that school and served as the technology director during her last three years. Her final years at the school coincided with the Great Recession in 2008–2009, which caused instability in the

school's enrollment. At that time, Sarah and her husband decided they wanted their son to begin kindergarten at a more established school.

Sarah moved to her current school and began teaching eighth-grade science and computers in seventh and eighth grade. After serving in that role for two years, she also became a technology coach, which provided her with one class period each day to help other teachers with their technology. In her 10th year at her current school, the technology director left abruptly in the middle of the school year. Based on her prior experience as a technology director and her role as a technology coach at the school, school administrators promoted Sarah to the technology director position.

Now in her fourth year as technology director at her school, Sarah oversees anything on campus related to technology. She reports directly to the school's superintendent, who oversees all school academics and operations. Her role includes managing all faculty computers and student iPads and coordinating all technology-related professional development. Additionally, Sarah implements and manages the student information system (SIS), learning management system (LMS), and supervises the school network infrastructure.

Sarah's Story

Episode 1: A Typical Day

One of the things I like about this job is that I never know what I am walking into from one day to the next. Having to problem-solve and not know what issues I will face is one of the most appealing parts of my job. Every day is different, which keeps the job fresh and interesting. A recent day highlights the variety I face in a typical day.

As I arrived at school, our superintendent, who oversees academics and operations on campus, approached me about an issue with the spacebar on his computer.

It was not a quick fix, so I issued him a loaner device while troubleshooting his laptop. Even as I was working with him, the Internet went down for a few minutes. Both of these events happened within the first 30 minutes of school. Soon after our issues with the network, a student dropped by with a broken iPad, so I had to help them prepare to send it off for repair. As I finished that task, a teacher requested help with Google Classroom, so I had to resolve that issue.

After spending much of the morning troubleshooting computer and network issues, I worked on our SIS and LMS for a few minutes, including posting our daily announcements through the SIS. One project I am working on within that program uses forms to help students and parents order items, such as t-shirts, and use their credit card to pay directly through the form. Our lower school uses this feature with a lot of success, so I want to expand that into the upper school. In this case, I needed to train our student council sponsor on how to use that software to order homecoming t-shirts.

I had a little time between meetings, so I worked on getting some older computers ready to sell, which helps to replenish our technology budget. After working on old computers, I spent some time catching up on email. I had several emails from parents about remote learning. One of the challenges I have dealt with lately is providing technical support while students learn at home. It is a challenge to walk students and parents through troubleshooting a device when they are at home. There were a couple of parent emails about how to process insurance claims for broken iPads. We have insurance on all student iPads, so they have to file a claim and generate a ticket to have those repaired.

Finally, I had a follow-up call with Securely, a cloud-based web filtering service. We are looking at Chromebooks for next year, so I am trying to decide if that is a way to control students' access to the web on those devices. It was about a 40-minute conversation looking at their solution and finding out if it would work well with all our devices.

Episode 2: Training and Professional Development

A significant part of my role is providing our faculty with professional development and training opportunities in technology. I coordinate all aspects of our technology training program, including large-group training, small-group sessions, and even one-on-one help with teachers. I supervise several staff members that serve as technology coaches across the school, so in addition to developing training on my own, I also coordinate the training sessions they provide. I try to offer training opportunities that focus on what teachers are interested in learning more. I also tried to develop short, on-demand, video-based training sessions that help teachers learn about a tool they can quickly implement in their classrooms.

Learning From Training Failures. Early in my tenure as the technology director, we migrated our SIS and LMS into one platform, called Blackbaud. Before Blackbaud, which ties together our accounting, SIS, grading system, and LMS into one platform, we used different software programs for each task. I knew this would require a lot of training to help everyone learn the software, so the administrators required every teacher to come in for sessions throughout the summer. We trained everyone in a large group setting. I heard many teachers complaining throughout the training, stating, "I hate

this" and "I am too old for this." Over time, everyone finally learned the software, and now they find it beneficial, but the initial training was difficult and unsuccessful.

Before I transitioned from the classroom to this role, two people were acting technology directors. At the time, they decided to discontinue using the downloadable version of Microsoft Word and move entirely to the online version. We tried to train everyone at once during in-service in our library. This training was a disaster. First, we had everyone in one room trying to teach an online software program. Our Wi-Fi could not handle the load. Second, we had users with various skill levels on Word, so some could not keep up and others who were bored. From that session, I learned that it is better to train in small groups and group people based on their experience.

Training Successes. Since then, our training sessions have improved. I focus on topics that teachers and our technology coordinators request. I try to offer a lot of variety that will hopefully provide everyone with a topic that interests them. I have found that providing multiple sessions where teachers can pick what they want to learn about also increases excitement and buy-in. When we offer training, we offer multiple sessions, so they can choose to attend one on a topic that interests them. Our teachers respond well to training sessions about online programs they can implement in their classrooms, such as Kahoot!, Quizlet, and other online games.

I have seen a lot of success with training our faculty on the G Suite platform. The teachers have also shown a lot of interest in training on Promethean smartboards. Promethean trainers provide initial training when you purchase a new smartboard, which has been very popular among our teachers.

Episode 3: Chromebook Program

One large project that I am currently working on is the implementation of Chromebooks in our high school. As I talked with teachers in our high school, I found they felt the iPads were limiting their use of technology. Many felt the addition of a laptop program would be beneficial to their instruction. I recently talked with a college professor who indicated an iPad was not a useful device for college. They felt that students needed a full laptop, so I decided it was essential to provide our students with that type of experience before leaving our school.

First, I looked at the cost of changing from iPads to laptops, specifically Chromebooks. After talking with other technology directors in our area and looking at different models, I determined it was financially feasible to change. As I began the planning process, I contacted a vendor, who said they could have all the Chromebooks in cases and install apps we wanted before they ship to us. I also determined that we needed to purchase four years of accidental insurance to follow the students and devices through high school. Finally, I decided it would be better to implement the Chromebooks over four years, starting with our freshmen next year. Our current high schools are already in the middle of an iPad rental program, and I did not want to force them to pay for a new device. Once I completed the research and planning for the new program, I wrote a proposal for our superintendent and president to approve, which had to be approved by the board of directors. There were multiple layers of approval.

Episode 4: COVID-19 and Remote Learning

The initial weeks of the COVID-19 shutdowns and remote learning were extremely stressful at first. I adopted a dig-in, pray, and get-through-it mentality. Our spring break

was scheduled in mid-March, so our school went ahead and dismissed the Friday before the break began. That Friday, while teachers and students were off, I met with other senior administrators to figure out how we would make this work. What do we need? How can we implement programs to make this work?

We trialed both Zoom and WebEx as our online classroom platforms and ultimately went with Zoom as it worked better for us at the time. I held trial meetings with my technology coaches and felt it performed better for teachers. We then met to strategize about how we could roll it out to teachers. Initially, we thought everyone would come back to campus for a day of training, but we then found out no one could come to campus. Suddenly we had to develop a way to train teachers remotely while using the software we were going to train them on. We were trying to introduce people to teaching with Zoom as we helped them use the software for the first time. On Sunday at the end of spring break, I trained all the technology coaches on how to use Zoom. We then divided the faculty into small groups of five to 10 people that the technology coaches trained on Monday. We then started remote learning on Tuesday.

One of my technology coaches and I wrote a remote learning handbook. We also edited that version to fit the learning environment of the lower school as well. We learned a lot through the process and made quite a few changes over the summer if we were forced into the full virtual learning situation again. We also adapted to fit the needs of our current remote learners and students in quarantine.

During the summer, I attended many more meetings. I joined a group that focused on how simultaneous remote and in-person learning would look academically. We tried to envision what a classroom would look like with some students on Zoom but with most

students in person. We tried to plan what that would look like for the teachers. I also attended meetings with our school nurse, local health care providers, and our administration on what school would look like when we all came back to campus. I noticed over the span of the spring and summer that my opinion mattered a lot more than what it did before.

We started the year with about 70 remote learners, so we had to think through what school looks like with students on campus and at home. We kept Zoom as our digital learning option for this school year, and it has worked well. We purchased Bluetooth headsets and microphones for our teachers to use with Zoom. Some have used those, while others opted for other solutions like headphones. We have found [that] the Promethean boards are effective for our teachers and at-home learners, but we do not have those in every classroom. We had hoped that all students would return after fall break, but we realize that remote learning will continue for some students throughout the entire school year.

Everyone's stress levels have been high. As we introduced this new model of learning to teachers at in-service, we had several teachers break down at the thought of trying to do both at once. We had overcome everyone having to learn remotely, but now trying to do both in-person and remote learning was overwhelming to many teachers.

Part of my job became just trying to calm everyone's fears. In a way, I also became the technology counselor this year, just trying to assure everyone that it will be okay. As we settled into the school year, everyone has adapted to this system. Although we continuously face new challenges with it.

We expected to have quarantine situations but thought the permanent remote learners might come back after the break. Most of the lower school returned, but we still have a few learning from home. Having students at school and some at home created a challenge as some teachers face a much heavier workload. In our third grade, one teacher had several remote learners, while the other only had one, which caused a lot of frustration. They both had to stay on Zoom all day with the remote students while maintaining a classroom full of students. I coordinated a meeting with our superintendent, the teachers, and their principal, to find a workable solution.

We talked through bringing in an aide, which would not work out financially. We discussed moving them onto a rotating schedule like our fourth through sixth grade, so they would only have to use Zoom part of the day, but that did not work out either. Finally, one teacher suggested that they each have a weekly rotation with the remote learners. Since the teachers use the same curriculum and pacing, we developed a rotation where now they have some time away from Zoom and can focus solely on their classes.

We have experimented a lot this fall with different ways to engage remote learners, both ongoing and those in quarantine. I bought some webcams that we set up on the Prometheans, which works great if the teacher is home. They can then see the class while they project their screen onto the board, but it is not effective when students are at home. Everything changes daily, with students going into quarantine, so we are just continually trying to find out what works best with Zoom and online learning.

Another ongoing challenge with remote learning is software updates and changes. At one point earlier in the fall, Zoom had an update that randomly changed some teachers' meeting room passwords. It was not too much of an issue for our secondary, but

it caused many elementary school problems. Our teachers produce a weekly newsletter with links for the students to click on, but those no longer worked after the update. There were a lot of parents calling the school, saying we cannot access our remote classroom. Luckily, the principal had a spreadsheet with all the teachers' meeting room passwords saved, so we could go to each teacher and change their meeting room password back so that the links would work for the students, which took about a day and a half.

Episode 5: The Technology Counselor

As I mentioned in the pandemic discussion, I feel like I have become a technology counselor. Although certainly heightened by the pandemic, it was a part of my role before March. Last year, we added a technology component to our teacher evaluations, which means that anytime principals evaluate teachers, technology must be a component of the lesson. This change caused stress among teachers, with a few coming to my office and breaking down over it. In these situations, a lot of my job involves calming teachers' fears about using technology.

Last year, we hired a new lower school principal. She is young, energetic, and loves to see technology used in the classroom. However, she works with some older teachers and who resist using technology in their lessons. I attended a meeting with teachers from the lower school and the new principal to discuss this new evaluation system and technology integration in their classrooms. Before the meeting even began, one teacher broke down crying, explaining they felt it was too much to ask them to use the iPads a lot at their grade level. They also thought it was not fair that all students in their grade did not have access to them all the time. Our elementary iPads are cart-based, with one cart per grade level. I have known this teacher for several years as she taught my

son. I reassured her that she is an excellent teacher and tried to walk her through ways technology can easily be integrated into the classroom. It does not always have to be a lesson wholly based on technology. I explained that integrating technology can be as easy as using a Kahoot! or other online resources to enhance the lesson. I encouraged her to look at her regular lesson plans and find a way to use a technology resource within that lesson. We also developed a sign-out sheet to help coordinate when each teacher needed to use the iPad cart. Sometimes teachers come to my office and just need someone to listen to their frustrations and calm them down. They just need me to sit and listen while they talk through it. A lot of times, they figure it out on their own while they talk to me.

Portrait of John

In his 11th year as a technology director, John serves at a PK–5 independent school in east Tennessee. Before becoming a technology director, John had no experience in education or educational technology. He had worked at a local telecommunications company that offered fiber, television, and phone services.

Before his arrival, his school engaged in long-range planning, which included the goal of hiring a full-time technology director. John and the headmaster were already acquaintances, and the headmaster offered him the technology director's position to help "steer the ship" for the school's technology program. John had always loved working with technology and had a vision for moving the school to a cloud-based infrastructure, which was beneficial during the pandemic and tornadoes that affected the area.

Although he was already in a technology-related field at the telecommunications company, John worked more on the product side than infrastructure management. As he moved into his new role, he began moving infrastructure and software programs to cloud-based services

and learning more about those services as he deployed them. With many different cloud-based services implemented, John's job is now "knowing how all the pieces fit together as much as it is knowing how to make the individual pieces work."

With the ever-expanding role of technology in education, John's responsibilities have grown since he began at the school in 2009. He now oversees anything technology-related within the school, from the fiber optic cable that brings the Internet into the school to every end-user computer and printer. These responsibilities include network infrastructure, the school website, systems, computers, iPads, and media tools. He jokes that "anything with Wi-Fi is now my responsibility."

John's Story

Episode 1: Change in the Field

> One of the most critical factors in my job is how much the field changes yearly. The goalposts are always moving, and we continually add new technology to the school. When I started, we just had the second version of the iPhone, and the iPad did not even exist, so many of the things that exist today did not exist when I entered the field.
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> Technology has become more stable in a sense, but it has also become more finicky. The technology is better, but there are more ways to break it. We have increased the number of devices across campus over the past 11 years. The need for more devices generates more problems. There are far more devices available to fail at any given time. We have about 200 iPads, 50 Macs, 45 cameras, 65 access points, and 15 switches.
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> Since I began, the prevalence of Wi-Fi is one of the most significant changes. It is an ever-changing technology. Previously, you just needed Wi-Fi access, and coverage was the primary issue; now, you also must worry about capacity. It is no longer enough to

have Wi-Fi available across the school; you now must ensure the network can handle many more devices.

Another example of new technology improving the environment and posing challenges is the new TVs I recently installed. They have Apple Airplay, which is an excellent service. Teachers can wirelessly project their computers on the TV screens, but what happens when it does not work? It is one more point of failure that can cause problems for the teacher. When we had projectors, you could just hook up the computer, and it would work almost 100% of the time. Technology is never going to be perfect; there are too many moving parts. Another way of looking at this problem is that you go into a facility, run the wiring, and leave if you are an electrician. You move onto the next facility to wire. However, in this role, when I go in and hang a TV, mount a new network access point, or hand out a new computer, I must provide ongoing support for that. Anything you deploy, you kind of own forever.

Episode 2: Technical Support

One of the oddest challenges I faced in the last year is installing our new camera system. Last year, we decided to install a modern camera system. Over time, we realized that we needed to be able to monitor more parts of campus. Previously, we just needed cameras outside and in some hallways, but we decided we needed to see most interior and exterior areas as time went on.

As I began the process, I wanted to move to a cloud-hosted service, but it quickly became apparent that what I wanted from the technology would not work within the budget. I kept researching and testing several different systems until one finally checked enough of the boxes to make sense to roll out. Every decision has compromises, so I tried

to check as many boxes as possible for the system's technology side while staying on budget.

We installed the system over the summer and began with 35 cameras, and everything was working fine. We decided to go ahead and add another ten to have 45 cameras. The system we purchased indicated it could handle 50 cameras on a single network video recorder (NVR). After getting all 45 cameras installed, we started having an issue where cameras would randomly disconnect once every hour. After about a minute, they would reconnect. I tried to troubleshoot the problem for a while and eventually had to contact their technical support team. It turned out that the hard drives we purchased for the NVR were not capable of handling the number of cameras we need. Even though the NVR could handle the load, we had to upgrade the hard drives to make it work. It took me a good week of working on the problem to finally find the solution.

Sometimes you are trying to fix problems with many variables, and it is hard to narrow down what is causing the issue. There are so many pieces involved in a technology-related problem. One example is a communication error some of our MacBooks had with a printer. There were certain parts of the building where you could not print. I verified that the connection between the computer and printer worked in other parts of the building. I also confirmed that we had a reliable Wi-Fi connection in those parts of the building. I had to figure out which piece of the puzzle was causing the issue, but none of them showed a specific error.

The challenge in those situations is that most people expect me to resolve technology issues quickly. Most people understand that if a bathroom needs repair, it can take a few days, but they anticipate that technology problems can be resolved instantly.

Even though I know enough about the system to install and operate, I am not an expert on that camera system. I did not write the code for their software, so sometimes I need to get a vendor involved to troubleshoot the problem. When that happens, I may be in line behind 50 other people to work with their technical support team, so I need a lot of patience to work through those scenarios. I also have to help others with patience in those situations.

Episode 3: Training

One of the challenges in a school setting is training our faculty. In a business setting, you can block off sections of people's calendars and schedule training, but that is impossible in a school because the children need their teachers with them all the time. I must find surgical ways to take on training.

One recent example is a teacher who was trying to resize a picture on a document. She was using Google Docs, but it was not working well. She wanted to add a photo to the document and then resize it to print. I took a few minutes to walk her through using Apple's word processor, Pages, so that she could drag a picture directly into the document quickly. That is now a tool she will continue to use forever, but there is no need to bring all the faculty in to train on that skill. When you bring everyone in for a 30-minute session on a specific topic, most of them will not get anything out of it, but when you sit down and train someone one-on-one, they will get more out of the session.

Episode 4: Leadership

I want people to have the opportunity to fail. If you are not in a situation where you are making mistakes, you probably are not pushing yourself. The problem in any business is that mistakes can cost time and money. So, it is a hard balance between pushing yourself

and not hurting the company. It is sometimes hard to make mistakes in my area, but if I am working on a significant network overhaul or a big project like the cameras, I need them to work immediately.

The pandemic pushed our teachers out of their comfort zones, and one thing I have had to help them understand is that it is not going to be perfect. When teachers have had to teach virtually, it is met with a lot of fear. The critical thing in this situation is that we had to start doing it, and sometimes that is the hardest part. The nice thing about technology is that nothing is ever finalized, so you know if things are rough, you can adjust, you can change its flow. We don't have to know every answer before we start.

Another instance where that mentality helped was when we launched our new website and moved to online enrollment. As we approached online registration, I knew I did not have all of the answers about how the system would work, and I knew there would be some issues along the way, but we had to take the first step to move the project along. I try to begin with the end goal in mind and understand that it will eventually get there.

Episode 5: COVID-19

For years, we had all heard that Khan Academy and services like it were going to take over education. Although technology increased in schools, I think the pandemic proved that in-person learning is critical. Schools are not just for the transfer of knowledge. Students learn relationship and social skills. It is about the experience of being in school. Think about the things you remember in school: it is often what you learned socially and how to deal with those. I think the pandemic has shown the value of school and gives us a chance to show our purpose.

We have learned a lot through this about adapting and using technology creatively. I think the teachers found that they can learn new skills quickly. For example, our teachers had to learn Zoom, and we all had to become Zoom experts overnight. We have a teacher out right now who is taking care of her father, who is having heart surgery in the next few weeks. For him to have the surgery, she must quarantine for a couple of weeks before and after the procedure. In past years, we would have to call in a long-term sub, and those students would have missed that time with their primary teacher. Now, we can let her teach from home while her students have a substitute in class. Their teacher is still teaching them, and there is something pretty cool about that.

One of the challenges for me this year is working through the multiple learning scenarios we have. There are students in person, some are at home as virtual learners all the time, and we have some students in quarantine. Now I must support students and teachers that are here on campus and those who are at home. It is hard to help students who are at home and have Internet issues. In those situations, their faulty connection is not my fault, but it is my problem. I must try and support them through those issues just as if they were facing a problem on campus. I cannot fix their routers at home, but I can make recommendations to the parents to improve their connections, like upgrading equipment or installing a mesh system.

Another new challenge this year for me is chapel. We are not gathering in large groups for chapel service like we usually would, so I am now having to film chapel and prepare it to send out through video. In addition to filming, editing, and distribution, there are often issues with playback for teachers, so I have to figure out how to help them get the video to play.

> One of the most important things this year is to continuously reassure our faculty that it will be ok even if things are not perfect. We are doing the best to make this situation the best it can be for our students. We have all had to expand our comfort zones this year to make it work. It is hard for teachers to plan this year. One day they have their full class, and then the next day, you have most of the class in quarantine, so most of them are now learning virtually. They must throw the plans they made out the window and adjust on the fly.

Portrait of Sam

In his 20th year as a technology director, Sam serves as the director of information systems at a K–8 independent school in middle Tennessee. Sam began his career in the early 1990s as an insurance defense lawyer, working mostly with workers' compensation cases. Throughout his time as an attorney, Sam managed up to 40–50 cases simultaneously. The demands of managing that amount of information led Sam to become familiar with database management software.

When Sam's children were young, the childcare provider they used suddenly was no longer able to take care of their children, so he left the field while they looked for other daycare options. He mentioned that he was looking to leave the legal profession and his wife wished to continue working as a lawyer. After spending a few years as a consultant on the database software he used to manage cases, Sam began working at his current school in 2001 as his children entered first grade and kindergarten.

Sam mentioned that when he began working as a technology director, the school had two data servers, an email server, and was in the process of upgrading the network to a 3 Mbps connection. Although all teachers had a desktop Mac, students' computer access was limited to a

lab with 20 Mac desktops and a few Macs in the library. Since then, the school has upgraded its Internet connection to 500 Mbps while expanding student access to devices across their campus. Students in fourth through eighth grade now have one-to-one access to MacBook Airs, while students in kindergarten through third grade have a one-to-one program using iPads.

As the director of information systems, Sam manages all aspects of the school's technology program, including their student information system (SIS), learning management system (LMS), network infrastructure, and cloud-based software. Additionally, Sam oversees two staff members who provide support for student and teacher devices. As campus security became a critical concern for school administrators in recent years, Sam also implemented and managed new security systems, including cameras and a door-access control system.

Sam's Story

Episode 1: A Typical Day

> I have to pull back from a single day and look at it from a seasonal perspective. What a day looks like varies widely throughout the school year. First, summer is all about refreshes and getting things set up for the next school year. We save our big projects for the summer when no one is on campus. That is when we will do things like replace the core switch or replacing the Wi-Fi. Those are complicated projects and can sometimes be difficult, so we do those while school is out.
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> We also have a regular schedule to refresh our hardware. We have our laptops on three-year rotations, while our iPads are on a five-year replacement cycle, so we use the summer to prepare the new devices for our students and teachers. I also do a lot of data management during the summer. I manage the data in our student information systems, so I input all our new students and teachers while also setting up their Google accounts.

Another big part of the summer is orientation. I created training videos that teachers can access on their own time in Google Classroom. It is self-paced rather than bringing in everyone for one big session. I set it up with many videos and quizzes, so teachers can work on it when they have time. I think this is effective because we ask our teachers to do the same type of instruction with our students.

As the school year begins, there is a flurry of activity in our department. Many people forget how to access things, and equipment has not been used since the end of the school year. So, we spend a lot of time troubleshooting those kinds of issues with students and teachers. Having lower maintenance hardware has helped the start of the year become more manageable because there are no more projector bulbs requiring replacement.

After about a month or so, we settle into a calmer routine. This part of the year is more about regular maintenance and keeping up with annual tasks. Some random tasks roll around at this time of year, like inputting new grandparent information. A typical day at this point in the year involves getting to school around 6:30 to get ahead of any problems I already know about so that I am available as school starts. Most of the day, it is just being in the office being available to run down any tickets.

I also spend some time developing training materials for new services. One example is our standardized testing, which is in the fall. The company provides training materials, but I have modified them and added clips to smooth out that process. I also manage our SIS [student information system], so I have to help troubleshoot any problems with inputting grades. I maintain the digital signage on campus, so I am regularly pushing updates to that software.

As winter break approaches, I start developing budgets for the coming school year. I try to contact our faculty and see what their needs are for the next year. Then I begin contacting all of our vendors to obtain pricing and start planning when we need to order equipment for the following year. I try to order most of our new equipment in March to make sure it is available by June for us to start setting up. Finally, one big event at our school is our spring art show in May. I am involved in that as our department manages the payment systems. It is a pretty intense event, as I want to make sure the payment system works well and that all staff members are well-trained in using it.

Some other random things come up throughout the year. For example, we had an issue with the imaging software we used to use on our MacBooks caused a conflict with the antivirus software. Due to the type of error, we could not push a script through our MDM [mobile device management] software, so we manually worked on every laptop to resolve the issues. We had to take about 15 to 20 at a time and gradually work our way across campus. One year, we decided to extend the life of about 70 of our MacBook Pros by installing new solid-state hard drives. That was another slow and gradual process of working across campus to get all of them replaced. Even when there are quiet times with no projects, I try to search for new tools and refine the training videos I made.

I am grateful that I do not have any classroom responsibilities. First, my background is not in education, so it would not make sense for me to be instructing students. Second, it allows me to be available when something goes wrong. I can focus on properly maintaining the infrastructure and being open to help our teachers when needed.

Episode 2: Leadership

I serve at the director level, which is a direct report to the headmaster. I often find it funny, though, that sometimes there is not a lot of weight behind the suggestions I make among our faculty. There is much more impact when a recommendation comes from another classroom instructor. However, I have modified my approach to sending out short videos that are tech tips that highlight a new tool or feature of a current device or website we are using. I also really try to lead by example and use the tools I promote among our faculty as I provide training.

I would also say that leadership in my role is about collaborating with other team members on large projects. For example, I often work with the finance director and headmaster to develop a funding plan for a large project or help school administrators understand why specific programs are more beneficial than others. There are software and hardware platforms that work great for personal use but do not translate well into an enterprise environment. So, I often will work with other administrators to understand why one option may not work while also searching for another solution.

Ultimately, I kind of see myself as a facilitator. When a project comes up among the other administrators, I try and look at it from all angles, technology-wise. For example, when we decided to use e-books, I tried to think about everything that goes into the process of obtaining them, distributing them, and student access. How do we get that onto student devices? How can students log in? I try to help others evaluate it from that perspective, in addition to their evaluation of the content. No matter how great the content is, it will not be successful if it will not integrate well with our systems.

Teacher Support. I believe that time is an incredibly precious commodity for our teachers. I also think that technology can provide teachers with efficiencies, giving them more time to focus on instruction. However, if it is too complicated or if it does not work, they just will not use it. So, my job is to smooth things out and make technology more manageable. I would like to see more teachers adopt some of the technologies because I believe it would make their lives easier, but sometimes teachers are too busy for their own good. I want them to know that if they invest a little time to learn it on the front end, it will save so much time in the future.

One of our most tech-savvy teachers on campus teaches in middle school. He spent his first couple of years working to develop a lot of digital resources. He put a ton of digital tools in place that now allows him to focus on improving his instruction. With all of the technology resources fully developed, he is much more efficient.

Episode 3: Training

Another significant part of my role is providing training to help teachers integrate new technologies into their classrooms. However, the responsibility is somewhat divided between me and whoever works with the academic area the new technology supports. For example, we recently deployed Storia, a reading website. I synced the software with Clever, which helps students and teachers easily log in using single sign-on. I provided training on how to access the website and log in. From there, the librarians take over training for use in the academic setting. Basically, I get them to the doorstep and whoever has the closest application to that technology takes over.

I rely heavily on training sessions, but we also have lots of videos and canned responses that we use to quickly help teachers with several topics. It is kind of a

knowledge base so that we can quickly send out a video or article to help them. If that does not help them, then I am happy to step in and offer more in-depth training.

Episode 4: Managing Technology

Since I arrived, our technology program has grown. It started with two data servers, an email server, and teachers' desktop computers. One of my priorities was to use my database skills to document everything I did. First, that helps me stay organized and keep up with a lot of information. With that system, any records I need are easy to find, sometimes even from my phone. Second, it would help the school easily continue if something were to happen to me.

Managing Laptops and Tablets. When I began, we had minimal access to computers for our students, but we are now one-to-one across campus. We eventually added a few laptop carts that would roll from one classroom to another. The most significant growth came in 2012 when we decided to implement a one-to-one MacBook program in our middle schools, which expanded into our fourth and fifth grades over the next couple of years. We also distributed iPads throughout our kindergarten through third-grade classrooms, so we have far more devices than when I came.

I am very security conscious with our devices, so I keep them locked down where only a few people have administrative rights. I use a cloud-based program called JAMF to manage our iPads, and one called Mosyle to control our MacBooks. The software allows me to manage the devices from anywhere I have an Internet connection. These programs were invaluable when we sent everyone home with a device in March for the COVID-19 lockdowns. As people needed Google Chrome, Zoom, or Flash updated, I

could push out the software from my home without needing to meet them or touch the computer.

Device repairs are another area we manage for our students and teachers. I have a technician on my staff that fixes the devices on site. We find Apple devices are reliable, but sometimes there are hardware and software issues. We try to help students develop responsibility and competency while using our devices, but we also understand that accidents happen. Generally, if it is a broken screen or accidental damage, we fix it the first time at a 50% discount on the parts. If it happens multiple times, we charge the family 100% of the cost. We still save them the labor hours on the repair, so it is usually still very affordable.

Classroom Devices. In addition to expanding access to computers, we significantly enhanced our classrooms with technology over the past 15 years. When making investments in classroom technology, I try to standardize equipment across all classrooms. For example, when we purchased projectors, I used the same model across campus to keep bulbs on hand and quickly troubleshoot any problems.

First, we added projectors and smartboards in the early 2010s, which many teachers enjoy using. At the time, I was surprised that some of our older, technology-averse faculty were the fastest to adopt the smartboards. Eventually, the technology behind smartboards changed, and now they are built onto a flatscreen TV with touch capability. These new touch screen smart boards are great as they are like a computer in and of themselves. They also have built-in Airplay, so teachers can easily project their computers wirelessly from anywhere in their room.

One of my favorite projects is the addition of classroom audio across campus. It is a small receiver that works with ceiling-mounted speakers in each room. It enhances the teacher's voice and makes it easier for students to hear. Teachers love using that device since their students can hear them while also reducing the strain on their voice. This system has been beneficial this year since teachers have to wear masks all the time. Their students can still hear them clearly, and the teachers do not have to yell through their masks. Our admissions director even told me that it became a talking point as they bring prospective families through campus while on tours.

Episode 5: Unsuccessful Rollouts

In 2009, we had a visiting teacher who used a Bluetooth tablet as they projected their lesson. They used it very effectively in their instruction, and I thought these would be a great addition to our classrooms, so we purchased one for every teacher. Ultimately, the tablets did not pair well with our Mac computers. They used an early version of Bluetooth that was not very reliable either, so many teachers never adopted them. In hindsight, I wish I had developed a pilot program in a single grade. I could have quickly figured out that the device would not work in our environment, which would have saved the school a lot of money.

Although that project was not successful, I did learn from the experience. A project failure like that is a part of growing and pushing yourself. It is challenging to have failures in our role because projects are expensive. You also don't want anything you work on to break because everyone else relies on what you are doing, especially when working on large network projects.

Large purchases in technology are kind of treacherous. Often new technology projects involve a lot of expensive hardware that becomes a sunk cost. There is no way to quickly replace a device that does not work out well in our setting. In terms of software, though, it is usually pretty easy to change since most programs are now subscription-based.

I feel like part of my role is being an informed consumer so that I pick devices that will succeed in our environment. It is also essential not to allow technology to become the tail that wags the dog. Often, new technology becomes a driving force in instruction when instruction should drive the use of technology. I have to explore why we are investigating purchases and justify the expense from an instructional perspective.

Episode 6: Network Management

As we added devices, we also had to grow our network infrastructure and bandwidth to handle the increased traffic. When the new program began, we upgraded the Internet speed to 100 Mbps and gradually upgraded it to 500 Mbps, where it currently remains. We also had to upgrade our wireless network to handle laptops and iPads that didn't have a wired connection.

One especially beneficial thing is selecting vendors that provide a lot of visibility and transparency into the network. Our wireless system provides cloud-based management, so I can easily monitor the network. The switch vendors are also adding a graphical interface, so managing those is getting simpler over time. I try to make sure I use products that I can manage and understand on my own.

A few years ago, we had to upgrade our firewall, so I ordered the device well ahead of time and set it up in my office. We could not do a direct upgrade from our old

firewall, so the new one had to be configured from the ground up. Over time, I sat down and built the firewall configuration and learned a lot about the system as I set it up. Now I am comfortable managing the device independently since I know how I set it up. If you have an outside vendor configure everything, you will always rely on them when something goes wrong. I want to know that if there is an issue with our network, I do not have to wait for someone else to troubleshoot it.

Security. Another responsibility recently added to my role is managing the technical aspects of our campus security. Our campus is not a traditional school building, and many of the classrooms have external doors that were easily accessible. As we explored ways to secure our campus, we decided controlling who can access our buildings and classrooms was vital. Now we only have three entry points for visitors with access control badges for teachers and four-digit codes for students who travel between buildings. Additionally, we decided to add 30 security cameras to both interior and exterior parts of campus. All these new security devices tie into the network, so I am responsible for managing them.

Episode 7: Student Interactions

Even though I am not in the classroom, I do enjoy getting to interact with students. They keep me on my toes and test the limits of our system. At one point, we could not block extensions in Google Chrome on our students MacBooks. Even though we have filters in place, some of our sixth-grade students added a VPN extension to Chrome, which allowed them to get around the filters. Most of the time, they just want to play video games or watch harmless videos on YouTube, but we still need to stay ahead of these issues. What is funny is how they will always blame it on their friends. Their friend

installed the VPN extension, so it is never their fault. Luckily, our MDM, Mosyle, released a feature that allows us to block Chrome extensions universally, so we found a way to remedy that problem. These types of situations help us understand, see, and fix weaknesses in our systems.

Episode 8: COVID-19

The COVID-19 shutdowns began during our spring break. Our administrators decided to take the week after spring break off to allow our faculty to prepare for remote learning. Luckily, most of our management systems and software were already based in the cloud, so there were not many challenges from a technical standpoint. The lockdowns and remote learning served as a validation for the strategy to move everything to the cloud over the past few years. As we took the two weeks to prepare for the transition, I really only needed to solidify an online antivirus solution, a way to push updates to users' devices, and find a way to provide remote support. Many of these tasks were already in process, but the pandemic certainly accelerated our adoption.

Remote Support. One of the significant challenges of the lockdowns involved providing remote support for our teachers and students. We decided to have open office hours on Google Meets that were running throughout the school day. The other two members of my department and I worked on a rotating schedule in Google Meets, which allowed users to join and request help whenever necessary from 7:30 a.m. to 4 p.m. After hours, we rotated staying online one at a time to provide support for teachers as they prepared for the next day. One of us checked and resolved support tickets up until 9 p.m. each night. We had to be very accommodating in our schedule to help teachers with their

technical problems. In addition to using Google Meets for communication, I pushed out a program called Splashtop, which allowed us remote access and control of users' devices.

Current Year. We continue to provide remote support this year, even as we have returned to campus. We try to make sure we remain at least six feet away from our teachers and students so that we do not wind up in quarantine. One of my techs helps coach soccer and wound up in quarantine after riding a bus next to a student for right at 10 minutes. That put us a man down for several days. Since then, we focus on maintaining our distance so we can continue to provide support on campus. Due to those restrictions, we try to fix most problems remotely. Teachers submit a request for help through an online ticket system, and we try to resolve issues through chat and remote support software. Although we keep our office open during school hours for students to drop off broken devices, we remain conscious of how long we are around one another.

Recently, a teacher wanted to provide an assessment to both in-person and remote learners but was worried about cheating. Using our remote access software, we logged into her computer and set up a Google Form that kept students from accessing other websites while they were taking the test. Using our MDM and Google software, we performed every step of this process online and never stepped foot in a classroom.

Obtaining Equipment. A normal summer is already busy for my staff and I, but this year was exceptionally busy trying to prepare to welcome students back to campus while also supporting online learners. I normally like to test equipment thoroughly before purchasing and installing it, but this summer we had to rush to purchase everything. For example, we decided to use OWL cameras, which provide a 360-degree view of the classroom. The entire purchase and installation of this device felt much more rushed than

other systems I installed in the past. Due to supply chain issues, we had to decide and purchase everything very quickly to ensure it was in place on the first day of classes. I also ordered an ozone cabinet during the summer, which helps disinfect devices. It is early December, and it just now came in, so products take much longer to arrive than in years past. I felt behind throughout the summer due to the rush of receiving and installing all of the new technology while also completing all of the normal work we perform during the summer.

We also had very little time to train teachers on how to use the new cameras and software. The first two or three weeks of school were filled with requests for help setting up Google Meets and the OWL camera correctly, but that settled down soon after. I also ran cabling from the classroom sound systems to each teacher's laptops, which prevents them from having to wear an additional wireless mic. I tried to streamline the process of teaching remote learners and make it as smooth as possible for our teachers.

Online and In-Person Learning. We provide a synchronous learning experience for our students learning remotely. They log in to their classes live through Google Meets and see the classroom with a 360-degree view through the OWL camera. Overall, this system provides a great experience for our remote learners. It is heartwarming to drop by a class and see how the students can interact with one another and their teachers even though some are at home. Early on, we had some issues with the expectations of remote learners. Some parents had unrealistic expectations of our teachers, requesting they always face the camera while managing a full class of in-person learners. We also had some families who would request to move to remote learning while they went on a vacation, which we could not allow. Trying to teach both in-person and remote learners

provides teachers with a significant challenge, so we try to minimize the number of remote learners and restrict it to those in quarantine or those with health concerns.

We had one teacher request to teach from home due to health concerns. We set up a desktop computer in their classroom that they can access from home. It connects to their smartboard. There is a proctor in the classroom that facilitates class while the teacher projects through the smartboard and teaches the class from home.

Portrait of Mike

Currently in his 10th year as a technology director, Mike serves as the director of technology at a K–12 independent school in middle Tennessee. Mike has 20 years of educational technology experience and worked at three different independent schools throughout his career. He has supported technology in independent schools ranging from a small school with 300 students to his current school with 900 students.

Mike grew up in middle Tennessee, where the music industry thrives. Like many in the area, he enjoyed music and playing in bands. Mike and his brother even developed a small recording studio utilizing technology before graduating from high school. He chose to pursue an undergraduate degree in recording industry management and graduated in 1995. As he began his career in the recording industry, he met his wife and soon realized that his field would not support a family.

Mike also spent a large part of his childhood involved in swimming and started coaching before graduation. With his background in coaching, he felt he could become a teacher and also coach swimming. He went back to school and received a teaching certificate in seventh through 12th-grade business. Mike started his first teaching job at a Catholic school, teaching computers. After a year, he moved to another school where he became the assistant director of technology

and coached swimming. As he became more familiar with the technical side of his role, he added new responsibilities. His business management background also helped him progress in dealing with the financial side of the job and the managerial skills he needed. Eventually, he went back to school and obtained a graduate degree in educational technology.

In his current position, Mike is a member of the senior leadership team and reports directly to the school's headmaster. He oversees all aspects of technology at the school, including network infrastructure and security, and all devices issued to faculty, staff, and students. He currently manages a team of two other technology support specialists who assist in day-to-day technology operations.

Mike's Story

Episode 1: A Typical Day

A typical day for me starts around 7:30 a.m. when I check in with my team. We usually go over any known issues and check the help desk for open tickets. There are some mornings where this is an emergency issue that requires all-hands-on-deck for that one problem. Most mornings, though, we meet and prioritize tickets and let each staff person handle their typical responsibilities. After that meeting, I usually have some meetings to attend or work on an upcoming project.

I wish I could say it was a little more structured, but there are some days where I am just reactive to whatever problems come my way. I try to be proactive and maintain our network and devices, but there will always be failures with technology equipment. Even with a regular maintenance plan, there will be equipment outages or new issues with an update that arises.

I usually try to spend some time walking around campus talking to people to see how things are going. Sometimes, that is how I catch issues that are not reported in our help-desk ticketing system. If I am walking around campus and talking to our staff, I can keep an eye out for any issues that slip through the cracks.

Episode 2: Varying Experiences

I believe the experience of independent school technology directors varies widely between schools. I know several in the area, and each of us has a differently defined role within our school. Some of us have additional staff to help with the job, and others are the only member of their school dedicated to technology.

Even the experience levels among other technology directors vary widely. I know some technology directors trained in network management, while others come from a more academic background. In some schools, I have seen them split the role into two jobs. One person maintains the network and all hardware, while the other focuses on the educational side—with instruction and innovation. One of the critical skills a school technology director can have is understanding how a network runs, managing the network, and fixing it.

Episode 3: Network Management

Since I began working in this field, one of the most significant changes to the job is managing the network. When I first started, network management was complicated and usually required an outside vendor to install, configure, and manage the wired and wireless network. Over the past few years, systems simplified, so it is easier for our staff to handle all those demands. Even as a technology director whose knowledge is an inch deep and a mile wide, I can effectively manage those systems. All network management

is now in-house, so my staff and I can now handle all aspects of the network, from hanging the access points to configuring all the devices.

Episode 4: Troubleshooting

One of the most difficult challenges I face is when we encounter technical issues that are not easy to troubleshoot. Sometimes issues stay hidden. A few years ago, we had a time where our network speeds dropped dramatically. It was frustrating because I could not trace the problem and figure out what was causing the slowdown. I would monitor our switches and watch traffic speed up and slow down, almost in waves. We spent about a week and a half trying to track down the issues. Luckily, we had just contracted with a vendor to clean our fiber connections across campus, and as they were working, they found one of the fiber strands was going bad. That issue was tricky because it affected a large part of our campus and caused many problems for our end-users. It is usually pretty easy to find the source of a problem when something on the network is completely broken, but it's challenging when a device or connection is slowly going bad. In this case, I was thankful my administration was understanding and showed patience as we tried to resolve the issue.

Episode 5: Stakeholder Interactions

Teachers. Communication with teachers and staff is a crucial part of this job. I try to be proactive in my role and make sure everything works smoothly for our faculty. I try to make sure and spend some time walking around campus and interacting with our teachers in a way that allows them to discuss issues in their classrooms openly. I worry about the small troubles they face that they do not feel worthy of reporting as a support ticket. An example of this situation is coming across a classroom with an odd coloration on the

projector screen. When I asked the teacher how long it had been that way, they told me it had been several weeks, but they had just learned to live with it. I purchased an inexpensive VGA replacement cable for the projector, and it only took a few minutes to resolve the issue. In another case, a teacher never authenticated on our private network with their password, so they were using our guest Wi-Fi, which prevented them from accessing several resources, such as faculty printers and Apple TVs, for remote projection. In both cases, they did not feel like the issue was worthy of filing a ticket, even though the fix was straightforward for our staff.

I worry about those types of situations because I want technology to work for our teachers, so I try to communicate that faculty need to report any issues they face with technology. My standard is that if a teacher cannot resolve the problem independently within a minute or two, they should turn in a support request. I also feel like letting these types of issues go under the radar hurts our department and our school. Broken technology can hurt teacher morale, but it also sends a negative message to our students and parents, damaging the entire school's brand and reputation.

I try to provide teachers with all the technology resources they desire, but sometimes I have to say no. My communication skills are critical in these scenarios, as I am delivering bad news. In one case, a teacher wanted to use Reddit as a discussion board for their classroom. It was a creative implementation of the tool, as it would allow their students to up-vote and down-vote various threads of the discussion, but it required me to allow the entire platform through our filters. Reddit is an open platform, and there are many materials our students do not need to access on that site, so I had to turn down their request in this case. There was no malintent on the teacher's part, and they were

creatively using an existing tool. Still, ultimately, I felt the negative of allowing the entire site outweighed the benefits.

Parents. Throughout our one-to-one program, parents' expectations of the program have varied widely. It is interesting to see how some parents want their child's device locked down, while others have almost no concern over the access the device provides. In one instance, I had a parent tell me they did not feel their child was mature enough to have a device of their own, so they requested I shut off the Internet for that computer. While this was technically possible, I had to discuss the impact that action would have on their child's learning. Yes, shutting off the Internet connection could keep them from accessing harmful content. Still, it could also prevent them from accessing content and benefitting from the enhanced learning opportunities the device provides. Fortunately, technology directors have many more tools to help assure parents, such as cloud-based filtering. Now, we can monitor and filter content no matter where the student has the device. It also provides parents with the ability to monitor their child's Internet activity through an online parent portal.

Students. Interactions with students are sometimes one of the most fun parts of my job. The exchanges are just like those with parents: they vary widely. Some students are not tech-savvy, who blame everything on Wi-Fi. They will bring their iPad to me and claim the iPad is not working when they have 30 apps open, and they have not rebooted the iPad in several weeks. We quickly reboot the iPad and clear out the running apps, and everything starts working again.

On the other hand, we have some incredibly tech-savvy students who keep us on our toes. I learn a lot from my interactions with them. Often, they try to get around

systems we have in place or access sensitive resources. Even when we have controls to prevent it, some students will find a way to get around them. Our systems really can only serve as a deterrent. If a student has the intent, they will figure out a way to do it. In those cases, I like to try and redirect those students into a beneficial activity. I learn a lot by keeping up with those students and seeing what technologies they use. Recently, I heard about how they can create a denial-of-service attack through websites. The students use them to knock their friends off video game websites. Even though this practice is illegal, some websites allow them to do this to their friends easily. I probably would not have known about this type of service if I did not keep up with some of our students' practices.

Episode 6: Leadership

Since I began working in educational technology 20 years ago, it has been interesting to see IT [information technology] pulled into school leadership. I report directly to our headmaster, so I am at the highest leadership level, report-wise, in our school structure. Everything we do at the school, from business operations to classroom instruction, involves more technology than ever before. This level of integration across the campus pulls me into many more advisory roles than before. I serve in an advisory capacity on the academic leadership team and advise on operational committees.

Technology Staff. When I moved into my first director role, I worked with several IT guys that were previously my peers. They heavily emphasized the technology side but did not want to deal with people. In some cases, a teacher would bring a problem to the department, and they would even say, "Well, it sucks to be you." That type of mentality cannot be anywhere near my department, as we have a tremendous influence on the adoption and integration of technology in our school. Working in technical support in

a school means that I will see people when they are completely frustrated and upset. My goal is to remove the roadblocks that keep them from being more productive and happier in those situations. I have found in those times, a little kindness and listening go a long way. Also, as I guide my department, I try to instill in them that no matter how menial the task, we need to do it if it improves everyone's situation. There have been situations where my staff did not want to move in a particular direction, but I chose to pursue it because I felt it would move the entire department forward.

Early on, I worked with several staff members who held the 'sucks to be you' mentality I previously mentioned. As their supervisor, I found myself working to control the damage and fix relationships with other school community members. There have been situations where I have had to redirect others to a different position outside of our school. I firmly believe that if someone is not happy in a job, they need to find a different job. So in some cases, I have tried to encourage technology staff members to leave the school. I try to gently redirect them to another position by providing a reference and assisting them in finding another job where they will be happy. I find that approach works best, rather than firing someone, which increases the school's liability and stress.

I currently have one of the best staff I have overseen in my time as a director. One of them came from the technology support field in a corporate setting, so he has a lot of knowledge. He was tired of the toxic environment in the corporate world, so he has been great working at our school. He shows patience as he works on finding solutions for our teachers and students.

I also recently hired a person with no technology background at all. His experience is in English and accounting, but he is very personable and kind. I hired him

based on his ability to communicate, learn, and build a good rapport within our school community. He has been learning on the job for a few months and has done well working with teachers and students.

Academics. I sit on the academic leadership committee, a large group of leaders across campus that works to align curriculum and consider pedagogy and classroom practices across our lower and upper schools. Sometimes I feel a little out of place in this group as they discuss pedagogy and practice, so my membership is more of an advisory role. I make recommendations on new technology tools or help them consider whether a tool will work well within our environment. Members of this committee will come with an idea for a project and ask for recommendations, so I spend a lot of time researching new tools and figuring out how we can implement the changes.

Strategic and Campus Planning. One part of my role that changed substantially over the years is how involved I became in strategic planning and planning for new buildings on campus. A few years ago, when we built a new building, I was brought in late in the process. I was asked if there needed to be wiring in the building for technology since most of our Internet access had moved to wireless. Even when a building mostly uses wireless Internet, data cabling still needs to be run to support the wireless system. At that point in the building process, running wires was more challenging, but we had to do it because it became a budget issue. The construction group had not factored that cost into the budget, so we had to do it ourselves to save money.

In contrast, we broke ground on a new facility last year, and I have been involved in the planning process since the beginning. I have sat in on multiple—almost too many—meetings on the technology needs for that building. We are just now getting close

to the point where we will start having wires run for the network in that facility. But there is a plan for this building. Now, I am much more involved in the planning stages of many processes on our campus since technology is an integral part of classroom instruction and campus operations.

Episode 7: Budgeting

Another significant part of my role is figuring out what is possible within our budget and keeping our network working in production while staying within the financial constraints of an independent school. Over time, I have tried to find technology solutions that provide a great experience but cost much less. I try to look for low-cost or free options and ask myself if the less-expensive option will meet the necessary production standards on our network. The first time I did a network refresh at my current school, we spent well over $100,000 for new switches and Wi-Fi access points. With the most recent refresh, I spent about a third of that using less expensive solutions that do not require subscriptions or fees. I also switched to a firewall solution that allows us to use an older server with the firewall software, which means we did not overpay for underpowered hardware.

There is a trade-off when using lower-cost solutions. Often, the companies do not provide any support, and troubleshooting solutions are mostly found on user forums. Without a support license and training, I have had to learn each system's ins and outs on my own. If something goes wrong with the equipment, there is no one I can point the finger at or an external support team where I can push the problem.

Episode 8: Innovation

Whether I am trying to save the school money or looking for a short-term solution to our remote learning issues, I feel innovation is an essential part of my role. In one case, our

athletics department wanted to purchase cases for some iPads used in the weight room. The case had a built-in magnet that helped it attach to the weightlifting equipment. The purpose was to allow students to track their health data as they worked out, but the athletic staff felt the iPad needed to attach to the equipment as not to get damaged while lying on the floor or a weight bench. The cases they picked out were about $200 each, so I asked if I could explore other options. I was able to find a $20 iPad case and some inexpensive neodymium magnets. When combined, the cases provided a protective cover with a powerful magnet to keep it attached to the weight racks.

As we worked on the weightlifting iPads, one of my techs had the idea to use the magnets to attach our wireless access points to the drop ceiling grids using the same magnets. Now we can quickly install and remove access points from around campus. I was a little worried about wireless interference with a magnet so close to the access points, but we have not had any trouble with our wireless network since we started using them.

Our athletics department pays for a service called HUDL, which allows coaches to film their games, share them with their teams, and provide commentary over the film. It is an athletically aimed solution, but we could adapt it for classroom use in our speech classes. Our speech students get feedback from the speech coach, who has also sent it to other speech professionals across the country.

Finally, the streaming requirements due to the pandemic have forced us to be innovative in our classrooms. We equipped each classroom with an iPad for teachers to use with Zoom, but sometimes audio was a challenge. So, we ordered some belt-pack

microphones and a speaker to help boost their voice levels. It has also helped a lot of them with projecting their voice to in-person learners while wearing a mask.

Episode 9: COVID-19

Spring. When all the schools started shutting down in the spring, I decided one of the most essential things our department could provide was remote technical support. I decided on a software program that allowed students, teachers, and parents to go to a website and software that allowed our staff to connect and take over their computer remotely. The installation was easy for the end-users, and the software provided us with the ability to control their computer and fix it no matter where they were.

One of the critical decisions made early in the shutdowns was what video conferencing platform we would use. As we began remote learning, we adopted Zoom, which was a new platform for many of our users. Early on, my primary role was providing support on how to use this service effectively. I tried to ensure our teachers knew how to set up their online classrooms to help them manage their students and allow them to provide effective remote instruction. Zoom faced many challenges this spring as it scaled to handle so many people working from home, along with so many schools starting remote learning. One significant security challenge involved ‘Zoom-bombing’, where people would gain access to a Zoom session and shout obscenities or post inappropriate content on the screen. I had to focus on training and helping teachers learn to set up their classrooms to prevent those types of security issues.

Summer and Fall. As we moved into the summer, our leadership team spent many hours in meetings planning for how the fall would look. We tried to prepare for any foreseeable scenario once school started back. Even with all the planning, we had to

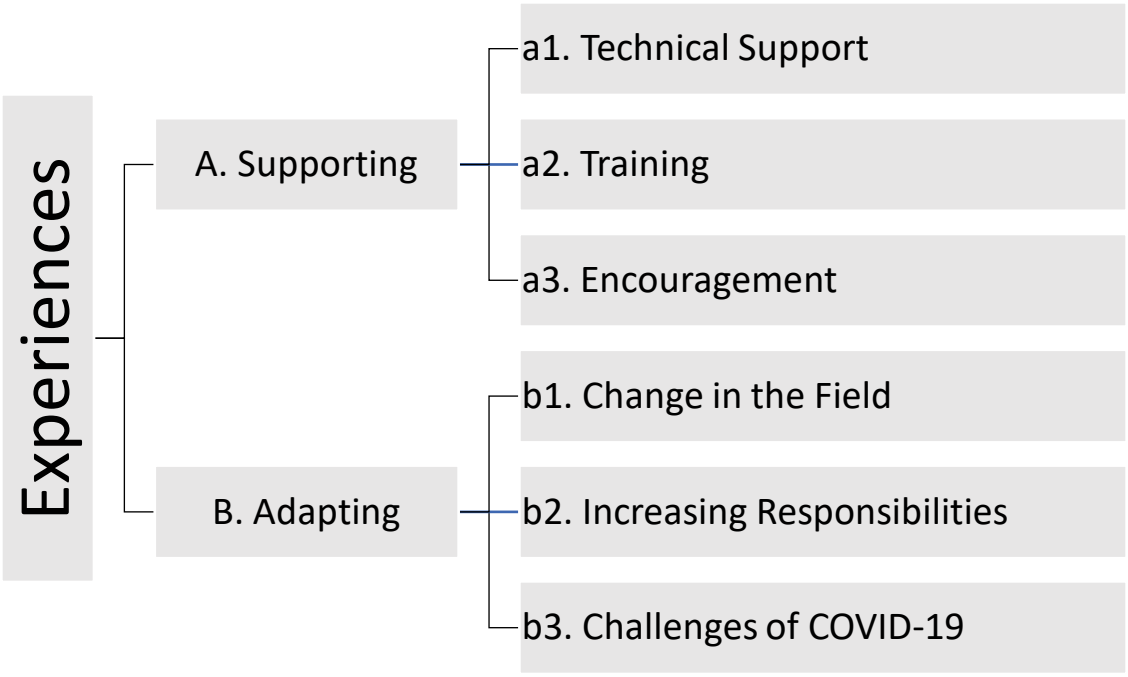
make a dramatic shift right before school started. Initially, we planned to only offer asynchronous learning experiences for quarantined students and at-home learners. Still, our area experienced a significant uptick in cases in the days leading up to school starting. We decided to provide synchronous learning at the last minute, as we anticipated more students learning from home. Fortunately, we had just upgraded many of our Apple devices, which allowed us to set aside some of the older iPads for synchronous learning with Zoom. We bought additional charging cables, adapters, and tripods so that teachers could use them in any classroom. It has worked well outside of the iPads, occasionally locking up due to video conferencing demands. Our network handles the load well, as we had upgraded our infrastructure over the past few years. We were very blessed to have the network upgrades in place and the extra iPads available to facilitate synchronous learning.

Key Themes

In this section, I present the key themes that emerged from an analysis of participants' stories. The two major themes that emerged from the data are (a) supporting and (b) adapting. Each theme is divided into subthemes that further organize the presentation of the findings. The theme of supporting is further divided into (a1) technical support, (a2) training, and (a3) encouragement. The theme of adapting is further divided into (b1) change in the field, (b2) increasing responsibilities, and (b3) challenges of COVID-19. Figure 2 illustrates the prominent themes and subthemes of the findings.

Figure 2

Prominent Themes and Subthemes



Theme A: Supporting

Supporting refers to the leadership behaviors of technology directors that promote higher levels of technology use and adoption within their schools. Throughout the interviews, participants described their support of technology use within their school community in a variety of ways. Table 3 presents illustrative phrases from the narratives that reflect the theme of supporting.

Table 3

Illustrative Quotes: Supporting

Participant	Illustrative quote: supporting
Sarah	"Sometimes, I call myself the technology counselor."
John	"The need for more devices generates more problems. There are far more devices available to fail at any given time."
Sam	"Sometimes we run into people that are as frustrated as anybody is going to be in a school environment."
Mike	"My job is to smooth things out and make technology more manageable."

As noted, three subthemes, (a1) technical support, (a2) training, and (a3) encouragement, further organize the participants' leadership activities. Each of these is defined below.

A1: Technical Support. Providing technical support for both hardware and software is an important part of each technology director's position and was supported through their narratives. Throughout the interviews, participants provided stories of overcoming technical issues to keep the entire school online, along with stories of helping individual teachers with hardware and software problems. Providing prompt technical support for hardware, software, and network-related issues allows teachers to focus on using the technology in creative ways to enhance learning. As Sarah described a typical day, she highlighted several instances where she provided technical support for users on her campus. Within the first couple of hours of her day, she repaired an administrator's laptop and processed an insurance claim for a broken iPad. She described providing support through the pandemic as a challenge, saying, "Sometimes there will be technology glitches from home, which can be kind of challenging, walking people through that because I am here, and they are at home." She also mentioned helping a teacher with a software issue on their laptop.

Early in the first interview, John noted the number of devices on campus and mentioned that statistically, there will always be problems with that amount of technology present. When talking about the technical issues, John stated that "in some ways, it's more stable, but in some ways, it is more finicky, not because technology is less stable, but it's like there's just more to break." Due to the importance of technology in the school, especially during the pandemic, quick repairs became more vital.

Mike emphasized providing technical support. He talked about his goal to be proactive in performing regular maintenance to avoid significant technical issues. He realized there are failures that come up randomly; however, his goal is to prevent issues before they arise. Describing his daily routine, Mike said:

> I'll spend a little time just talking to people around campus and seeing how things are going. One of the things we worry about is the issues that don't make it to tickets … what are the issues we missed three months ago or that users learned to live with.

Mike wants to ensure that even the glitches or issues that users believe are insignificant are resolved. He defined his perception of a reportable problem by stating, "If a teacher can't fix a problem within 30 seconds to a minute. If it's not fixable within that time standard, then it is a problem."

Sam also felt technical support for students and teachers was a significant part of his position. He said he is there to "facilitate" technology and help teachers with any technical issues they face. Describing his role within the school, Sam stated, "My job is to smooth things out and make technology more manageable." Sam structured his department around providing timely support for teachers, with one of the staff members dedicated to repairing broken devices. Recounting a typical day, Sam said, "Most of the day, it's just being in the office being available

to run down any tickets." He also credits his administration with keeping him out of an instructional role because it "allows me to really focus on the infrastructure and be available for the teachers when they need me." Table 4 provides illustrative quotes of the subtheme technical support.

Table 4

Illustrative Quotes: Technical Support

Participant	Illustrative quote: technical support
Sarah	"Sometimes there will be technology glitches from home, which can be kind of challenging walking people through that because I am here and they are at home."
John	"In some ways, it's more stable, but in some ways, it is more finicky not because technology is less stable, but it's like there's just more to break."
Sam	"Most of the day, it's just being in the office being available to run down any tickets."
Mike	"If a teacher can't fix a problem within 30 seconds to a minute. If it's not fixable within that time standard, then it is a problem."

A2: Training. All four participants mentioned training and professional development as a part of their role. Training refers to actions that aid in the development of teachers' skills in using technology. Training may include large seminar sessions, small-group professional development, or even one-on-one mentoring. The type of training offered differed between the directors. While Sarah focused on classroom integration in addition to technical training, the other participants focused mostly on technical training. As Sam stated, "We kind of get them to the doorstep, and then whoever has sort of the closest application to that technology takes over."

With her background as a technology coach, Sarah emphasized the training portion of her job. Early in the first interview, she stated:

> So we do a lot of training, we've come a long way in the last three years that I've been in the position. We've really trained everybody on Google and using G Suite, which was a tremendous help when we started quarantine in March.

Discussing the COVID-19 pandemic, she stated that her priority was training teachers on how to use Zoom. As she described a typical day, Sarah mentioned two instances where she worked to train individual staff members on how to use the software. Although she works with a staff of technology coaches who perform much of the training, Sarah oversees all the topics and works with the coaches to ensure content is relevant for their teachers.

Sarah's approach to training involves providing numerous options for teachers to choose from, which she feels makes it more applicable and relevant. Discussing this approach, she said, "Letting teachers pick their training sessions has been very good. When we let them choose what they want to go to, they are going to something they are interested in." She also feels training sessions must be individualized to the teacher's ability level. When describing a large-group session, she mentioned difficulty working with differing ability and comfort levels, stating, "Trying to train everybody at every different level did not work. So, I learned very quickly you cannot treat everybody in one petri dish. You have to separate them out and do small group sessions."

John believed training is best achieved in a one-on-one setting that provides an opportunity to work with faculty members on specific topics that are relevant to their classrooms. He stated, "You have to find surgical ways, so I find myself doing more one-on-one type things." He later said, "Most of the time when you bring thirty people in for a thirty-minute training session, half of the people aren't going to get anything from it. It's when you sit down one-on-one; they are going to get it."

Mike focused on the technical and practical aspects of helping teachers use technology. Describing the initial school closures due to the pandemic, Mike stated:

> We did a lot of teacher training and a lot of reminders about when you set up your Zoom class; this is the way it needs to look. And here is how you can manage your students on Zoom, and here is what you can expect out of them. And just really setting realistic expectations for class management and class setup.

Mike also mentioned training teachers to protect their privacy and their students' privacy while using Zoom for remote learning.

Sam talked about how training is best achieved in small doses. Rather than having long orientation meetings for new staff members, he provides all new teachers with access to a course in Google Classroom with self-paced videos and quizzes. He feels this allows them to learn the material at their own pace and review areas they need more time with. He also feels this provides them with an example of how blended learning can be achieved. Sam sends out short newsletters with short tech tips that provide training on software adopted by the school. As the school adopted Google's suite of productivity tools, Sam provided guided exercises for staff members to learn each of the new programs. Although he prerecords many of his sessions and develops them as self-paced modules, Sam mentioned that he is always available and happy to help any staff member one-on-one as needed.

Sam was careful to point out that he primarily trains staff on the technical and operational side of the software. When describing a recent rollout of a reading program, he outlined his portion of the training involved helping teachers access and navigate the site, while the librarian focused on training them on using the software in the classroom. He summarized his role, "Basically, we kind of get them to the doorstep, and then whoever has the closest application to

that technology takes over." Table 5 provides illustrative quotes concerning the participants' leadership in providing training and professional development.

Table 5

Illustrative Quotes: Training

Participant	Illustrative quote: training
Sarah	"So, we do a lot of training; we've come a long way in the last three years that I've been in the position. We've really trained everybody on Google and using G Suite, which was a tremendous help when we started quarantine in March." "Trying to train everybody at every different level did not work. So, I learned very quickly you cannot treat everybody in one petri dish. You have to separate them out and do small group sessions."
John	"You have to find surgical ways, so I find myself doing more one-on-one type thing."
Sam	"Basically, we kind of get them to the doorstep, and then whoever has the closest application to that technology takes over."
Mike	"And so, we did a lot of teacher training and a lot of reminders about when you set up your Zoom class; this is the way it needs to look. And here is how you can manage your students on Zoom, and here is what you can expect out of them. And just really setting realistic expectations for class management and class setup. And even some teaching methods and things like that."

A3: Encouragement. Although ensuring fast technical support and functional equipment for teachers removes some of the barriers to technology use, the participants also work to encourage positive attitudes and beliefs about technology among teachers in their schools. In interviews with Sarah, her strong desire to help teachers overcome their fears and anxieties about technology became a prominent part of the discussion. This was especially true with the amount of new technology introduced throughout the pandemic.

Sarah said, “Sometimes I call myself the technology counselor.” Sarah highlighted working with an early elementary teacher who hesitated to use technology. In one session, a teacher broke down, struggling with a new requirement for technology integration in principal evaluations. Describing how she worked with the teacher, she said, “I reassured her that she is an excellent teacher and tried to walk through ways technology can easily be integrated into the classroom.” Sarah also highlighted instances where teachers came to her office and voiced frustration with technology requirements. In her narrative, she reflected, “They just need me to sit and listen while they talk through it. A lot of times, they figure it out on their own while they talk to me.”

John’s narrative highlights situations from the pandemic to explain his influence on teachers’ attitudes toward technology. About helping teachers through their fears about teaching online, he said:

> When teachers have had to teach virtually, it was met with a lot of fear. The critical thing in this situation is that we had to start doing it, and sometimes that is the hardest part. The nice thing about technology is that nothing is ever finalized, so you know if things are rough, you can adjust.

Throughout his interviews, John asserted the inevitability of issues due to the nature of technology and the amount of technology used today. While working with teachers through those issues, he described seeking to “continuously reassure our faculty that it will be ok if things are not perfect.”

Sam has approached his role as an opportunity to make technology easy for his teachers. He stated, “I believe that time is an incredibly precious commodity for our teachers. I also think that technology can provide them with efficiencies, giving them more time to focus on

instruction." About his efforts to help teachers managing simultaneous in-person and remote learners, Sam stated, "So we really did try to think of ways to smooth that out for teachers as much as possible to take out any sort of extra things that they had to do to make stuff work."

Sam also managed a large knowledge base for teachers, allowing for quick access to support articles and videos on the software they use daily. The files are readily accessible to send to a teacher whenever they email a request for support. Throughout remote learning in the spring of 2020, Sam and his staff remained available until 9 p.m. to ensure teachers could prepare for the next day of instruction without any technology-related issues.

Mike believed his department influences teachers' attitudes toward technology through their interactions. As the leader of the technology department, Mike shared concerns about how teachers perceived the help he and his staff provide. Mike wanted to ensure his department moves the school forward in its use of technology, stating that "even if it's a menial task that some directors wouldn't want to do, I'm still going to do that because it helps everybody. It improves the morale."

In one story, Mike noted interactions with a faculty member who had little confidence in their abilities with technology. As he described it, the teacher said, "I need some help with this; I'm not very smart." Mike shared that the faculty member held a Ph.D. and that he told them, "You have a Ph.D.; you are very smart. I'm sure this is something small. Let's take a look. No big deal. We got this." Mike took the opportunity to consider the faculty member's lack of technology-specific knowledge and did not assume that their academic credentials meant that they did not need support or encouragement.

When working with technology, Mike explained how "people's reactions can make or break a deployment, so it's all about managing the expectations and reactions to a deployment."

He continued, noting that "sometimes we run into people that are as frustrated as anybody is going to be in a school environment." As we talked, Mike elaborated about how he worries unreported issues can cause a loss of morale toward technology in the school. He highlighted an instance where a damaged cord caused a projector's picture to be odd colors. While he felt this issue reflected poorly on his department and it was a simple fix, he could not correct situations he was not aware of. Accordingly, he described attempts to be proactive in his identification of issues that then encouraged early reporting of even small problems. Table 6 provides illustrative quotes about providing encouragement.

Table 6

Illustrative Quotes: Encouragement

Participant	Illustrative quote: encouragement
Sarah	"They just need me to sit and listen while they talk through it. A lot of times, they figure it out on their own while they talk to me."
John	"When teachers have had to teach virtually, it is met with a lot of fear. The critical thing in this situation is that we had to start doing it, and sometimes that is the hardest part. The nice thing about technology is that nothing is ever finalized, so you know if things are rough, you can adjust."
	"Continuously reassure our faculty that it will be ok if things are not perfect."
Sam	"So, we really did try to think of ways to smooth that out for teachers as much as possible to take out any sort of extra things that they had to do to make stuff work."
Mike	"Even if it's a menial task that some directors wouldn't want to do, I'm still going to do that because it helps everybody. It improves the morale."
	"People's reactions can make or break a deployment, so it's all about managing the expectations and reactions to a deployment."

Theme B: Adapting

The second theme that emerged from the narratives was adapting. Adapting is used to describe the experiences participants described working within the changing field of technology and contextual changes that affected their leadership. The participants mentioned the magnitude of change they faced since beginning their roles, especially changes in network management and the number of devices they oversee. The COVID-19 pandemic provided numerous challenges, requiring the participants to quickly adapt to remote support and device management while identifying and providing training on new tools to help facilitate learning at home. This theme includes three subthemes: (a) changes in the field, (b) changes in responsibilities, and (c) challenges of COVID-19. Each participant described experiences where they were forced to expand beyond their normal skillset, as well as experiences where they were forced to adapt to changing contexts. Table 7 provides illustrative quotes about the theme of adapting.

Table 7

Illustrative Quotes: Adapting

Participant	Illustrative quote: adapting
Sarah	"And I said, oh, there you go. You know they're not using iPads in colleges. So just making sure our kids are prepared is one of the reasons why we changed that."
John	"The goalposts are always moving."
Sam	"We could not do a direct upgrade from our old firewall, so the new one had to be configured from the ground up. Over time, I sat down and built the firewall configuration and learned a lot about the system as I set it up. Now I am comfortable managing the device independently since I know how I set it up."
Mike	"I've seen tech directors get pulled into strategic planning and campus physical planning. It's gone from they used to build a building and never to talk to us. Now they build, and they know they need to talk to us."

B1: Adapting to Change in the Field. Each participant described experiences in which they dealt with change in the field of educational technology. John succinctly summarized this idea by saying, "We continue to add new technology to the school." The specific changes mentioned by the technology directors varied; however, each was required to adapt their skillset to a new form of technology or management within their school. Sarah described a change in devices currently happening in her high school, while Sam and John highlighted long-term changes in network management strategies. Mike noted changes in his involvement in strategic management and the construction of new facilities on campus.

A large project Sarah mentioned was the shift from iPads to Chromebooks in the high school. She described her reason for making the change, stating:

> My son—we were on a college visit—and he was talking to one of the professors. He was asking about what kind of computer he would need. He said that an iPad is useless. And I said, "Oh, there you go. You know they're not using iPads in colleges." So just making sure our kids are prepared is one of the reasons why we changed that.

Based on that conversation and discussions with teachers, Sarah began planning for a laptop program for their high school students. She began by exploring several laptop brands and operating systems to determine what devices would fit within the budget and meet the needs of their students. After deciding on Chromebooks, Sarah wrote proposals for the high school administrators and the school's board of directors. To implement such a large change, Sarah sought buy-in from teachers, principals, and the board. Once approved, Sarah began selecting specific devices and finding vendors that would provide device configuration, warranties, and content filtering for the new Chromebooks. The process began early in the fall and will conclude when ninth-grade students pick up their new Chromebooks before the next school year.

Mike brought up his recent involvement in a large construction project on campus and compared it to previous building projects. He stated:

> I've seen tech directors get pulled into strategic planning and campus physical planning. It's gone from 'they used to build a building and never to talk to us.' Now they build, and they know they need to talk to us.

Mike described the process, "I've been in multiple meetings, you know, maybe too many meetings, and we still haven't finished. We've planned and planned and planned." In his time as a technology director, his involvement in the process of planning for construction increased dramatically.

Cloud-Based Infrastructure. Both John and Sam mentioned working for several years to move their network infrastructure to a cloud-based management system. When he accepted his role as a technology director, John immediately began moving his school to cloud-based systems. In talking about that transition, he stated:

> I really saw this vision, like my passion is in cloud services, and so I really saw technology move in that way. So, I was really excited to move to that vision. That vision has been proven right time and time again through tornadoes and through the pandemic.

Throughout the past decade as a technology director, John gradually moved all network management to the cloud.

Sam was grateful for the transition to cloud-based management over the past few years in light of the pandemic and remote learning. Specifically, Sam brought up mobile device management (MDM) systems that allow him to remotely install updates and software to all teacher and student devices. He also mentioned that the last piece of the cloud-based system for his school involved cloud-based antivirus and content filtering. Sam said:

> So, all this stuff is really an extension of what was a strategy. I mean, as soon as we got Gmail a decade ago, it was a move to the cloud. It did accelerate a couple of things we had left to do.

The pandemic forced Sam to finally adopt a new platform, which provided control while students and teachers worked from home. Table 8 provides illustrative quotes for the subtheme changes in the field.

Table 8

Illustrative Quotes: Changes in the Field

Participant	Illustrative quote: changes in the field
Sarah	"My son, we were on a college visit, and he was talking to one of the professors; he was asking about what kind of computer he would need. He said that an iPad is useless. And I said, 'Oh, there you go. You know they're not using iPads in colleges.' So just making sure our kids are prepared is one of the reasons why we changed that."
John	"I really saw this vision, like my passion is in cloud services, and so I really saw technology move in that way. So, I was really excited to move to that vision."
Sam	"So, all this stuff is really an extension of what was a strategy. I mean, as soon as we got Gmail a decade ago, it was a move to the cloud."
Mike	"Over the past few years, systems simplified, so it is easier for our staff to handle all those demands. Even as a technology director whose knowledge is an inch deep and a mile wide, I can effectively manage those systems."

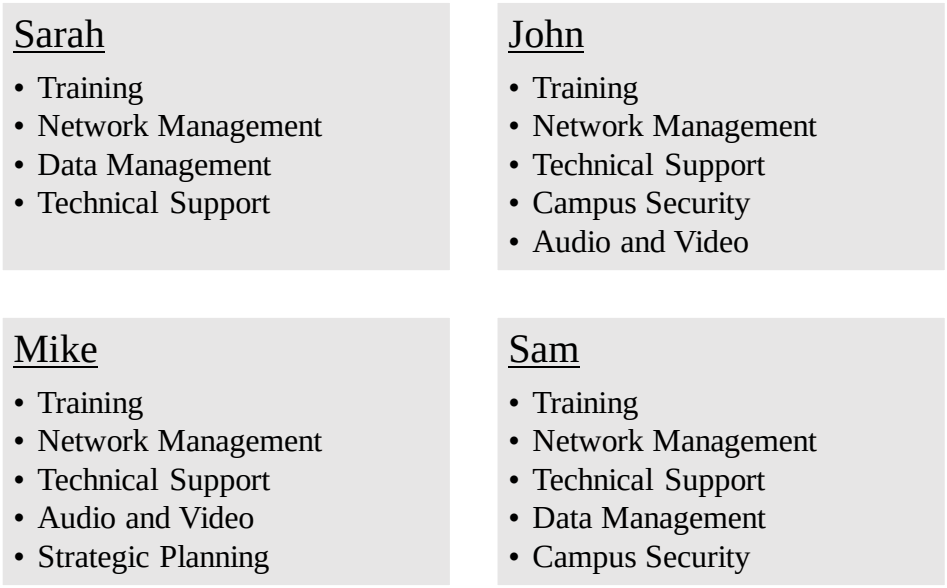
B2: Adapting to Increasing Responsibilities. Job descriptions and responsibilities varied across the roles of the four participants. As Mike stated:

> My experience is, basically, that if you work in the field of K–12 independent education, there is a huge variance in what the qualities, skills, and areas that make a technology director for our industry. What is a technology director varies by a lot.

Summarizing the wide span of operations he oversees, Mike stated that his knowledge was "about an inch deep and a mile wide." John described his position by saying, "anything with Wi-Fi is my responsibility." Independent schools operate outside of community school boards and state regulations, so each school's administration defines the responsibilities of their technology director. Figure 3 illustrates the responsibilities described by participants.

Figure 3

Participant Responsibilities



Each of the technology directors described their job as one that expands and changes over time. John stated that "the goalposts are always moving, and we continue to add new technology to the school. Anything you deploy, you own forever." He further explained that in many jobs, once a project is complete, workers move on to the next task; however, as a technology director, every item he installs becomes something he must continuously maintain and support. Sam highlighted the growth of his role since he began 20 years ago. When he began his career, the school only had one computer lab and a desktop for each teacher. At the time of his interviews,

his school had one device per student across campus, and John supported 200 iPads, 50 MacBooks, 45 cameras, and all the network equipment that sustains their technology program.

Although commonalities in positions across all four participants existed, each participant's discussion emphasized different aspects of the role of a technology director. For example, Sarah spent a lot of time in her interviews discussing training programs and her work with teachers, while Mike, Sam, and John focused on describing their infrastructure and how they support the technology program. Each participant found the COVID-19 pandemic significant and talked about the changes it brought about in the 2020 and 2021 school years throughout the interviews.

Network Management. All four technology directors highlighted network management, especially the Wi-Fi network, as an important part of their position. John described how "it is no longer enough to have Wi-Fi available across the school; you now must ensure the network can handle many more devices." Mike believed in understanding how the network worked, whether managed in-house or out-sourced: "I mean it's an essential part of being a tech director, to be able to know how the network works, troubleshoot and fix it. And then scale it for future use." Mike, Sam, and John indicated they managed the day-to-day operations of the network, while Sarah relied on an outside company for the technical operations of the network.

Providing a stable wireless network environment was a top priority of the participants. Sarah vividly recalled an Internet glitch and the importance of a quick resolution. Sarah remembered trying to train many teachers in one location how to use a website, and the load on the Wi-Fi caused significant issues. The entire training fell apart due to a lack of adequate Wi-Fi capacity. One of Mike's prominent stories involved the stress of dealing with an issue with the campus fiber optic network that caused slow connection speeds across campus.

Campus Security. Due to the number of school shootings in recent years, campus security became a top priority for administrators. Security camera systems, door access control, and visitor sign-in systems require Internet connections, so many administrators assign the management of these devices to technology directors. These are often new systems outside of the scope of the technology director's normal expertise, so they require additional research and learning to implement. Sam and John mentioned their involvement in deploying physical security devices on their campuses.

Sam highlighted his role in selecting and maintaining the camera system and door access controls.

> So that's been another sort of duty put on me as an IT director. All this security and access stuff. And so that can be kind of a time consumer, especially if a door goes wrong or you have to configure the system.

Since the administration began to focus on physical security, Sam assisted in adding 30 security cameras and a door access system that controls who enters campus buildings.

John detailed his involvement in a recent upgrade to the security camera system on his campus. He described how that took a lot of planning and continuous work even after the installation. After finding a solution that worked, the camera system continued to cause problems. Initially, he deployed 36 cameras, and the system worked well, but when he upgraded to 43 cameras, he noticed cameras randomly disconnecting from the recording device. John shared:

> It took me a good week to figure it out. There is no manual for this problem. I don't develop that software. So, you may be waiting on a vendor to talk to their technical

person that can look at the logs, and he may have 50 people [in line]. And so, it just it's like, kind of like finding that patience.

Data Management. Three of the participants identified data management as an important responsibility. In Sam's role as the director of information systems, data management is a primary concern. He oversees the creation and maintenance of student accounts within the school's student information system (SIS) and learning management system (LMS). One of the reasons Sam began working in educational technology was his ability to work with database management software. Sam also mentioned that much of his work during the summer involves creating student accounts for email and in Clever, an online platform that helps a student log in to multiple websites using a single username and password. Sarah said that working with the SIS was an important part of her job. She mentioned posting the daily announcements to the SIS and working with the student council on implementing a t-shirt order form through the SIS. John also mentioned working with usernames and passwords in Clever. Table 9 provides illustrative quotes of the subtheme increasing responsibilities.

Table 9

Illustrative Quotes: Increasing Responsibilities

Participant	Illustrative quote: increasing responsibilities
Sarah	"I've been pulled into a whole lot more meetings on what is going on around school."
John	"Anything with Wi-Fi is my responsibility."
	"Anything you deploy, you own forever."
Sam	"So that's been another sort of duty put on me as an IT director. All this security and access stuff. And so that can be kind of time consumer, especially if a door goes wrong or you have to configure the system."
Mike	"Knowledge is about an inch deep and a mile wide."
	"My experience is, basically, that if you work in the field of K–12 independent education, there is a huge variance in what the qualities, skills, and areas that make a technology director for our industry. What is a technology director varies by a lot."

B3: Challenges of the Covid-19 Pandemic. Throughout the interviews, conversations about the COVID-19 pandemic and associated challenges for schools were abundant. A global pandemic changed the context of the work of technology directors. Participants brought up challenges they faced during the initial spring lockdowns of 2020, summer planning, and their return to campus throughout their interviews. Each, by job description, served as members of the senior leadership at their schools. However, all felt their leadership role within the learning community grew in the spring of 2020. As Sarah stated, "All of a sudden, my opinion was a lot more important." Participants suddenly found themselves drawn into advisory roles beyond the scope of their normal duties. During the pandemic, the technology directors involved in this study led their schools in remote learning, influenced teacher morale, joined in complex planning, and implemented hybrid learning technologies. The role of technology directors

throughout the pandemic so far was summarized by Mike, “I think IT directors have been in a position of reassuring administration, teachers, students, and parents that, you know, it’s not, it’s not the end of learning.” In each participant’s school, learning continued within a week of students going home. Although there were challenges and barriers along the way, each school finished a full year of instruction with their students and continued to offer instruction into the fall.

Despite the challenges presented, technology directors found positive outcomes even in the pandemic. John said, “We all realize that schools offer more to their students than just transfer of knowledge … I think it has shown us the value in what we do … and it shows us our purpose.” He went on to say, “we have learned a lot through this about adapting and using technology creatively. I think the teachers found that they can learn new skills quickly.” He referenced how quickly teachers learned to use Zoom and adapted to teaching from home.

Mike felt the past few months offered an opportunity for innovation and creativity within his school, stating:

> You know, it’s not the end of a nurturing environment. We are capable of doing a lot of things with a lot of tools … I hope that it has created a lot more innovation in our students and our teachers and our administration … being more creative in the way that they construct instructional materials, that they think about individual learning … the way school can work, or the way people can learn.

Spring Lockdowns. All of the participants brought up how quickly the transition to remote learning in the spring of 2020 took place and described several challenges associated with the rapid transition. Sarah said, “Well, it was a little stressful at first. All of a sudden, everybody’s like, how do we make this work? And you just kind of had to dig in and then pray

and get through it." Her school took only one additional day before spring break to prepare for remote learning after the break. At Sam's school, they also spent spring break preparing for the extended closure but also added an additional week after spring break to allow teachers and administrators to prepare for the transition to remote learning. Mike's administration gradually rolled out remote learning over several weeks, with spring break in between their initial closure and a full start to virtual school.

Each technology director indicated that technical support for teachers and students was a primary part of their role; however, school closures in the spring made this task much more challenging. Providing remote support became a primary concern for all participants throughout the spring. Each technology director described challenges associated with providing technical support for both students and teachers while physically unable to work on the computers. Sarah described working with users at a distance, saying, "So, sometimes there will be technology glitches from home, which can be kind of challenging walking people through that because I'm here and they're at home." John's experiences with remote technical support were similar. He said:

> Well, you've now got to support teachers at home or even teachers at school teaching kids at home. You've got kids home Internet connections to manage, and so like that's something that you know you get questions about, and it's not your fault. It's not our fault, but it is your problem.

Mike and Sam purchased software that allowed them to remotely access computers, which both felt was helpful in providing better support. Sam and his coworkers monitored an open Google Meet throughout the day while also remaining available until 9 p.m. in the evening to help teachers prepare for the next day. Mike hired an additional staff member for the first few weeks

to help teachers. Sarah relied on the tech coordinators to help her train and support teachers through the initial stages helping the faculty use Zoom for the first time. She stated:

> We initially thought we could bring everybody in and train them … and then it was no, we're not doing that, everybody is going to be at home. So, we had to then train everybody on how to use Zoom while using it the first time. So that was kind of crazy.

For each of the technology directors, the initial lockdowns forced long hours and creativity in handling the need for technical support from a distance.

Summer Planning. As the spring semester concluded, school administrations began planning for students to return to campus in August 2020, even as the pandemic continued to escalate. All participants stated they were heavily involved in meetings throughout the summer to help plan for in-person learning, along with remote learning options for students in quarantine or uncomfortable with attending school on campus. John stated:

> We wanted to be back in school, and so we fought tooth and nail all summer to make sure we do the things we are doing. We said that we need to do whatever we need to do to make sure we are in school as many days as possible.

Already a busy time of year for technology directors, preparing for school to start both in-person and remote made for a stressful summer for the participants.

Prior to the pandemic, Mike purchased new computers for much of the school. He already had a full summer planned to address the new purchases, but he also became involved in preparations for in-person school during a pandemic. Mike said, "Like everybody, we planned. We planned and planned and planned for any kind of scenario we could think of, but then you know we had kind of a twist with an uptick in cases." Initially, his administration planned for asynchronous learning for their remote learners; however, due to a rise in local cases, they

quickly modified that plan right before school started to include a synchronous learning environment. Mike was able to retain some old iPads they were replacing, which he quickly converted to classroom streaming devices for synchronous learning using Zoom.

Sarah identified several committees she joined, including one that focused on academic planning for simultaneous at-home and in-person learning. She also served on a committee with other administrators and community health professionals to determine what school would look like in the fall. Additionally, she spent time helping revise the handbook for remote learning that was quickly developed in the spring.

Sam, like Mike, noted that summer was a busy time for technology directors. It is usually reserved for large network changes and preparing new laptops and tablets for distribution to students and teachers. In discussing the summer of 2020, Sam noted it was incredibly busy, filled with meetings and the installation of systems for remote learners in the fall. Sam felt a lot of pressure to make decisions early on to ensure the product's availability for the start of school. When discussing selecting the camera system they used in combination with Google Meets, he stated:

> We were on such a tight deadline …we just had to order something because if you didn't order it, it was just going to sell out. So, we had a sort of very quick period you had to decide this is what we are gonna go off of and kind of go with that.

Once the products arrived, he and his staff felt rushed to install and configure the products. He stated, "We kind of went through a little bit of a mad dash at the end, and I wish I had tested things better, but it all worked out." Sam felt the stress of his normal summer activities, coupled with the demands of preparing for such a different year. He elaborated:

> I mean, you're just in such a rush; you just had to do it. I guess I wish I had tested it more, but it's hard to test something like that because we had so many other things to do to get ready. I mean, that was on top of what I normally do in summer. And for me, I'm extremely busy in the summer because I have to do all of this data management.

Although the summer was stressful, Sam felt the systems they put in place served the students and teachers well this fall with few troubleshooting calls once everyone learned to use them.

Fall Return to Campus. Each participant's school offered an at-home option for students who wished to remain in a remote learning environment during the fall semester of 2020. In each of their schools, the participants set up options for synchronous learning where students engage with their classes in real-time using Zoom or Google Meets, thus providing an environment for students to attend both in-person and remote posed challenges for teachers, which the technology directors were forced to resolve.

In Sam's school, students who attend remotely engaged with their teachers and classmates using Google Meets, connected to an OWL camera system that provided a full view of the classroom. In addition to rapid deployment in the summer, Sam faced challenges when training teachers to use the new equipment. They tried several configurations in the classrooms to ensure they provided the best possible experience for at-home learners. Sam felt that some parents' expectations for remote learning exceeded the capabilities of the technology:

> I think our remote students, some parents had this sort of unrealistic idea of what remote learning would be like in a synchronous environment. You know they would complain that the teacher wasn't facing the camera, and they would have 19 children in their class.

Sam also reported that some students unexpectedly chose to attend school remotely also posed a challenge for administrators. Finally, Sam mentioned one teacher elected to teach remotely, so he

configured a special computer that allowed the teacher remote access to their classroom technology while at home.

Sam also highlighted the changes for his staff due to the pandemic. One of his staff members had to quarantine early in the semester. Losing a member of the staff for two weeks presented challenges for the department. After that incident, he implemented a 10-minute rule for working near others, which limited their ability to work with others in person. He became concerned that too many support tickets and computer repairs would pile up while they were in quarantine. So, Sam encouraged his staff and teachers to solve problems remotely through Google Meets and Google Chat to minimize in-person interactions.

John felt the fall semester presented challenges due to the change in the way school operated. Chapel services for the fall semester were video-based, requiring him to be more heavily involved than in years past. He summarized the changes, stating:

> Chapel is a good example. It's like before, everyone just came to chapel, and we did it, and it was done. Now it's like chapel is a three-day process. It's the filming, the editing, and it's hoping people can play it correctly.

COVID-19 also impacted how John viewed the timeliness of resolutions. He told a story of a teacher's computer screen cracking right before school. Pre-COVID, he could take the time to fix the issue as time permitted during the day; however, within the pandemic, quick repairs were needed so teachers could stream their classes. John stated:

> Those are the challenges, where again, you know last year you would've said, 'Okay, I will have it to you by the end of the day.' It's not just an issue for her; it's that kids really can't log in.

While John faced challenges with distance learning, he also saw positives throughout the fall. He told a story of a teacher who needed to take care of their father while he recovered from heart surgery. To ensure they could safely help their father without transmitting COVID, the teacher quarantined for two weeks before and after the surgery; however, they still taught class remotely almost every day, with a proctor helping facilitate in the classroom. Reflecting on the story, John stated, “But you know the kids are getting to be taught by their teacher, and there’s something pretty cool about that.”

Sarah noted how many of the challenges she faced throughout the fall semester resulted from students attending school both in person and from home. Just as in the spring, Sarah felt the need to help calm teachers’ fears about teaching in a new way. At in-service, Sarah presented training on how to use Zoom with remote learners, which was met with fear and hesitation. She understood the teacher’s reactions to teaching both ways, “Morale with having to do remote learning has been difficult. They’re handling it okay, but they’re very tired of it. I just, I kind of like to be the cheerleader and say, ‘You know it’s not gonna be forever.’”

Sarah recalled an instance in third grade where a load of remote learners for one teacher was higher than for the others, which created frustration. Sarah joined the search for a solution to balance the workload among all the teachers, which resulted in a rotation among the teachers working with remote learners. She described another situation that caused a lot of frustration, an update to Zoom reset all the teachers’ session passwords, preventing students from logging in to their classes. Throughout the fall 2020 semester, Sarah worked to help teachers navigate frustrating situations that resulted from simultaneously teaching in-person and remote learners.

Mike noted how quickly plans changed regarding returning to school. Throughout the summer, his administration planned for a full return to campus, with some students learning in an

asynchronous environment when quarantined. However, a rise in local COVID-19 cases as school began forced them to adopt a synchronous model. Mike and his team quickly set up iPads, microphones, and speakers to ensure teachers could engage with home-based students.

Mike also found positive outcomes that emerged from the pandemic. He saw that despite the challenges of the pandemic, learning continued. The pandemic forced teachers and administrators to, as he said, “think about being more creative in the way that they construct instructional material and think about individual learning.” Mike hoped that teachers would continue to use the skills they developed during remote learning to expand and grow beyond their normal classroom practices. Table 10 provides illustrative quotes of the subtheme: challenges during COVID-19.

Table 10

Illustrative Quotes: Challenges During COVID-19

Participant	Illustrative quote: challenges during COVID-19
Sarah	"Well, it was a little stressful at first. All of a sudden, everybody's like, how do we make this work? And you just kind of had to dig in and then pray and get through it." "We initially thought we could bring everybody in and train them … and then it was, no, we're not doing that, everybody is going to be at home. So, we had to then train everybody on how to use Zoom while using it the first time. So that was kind of crazy."
John	"Well, you've now got to support teachers at home or even teachers at school teaching kids at home. You've got kids home Internet connections to manage, and so like that's something that you know you get questions about, and it's not your fault. It's not our fault, but it is your problem."
Sam	"We were on such a tight deadline … we just had to order something because if you didn't order it, it was just going to sell out. So, we had a sort of very quick period you had to decide this is what we are gonna go off of and kind of go with that." "I mean, you're just in such a rush; you just had to do it. I guess I wish I had tested it more, but it's hard to test something like that because we had so many other things to do to get ready."
Mike	"Like everybody, we planned. We planned and planned and planned for any kind of scenario we could think of, but then you know we had kind of a twist with an uptick in cases."

Chapter Summary

In this chapter, I presented the narrative accounts of each participant and the key themes that emerged from the interviews. A third-person profile introduced each participant. Next, I followed with a first-person narrative of the stories they told in our interviews. A thematic analysis of the stories the participants told allowed me to present the key themes, along with examples to support each theme. Key themes included (a) supporting and (b) adapting, which

also included six subthemes. In Chapter 5, I present conclusions based upon the emergent themes. I also discuss the findings relating to the existing literature and the theoretical framework of visionary leadership. Finally, I propose recommendations for practices and recommendations for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

The COVID-19 pandemic forced teachers and students to transition classrooms online in March 2020 (Gaudet, 2020). Coupled with the growth of information and communication technology (ICT) overall, leadership in the use of technology in the classroom has never been more critical (Anderson & Dexter, 2005; Kowch, 2005). Leading schools in their adoption of technology to improve learning has been examined through the principal's role (Anthony & Patravanich, 2014; Brown & Jacobsen, 2016; Petersen, 2014). However, technology directors are influential leaders in ICT use (Chen, 2013; Rodríguez-Miranda et al., 2014; Sugar & Holloman, 2009). This inductive, narrative study examined four independent school technology directors' understanding of their leadership of ICT integration.

The purpose of this narrative study was to examine technology directors' leadership characteristics and their experiences leading ICT in K–12 independent schools in Tennessee during the COVID-19 pandemic. One broad question guided this study: How do technology directors perceive their leadership characteristics and experiences with ICT integration in K–12 independent schools in Tennessee during the COVID-19 pandemic?

The findings of this study may serve as a guide for further developing the leadership role of school technology directors. This chapter begins with a summary of the research, including the methodology and process of analysis. Next, I present conclusions based upon the emergent findings presented in Chapter 4. I then situate the prominent themes that emerged during data analysis within the literature on visionary leadership. Finally, I propose recommendations for practice and future research.

Summary of the Study

In this inductive narrative study, I utilized temporal organization, open coding, focused coding, and thematic analysis to understand how four independent school technology directors understood their leadership of ICT. Interviews with four technology directors occurred throughout the fall semester of 2020. This study used open-ended interviews with the participants, allowing them to guide the conversations and tell the stories important to them. All follow-up questions developed directly from stories told by the participants. According to Riessman (2008), "events perceived by the speaker as important are selected, organized, connected, and evaluated as meaningful for a particular audience" (p. 3). Therefore, the stories they chose to tell demonstrated the leadership experiences they felt were most important to share.

When engaging in a narrative study, Clandinin and Connelly (2000) argued, "It is more productive to begin with an exploration of the phenomena of experience rather than in comparative analysis of various theoretical methodological frames" (p. 128). However, in discussing thematic analysis of narratives, Riessman (2008) asserted that "prior theory serves as a resource for interpretation of spoken and written narratives" (p. 73). This study followed these recommendations, as it began with an open analysis of the participants' stories with visionary leadership theory serving as an additional lens for analysis.

Through thematic analysis, the following findings addressed the research goal to examine how independent school technology directors understand their leadership of ICT integration. Two themes and six subthemes, which demonstrate the participants' understanding of their leadership emerged: (a) supporting, with subthemes (a1) technical support, (a2) training, (a3) encouragement, and (b) adapting, with subthemes (b1) change in the field, (b2) increasing responsibilities, and (b3) challenges of COVID-19.

Conclusions

The findings presented in Chapter 4 are intrinsically linked through these themes to present the conclusions. Based on the data's findings, four conclusions answer the research question: How do technology directors perceive their leadership characteristics and experiences with ICT integration in K–12 independent schools in Tennessee during the COVID-19 pandemic? Conclusions (1) and (2) correspond to the technology directors' leadership experiences, while conclusions (3) and (4) correspond to their leadership characteristics. Four conclusions emerged:

1. Leading ICT requires constant evaluation and adaptation.
2. Remote learning due to the COVID-19 pandemic changed ICT use and management in schools.
3. Supporting ICT in education requires a wide range of both technical skills and interpersonal skills.
4. The technology directors in this study exhibited the leadership behaviors of visionary leadership.

Together, these inform the answer to the research question posed at the heart of the study.

Conclusion 1: Leading ICT in Independent Schools Requires Constant Evaluation and Adaptation

According to Anderson and Dexter (2005), "Rapid change in technology poses a significant challenge for leaders in the field of technology" (p. 73). This challenge has only multiplied in the intervening years. Using surveys and software that can monitor website use and traffic, technology directors constantly evaluate existing programs to ensure they meet goals for students' learning and achievement (Frazier & Hearrington, 2017). They must continuously plan

for infrastructure and device upgrades to meet the needs of teachers and students while also working with other school leaders to develop long-term technology plans that project ICT-related goals and purchases for at least three to five years (Frazier & Hearrington, 2017). The expectations for technology directors form a complex web beyond tech support and training, representing more than technical knowledge and soft skills.

Each of the participants reflected across their careers and described how the field had changed since they began working as technology directors. Due to the pace of changes, technology directors must continuously evaluate their current systems and adapt to teachers' and students' future needs. The move to 1:1 laptop and tablet programs in recent years brought about significant changes to their responsibilities, as the participants noted. Sam and Mike both managed teachers' desktop computers and a few student computers in a lab when they began their positions. Fast-forwarding, they now manage several hundred laptops and tablets for both teachers and students, requiring programs to monitor and support students' safety and privacy.

The transition to mobile devices also required evaluation of and updates to their campus networks to handle increased Internet traffic. Mike and John indicated that early in their careers, wireless network design focused on just providing access. However, throughout the past decade, the priority shifted to handle many devices and provide fast connection speeds. The technology directors needed not only the technical knowledge to manage systems but also the foresight to evaluate and improve those systems.

Each participant shared how they often worked on projects that required at least a year of planning and testing before deployment. Examples of long-term projects included network design for new buildings, upgrading existing network equipment, and planning future student and teacher devices' deployments. When describing his annual planning process, Sam mentioned

the importance of looking ahead to the next school year as early as December to ensure new equipment arrived on time. Other processes, like trialing new management systems and software, often required months of evaluation and testing before deployment.

In contrast to the adoption of best practices for carefully planning and testing the future use of technology, the COVID-19 pandemic forced technology directors to rapidly adapt to an upended construct of the use of ICT in teaching and learning in their independent schools. Although many of the support structures were installed and in place before the rapid transition to remote learning, the sudden shift changed the approaches they used to manage students' and teachers' devices. The participants cited the transition to cloud-based ICT management over the past decade as a critical part of their successful move to remote instruction.

Conclusion 2: Remote Learning Due to the COVID-19 Pandemic Changed ICT Use and Management in Schools

Conversations with the participants in this study continuously circled back to supporting teachers' and students' devices through remote learning and hybrid classrooms caused by the COVID-19 pandemic. The context of the study cannot be separated from the findings or conclusions. The movement to remote learning was in and of itself a huge change in ICT use and management. School technology leaders across the country faced increased support calls while also grappling with security threats and other challenges of sending every device home with students and teachers (Gaudet, 2020; Tamez-Robledo, 2020). The participants described the challenging experiences of providing technical and training support throughout the initial lockdowns and into a new school year where teachers simultaneously taught in-person and online classes. Despite these significant challenges, participants were able to identify some positive developments that resulted from remote learning.

Making the shift to remote learning in March 2020 required the participants to quickly adopt new software platforms for video conferencing and remote support. The participants described the challenge of training teachers to use the software while trying to use the software for the first time to access the training. Providing technical support posed a significant problem during the spring lockdowns. Adopting remote support software allowed technology directors and their staff to troubleshoot technical issues from home. Even as they returned to campus in the fall, Sam continued using remote support software in order to maintain social distancing requirements.

Cybersecurity and privacy threats became a significant concern for some of the participants that required changes to the use and management of existing ICT protocols. Sam worked to ensure the schools' antivirus protection could move to a cloud-based platform and protect users while off campus. Mike addressed challenges with the privacy and security of online video conferencing, particularly 'Zoom bombing,' where uninvited guests could gain access to a meeting and use profanity or display inappropriate images (Gaudet, 2020). Although campus networks often utilize substantial safeguards, many protections disappeared once users joined their home networks (Gaudet, 2020).

Despite the challenges in the change in ICT use, participants identified positive outcomes from remote and hybrid learning. Remote learning created opportunities for teachers and students to learn about new software, such as Zoom and Google Classroom. Although already in use in most schools, moving to remote learning forced teachers and students to learn to use these tools at a higher level through the immediate immersion of COVID lockdowns. Some participants shared that teachers gained ICT skills expressly through the move to online and hybrid learning. In John's school, a teacher's extended absence due to a family illness not

associated with COVID-19 no longer resulted in a long-term substitute taking over the class. Instead, the teacher remained engaged with their students by teaching from home, using a computer and projector in their classroom. Mike found that remote learning forced faculty and administrators to think creatively about instruction and how they present content to students. He felt the move to remote learning promoted higher creativity and innovation levels around ICT use among teachers in his school.

Conclusion 3: Supporting ICT in Independent Schools Requires a Wide Range of Both Technical and Interpersonal Skills

The theme of supporting encompassed the participants' evident leadership as they helped their school communities adopt and successfully use ICT. Aligned with Davies (2010), the participants did not merely provide ICT to ensure its use in the classroom. Instead, school leaders provided support to lead to higher levels of ICT integration. The technology directors in this study may have aided in the acquisition of specific tools and technology, but critically, they provided technical support and training. Significantly, each participant highlighted the importance of their interactions with teachers through a range of supports tailored to individual needs.

Teacher support is an antecedent to ICT adoption in their classrooms. In Inan and Lowther's (2010) path model of factors influencing ICT integration, they found that both technical support and overall support positively affected teachers' beliefs and readiness for ICT use in their classrooms. Teachers with numerous awards for technology use were used as case studies by Ertmer et al. (2012), who found that even among teachers who use ICT at a high level, support remained an impactful barrier to integration. An examination of the technology acceptance model (Davis, 1989) revealed that end-users evaluate the perceived ease of use as a

significant factor in their design to adopt new technologies. Through their daily support and training, the participants in this study seemed to make ICT integration easier on the teachers in their school.

In their personal accounts, the participants described situations where they helped others overcome hardware and software challenges. They shared stories that often occur out of public view and require no personal interaction, including managing the equipment related to network systems, campus security equipment, and databases. As they overcame technical challenges, they also talked about using interpersonal skills when working with end-users to encourage continued ICT use. Three subthemes further organized the types of supporting activities in which the participants engaged: (a) technical support, (b) training, and (c) encouragement. The three subthemes articulate the range of skills identified within this conclusion: both technical and interpersonal skills.

Technical Support. Providing technical assistance to end-users and ensuring campus network systems remain online was the most often mentioned form of support. As teachers identify a lack of technical support as one of the prominent first-order barriers (Ertmer, 1999; Inan & Lowther, 2010), this finding is not surprising. Further, as more schools adopted technology, administrators hired additional staff members to aid in daily technical support (Ertmer & Ottenbreit-Leftwich, 2013; Frazier & Hearrington, 2017). Rodríguez-Miranda et al. (2014) found that technology coordinators spent much of their time devoted to maintenance and technical problem-solving.

As each participant recounted a typical day, they discussed troubleshooting network issues, repairing broken computers, and resolving problems with apps, programs, and websites. Mike and Sam specifically mentioned that much of their daily routine during the school year

involved just being available to quickly resolve any issues teachers and students faced with their technology. John and Sarah recounted moments where they arrived at school with teachers and administrators needing a rapid fix for a broken computer.

The wide variety of devices they support provide the participants with significant challenges offering support across a wide range of items. As John stated, “Anything with Wi-Fi is my responsibility.” Supporting ICT now encompasses all network devices, student and teacher devices, campus security systems, and audio-visual equipment.

Beyond hardware support, the technology directors also supported numerous software programs, including computer-based and cloud-based programs. The participants listed programs across Apple, Microsoft, and Google platforms they learned to best help their teachers. Recently, due to the COVID-19 school closures, and more recently, quarantines, the participants had to become experts in video conferencing software such as Zoom and Google Meets quickly. Adding another layer of complexity, the participants utilized both local and cloud-based solutions to manage their school networks, which requires knowledge of the various software platforms for managing firewalls, servers, switches, and access points.

Training. Training teachers to use devices and software required technology directors to utilize their technical expertise while also employing interpersonal skills. A lack of training and insufficient skills has been reported as a significant barrier to ICT integration in the literature (Ertmer, 1999; Hew & Brush, 2007). However, providing teachers with the training to increase their ICT knowledge and skills positively influences teachers’ attitudes and beliefs about ICT use in their classrooms (Hew & Brush, 2007; Kopcha, 2012; Lowther et al., 2008).

Participants discussed how they tailored training, making it appropriate for their teachers and school. They utilized a range of strategies. One strategy coordinated sessions on multiple

topics so that teachers could find relevant instruction. Another approach was offering one-on-one training sessions at the teacher's request. Although this method requires more time and planning, it centered the teacher's learning goals in the session. One technology director used on-demand training sessions, combining screencasts, videos, and documents in Google Classroom modules. This approach allowed teachers to complete training at their convenience and access materials relevant to their classrooms' software and devices.

Encouragement. As described, traditional ICT support relies on technical knowledge, providing technical support and training opportunities. Building from the interpersonal skills also identified as critical within the training sphere, each participant shared stories that emphasized how they fostered an encouraging atmosphere within their school and with the teachers. The literature is adamant that teachers' attitudes and beliefs significantly influence their adoption of technology (Ertmer, 1999; Ertmer et al., 2012; Park & Ertmer, 2007). Whether consciously used as a tactic or not, each participant recounted experiences where they embraced an empathetic and supportive approach toward teachers.

Each participant told stories of their interactions with faculty members who hesitated to integrate ICT, whether due to their personal instructional beliefs, frustrations with technology, or even fear. As Mike stated, "Sometimes we run into people that are as frustrated as anybody is going to be in a school environment." Sarah used the phrase "the technology counselor" to describe her actions helping teachers find value in technology and overcome their anxieties about using it in class.

Although participants shared past stories of encouraging teachers, the move to remote learning caused by the COVID-19 pandemic heightened faculty members' fears and frustrations concerning ICT integration. The participants commonly used the word fear as they described the

transition to remote learning. Yet, in these instances, they described their own ongoing and purposeful actions to allay those fears.

Conclusion 4: The Technology Directors in This Study Exhibited Visionary Leadership Characteristics

Building from these conclusions and the central research question, it is evident the participants exhibit characteristics of visionary leadership. Visionary leadership occurs in two stages: vision development and vision implementations (Kirkpatrick, 2004; Sashkin, 1988b). Within those stages, visionary leaders engage in behaviors that foster the development of the vision and, once created, support the vision's execution (Nanus, 1992; Sashkin, 1988a, 1988b). Through their stories, the participants described engaging in behaviors associated with visionary leadership.

Vision Development. Developing a vision requires leaders to embrace a futuristic orientation while also monitoring their current capabilities and aspirations of their followers (Khatri et al., 2001; Nanus, 1992; Stam et al., 2010). The participants described vision development, if not overtly, as they told their stories of adapting to a changing field. The previous conclusions ascribing the ability to manage and assess processes through change also support this construct. Kirkpatrick (2004) described visionary leaders as individuals that respond to changes in the external environment and remain flexible to make changes necessary to further their goals. Through the processes of ongoing evaluation of their current programs against trends in education and technology, the participants developed what future ICT integration will look like in their schools.

According to Westley and Mintzberg (1989), visionary leaders use their knowledge of current trends in their field to innovate and move their organizations forward through "building

new perceptions on old practices" (p. 19). While each of the participants described their long-term planning, Sarah's story of changing to Chromebooks highlights this approach. She examined a current weakness in their technology program for students and then developed a plan to meet students' needs in the future better. When he first assumed his ICT leadership role, Mike examined the technology support staff's service skills and developed a vision for the team to show kindness, patience, and understanding when working with teachers and students.

Vision Implementation. A vision cannot advance through the leader alone, it must have the assistance of followers (Westley & Mintzberg, 1989). However, leaders must facilitate the enactment of the vision by enacting programs and policies that enable followers to adopt change (Nanus, 1992; Sashkin, 1988a). Sashkin (1988a) stated that visionary leaders "support words with actions" (p. 140). Through their use of their own expertise to provide technical support, providing training, and encouraging teachers, the participants facilitated their follower's capacity to enact the shared visions in their school communities.

In sharing their experiences, the participants described actions used to support their communicated vision. John met with faculty one-on-one to ensure they have the specific skills they need to use ICT in their classrooms. Mike purposefully looked for hidden issues that could hinder teachers' use of ICT. Sam felt included just being available to quickly help teachers who needed support as a critical part of his role. Sarah provided encouragement to teachers hesitant to use technology and served as a sounding board for frustrated teachers. These actions communicate concrete work to share their visions and implement them across their stakeholders.

If visionary leaders exhibit this combination of vision and action, the participants seem to reflect visionary leadership characteristics. It is important to note that this study was not developed to test this theory. Instead, the inductive analysis created an openness to any themes

that emerged. Yet, visionary leadership was an instructive lens through which to examine the findings within a larger context. The participants provided examples that could be viewed as visionary leadership throughout their stories. Examining their stories through the lens of visionary leadership warrants further examination of the findings in comparison with the literature. Specifically, the themes of supporting and adapting are examined within the existing literature on visionary leadership in the following section in an attempt to answer the central research question: How do technology directors perceive their leadership characteristics and experiences with ICT integration in K–12 independent schools in Tennessee during the COVID-19 pandemic?

Implications for Research

The literature concerning ICT leadership often highlights the importance of developing a vision for ICT use (Brown & Jacobsen, 2016; Davies, 2010; Frazier & Hearrington, 2017; Hew & Brush, 2007; Vermeulen et al., 2015). Therefore, the following section explores the connections between this study's findings and existing literature on visionary leadership. Two themes emerged from the data that describe independent school technology directors' understanding of their leadership on ICT integration: (a) supporting and (b) adapting. Table G1 illustrates how the findings of this research compare to previous findings in the literature on behaviors of visionary leaders (see Appendix G). The findings of this study support the existing literature on visionary leadership and expand the application of the theory to another leadership role within an educational context.

As noted, visionary leadership occurs through two processes, vision development and vision implementation (Kirkpatrick, 2004). Through vision development, visionary leaders establish an inspirational yet achievable vision for their followers. Using their expertise and

knowledge in their field, they examine current trends and find opportunities for innovations (Khatri et al., 2001). Once developed, a vision must be clearly communicated in a manner that provides meaning for followers and inspires adoption of the shared vision (Kirkpatrick, 2004).

After establishing and communicating the vision, visionary leaders provide an environment that allows followers to implement the vision (Sashkin, 1988a). By enacting policies and programs, coaching, encouraging, and motivating followers, visionary leaders facilitate the enactment of their vision (Nanus, 1992; Sashkin, 1988a; Taylor et al., 2014). This study's themes of supporting and adapting align with these ideas and characteristics of visionary leaders.

Theme A: Supporting

Developing a vision was, in many ways, an external process within the context of this study. Schools had to quickly adapt and shift their learning to virtual during COVID-19, which often relied on technology to implement the new vision of what learning looked like. Visionary leadership goes beyond creating a vision and involves helping followers achieve that vision. According to Brown and Anfara (2003), "visionary leadership must be transformed into actions" (p. 17). Further, Taylor et al. (2014) found that visionary leaders aid in implementing the vision by providing guidance, encouragement, and motivation for their followers.

Critically, providing support enables followers to implement a leader's vision (Kirkpatrick, 2004). Implementing the vision requires leaders to enact policies and programs to help followers carry out the vision (Sashkin, 1988a). All four participants told stories about how they supported ICT integration in their schools through processes of (a) technical support, (b) training, and (c) encouragement. Each of these was action-oriented.

Providing technical support was a key action to implement participant's visions for ICT use in their schools. As visionary leaders enact programs to support their visions, they allocate personnel, resources, and facilities that enable followers to carry out the vision (Nanus, 1992; Sashkin, 1988a). Khatri et al. (2001) found that visionary leaders' expertise and analytical abilities affect followers' satisfaction and performance. The participants in this study removed barriers to the vision through their technical expertise and problem-solving.

The findings of the current study also indicate that the participants understood the importance of providing training and encouragement to their schools' faculty, which corresponds to vision implementation behaviors of coaching, mentoring, and motivating (Taylor et al., 2014). When describing visionary leadership activities, Brown and Anfara (2003) asserted that edification is one of three phases of visionary leadership, stating, "visionary leaders in action at the middle level are sensitive and appreciate the need for time, training, trust, and tangible support prior to transformation" (p. 27).

Theme B: Adapting

The participants' practices of examining the external environment, making plans, and changing course when necessary align with vision development and implementation (Nanus, 1992; Sashkin, 1988a; Taylor et al., 2014). Taylor et al. (2014) found that visionary leaders assess the outside environment and react appropriately. Visionary leaders must have an openness to explore, along with the courage to change when necessary (Brown & Anfara, 2003). For the participants in this study, the theme of adapting captured their evaluative behaviors and how they were able to adjust based on trends in education to implement the vision of their schools.

This study's findings suggest the participants regularly think about long-term planning and the direction of their schools' ICT programs. They are future-oriented. According to Khatri

et al. (2001), a futuristic orientation is a key to encouraging followers' motivation, commitment, and performance. The participants planned for network upgrades and the adoption of new devices and software. As collaborators with other administrators, the participants help set the direction and establish a shared vision for ICT integration within their schools' academic programs.

Recommendations for Practice

Development of Best Practices Specific to Independent Schools

This study filled a gap in the literature by detailing the experiences of technology directors in smaller, independent school settings. In contrast to their larger public school system peers, they often serve as sole employees or as the leaders of small teams working to integrate ICT in their schools. Their responsibilities would otherwise often be divided among multiple teams and personnel in larger systems. Best practices and operational standards developed by industry associations such as the International Society for Technology in Education (ISTE) broadly encompass a range of settings and all education leaders and technology coaches. The Consortium for School Network (CoSN) Framework of Essential Skills of the K–12 CTO is a valuable guide; however, it was designed for school system technology leaders. It fails to consider alternate settings and may not apply to smaller independent schools.

Accordingly, this study identifies an opportunity for professional organizations serving independent schools, including the Association for Technology Leadership in Independent Schools (ATLiS), as well as the Southern Association of Independents Schools (SAIS) and its regional affiliates, to further define the roles and expectations of technology directors in independent schools. Developing a set of standards and benchmarks specific to independent schools could guide independent school technology directors and other administrators,

articulating specific roles and functions critical to independent schools. Standards could aid senior school administrators in the recruitment, selection, and evaluation of those who lead independent school technology programs.

Inclusion of Remote Learning and Technology Assessments as a Part of Disaster Planning

Each participant in this study discussed the rapid closure of schools in March 2020 due to the COVID-19 pandemic. They described the quick formulation of plans for remote learning and the high levels of stress for teachers and administrators as they moved instruction online. Due to the unprecedented closures, school administrators were caught off guard with few plans for extended school closure. In addition to the pandemic, participants' school communities also endured natural disasters, which further complicated remote learning. Although rare, these situations demonstrated the ability to continue student learning through extended school closures.

Adaptation is a critical part of any disaster plan, but proactive planning is important. As a result of this study, it is evident that independent school administrators should develop and regularly revisit remote learning plans. Plans should include policies for faculty expectations, recommended websites and software for remote learning, and a remote learning handbook for students. By creating clear contingency plans, and a vision for what successful remote learning looks like, leaders can support the next unforeseen challenge.

Inspiring Additional Actions

Clandinin and Connelly (2000) suggested that the stories presented in narrative studies stand on their own and "offer readers a place to imagine their own uses and applications" (p. 42). The stories provided by the participants in this study can be read by other technology directors, principals, and heads of school to understand the leadership of technology directors in

independent schools better. Their reading and interpretation of the stories may lead them to draw their own conclusions and understanding from the stories presented.

Future Research

The findings from this narrative study provide several opportunities for further research. In this study, the leadership of technology directors was examined from their perspective through the stories of their experiences. Future studies could include teachers' perspectives on the influence of the technology director's leadership on ICT integration. As much of the literature focuses on barriers from the teacher's perspective, understanding teacher perspectives about technology directors could provide a better understanding of what practices aid in ICT integration. Additionally, studies examining teachers' perspectives could lead to a better understanding of the technology director's visionary leadership characteristics or actions. Further studies could also examine alternative leadership approaches among technology directors, such as adaptive leadership.

The findings of this qualitative study are based upon the stories of leadership experiences shared by the participants, a small sample of only four participants. As such, it is not possible to quantifiably measure the visionary leadership behaviors of the participants. Future quantitative research, which could include the Leadership Behavior Questionnaire (LBQ-R) developed by Sashkin (1996), or other measures, could examine the visionary leadership characteristics and behaviors of independent school technology directors. These studies could use data gathered from teachers, other administrators, and technology directors to provide a holistic understanding of the technology director's role within the organization and their leadership characteristics.

Traditionally, visionary leadership occurs in top hierarchical levels of leadership within an organization, such as the chief executive officer (Margolis & Ziegert, 2016). However, the

findings of this study indicate that visionary leadership can occur in other management levels of an organization. Additional research could provide an understanding of visionary leadership across different organizational and management levels.

Finally, the shift to remote learning due to the COVID-19 pandemic placed this study's participants in a significant leadership role at their schools. As researchers examine the long-term changes in education due to the pandemic, future studies could explore how the role of the technology director changed during the pandemic and what changes occur once schools fully return to in-person instruction. Further, researchers could examine the technology director's leadership throughout the pandemic from the perspective of technology directors, teachers, and other administrators.

Chapter Summary

Richardson and Sterrett (2018) asserted that "in today's K–12 schools, learning and technology cannot be seen as separate silos" (p. 591). This study examined how technology directors understood their experiences leading ICT integration in Tennessee independent schools. The use of ICT continues to expand, and the COVID-19 pandemic only accelerated the pace of adoption. Educational leaders must provide more than just devices but the necessary support to integrate ICT in their classes effectively. As Davies (2010) noted, "merely providing technology does not lead to changes in instructional approaches" (p. 55). Through their stories, this study's participants shared how they supported, trained, and encouraged their school communities. Their stories also relayed the importance of continuous evaluation and adaptation so that their schools had the necessary resources and skills to integrate ICT successfully in their instruction during an unprecedented global pandemic.

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Appendix A: IRB Approval Letter

ABILENE CHRISTIAN UNIVERSITY
Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs
320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885

September 1, 2020

Jeremy Womack
Department of Graduate and Professional Studies
Abilene Christian University

Dear Jeremy,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "Technology Director's Perspectives on their Leadership Integrating Information and Communications Technologies in K-12 Independent Schools",

(IRB# 20-126)is exempt from review under Federal Policy for the Protection of Human Subjects.

If at any time the details of this project change, please resubmit to the IRB so the committee can determine whether or not the exempt status is still applicable.

I wish you well with your work.

Sincerely,

Megan Roth

Megan Roth, Ph.D.
Director of Research and Sponsored Programs

Appendix B: Request for Participation

To Whom it May Concern:

My name is Jeremy Womack, and I am a doctoral student at Abilene Christian University. I kindly request your participation in a doctoral research study titled: Technology Directors' Leadership in K–12 Independent Schools: A Narrative Study. My goal in this study is to examine how technology directors perceive their leadership influences teachers' integration of technology in their classrooms.

The study will involve in-person interviews where participants will be asked to share stories about their leadership activities in their school. Initial interviews will last approximately one hour, with possible follow-up interviews to clarify and expand on concepts from the first interview. Due to the current pandemic and social distancing requirements, interviews may be conducted through a video conference. Participants will remain anonymous in the actual publication of the study.

Your participation in this research is entirely voluntary. You may refuse to participate or stop your participation at any time and for any reason.

If you would like to participate in this study, please email me at xxxxx@acu.edu. I have attached a copy of the informed consent form, which outlines all aspects of the study in further detail.

Thank you for your consideration.

Sincerely,

Jeremy Womack
Doctoral Candidate
Abilene Christian University

Appendix C: Interview Protocol

Introduction:

I would like to thank you again for agreeing to work with me on this research project. I wanted to take a moment to reassure you that all personally identifiable information will be removed from the transcripts of this recording. All participants will be assigned a pseudonym in the transcripts and research reports. Would you like to select yours?

At this time, I would like to turn on the recorder. May I have your permission to do so?

This is Jeremy Womack, a doctoral student at Abilene Christian University. Today's date is _____, and I am speaking with participant ____.

As we begin today, is it ok that I continue to record our conversation?

Initial Question:

Tell me about your experiences as a technology director.

Other Possible Questions or Follow-Up Questions (as needed):

How did you become a technology director?

What experiences led you to this field?

Are there any other experiences you feel have influenced your work?

Probes (as needed to move the conversation forward):

Can you tell me more about that?

What was that experience like for you?

What happened next?

Adapted from Atkinson, R. (1998). *The life story interview*. SAGE Publications.

Appendix D: Printout From Delve

Adapting: COVID (40)

Sarah
We cannot access our remote classroom.
Sarah
Which caused a lot of frustration.
Sarah
We had overcome everyone having to learn remotely, but now trying to do both in-person and remote learning was overwhelming to many teachers.
Sarah
Adapted to fit the needs of our current remote learners and students in quarantine.
Sam
Synchronous learning experience for our students learning remotely.
Sam
Very little time to train teachers.
Sam
We try to make sure we remain at least six feet away from our teachers and students so that we do not wind up in quarantine.
John
Adjust on the fly.
John
I must try and support them through those issues just as if they were facing a problem on campus.
John
There are students in person, some are at home as virtual learners all the time, and we have some students in quarantine.
John
One of the challenges for me this year is working through the multiple learning scenarios we have.
Sam
We had one teacher request to teach from home due to health concerns. We set up a desktop computer in their classroom that they can access from home. It connects to their smartboard. There is a proctor in the classroom that facilitates class while the teacher projects through the smartboard and teaches the class from home.
Sam
I also ran cabling from the classroom sound systems to each teacher's laptops, which prevents them from having to wear an additional wireless mic.
Sam
We also had very little time to train teachers on how to use the new cameras and software.
Sam
I normally like to test equipment thoroughly before purchasing and installing it, but this summer we had to rush to purchase everything.
Sam
A man down for several days. Since then, we focus on maintaining our distance so we can continue to provide support on campus. Due to those restrictions, we try to fix most problems remotely. Teachers submit a request for help through an online ticket system, and we try to resolve issues through chat and remote support software. Although, we keep our office open during school hours for students to drop off broken devices, but we remain conscious of how long we are around one another.
Sam
One of my techs helps coach soccer and wound up in quarantine after riding a bus next to a student for right at 10 minutes.
Sam
One of the significant challenges of the lockdowns involved providing remote support for our teachers and students.
Sam
Lockdowns and remote learning served as a validation for the strategy to move everything to the cloud over the past few years

Sam
I really only needed to solidify an online antivirus solution, a way to push updates to users' devices, and find a way to provide remote support. Many of these tasks were already in process, but the pandemic certainly accelerated our adoption.
Sam
Their students can still hear them clearly, and the teachers do not have to yell through their masks.
Mike
Asynchronous learning experiences for quarantined students and at-home learners. Still, our area experienced a significant uptick in cases in the days leading up to school starting. We decided to provide synchronous learning at the last minute as we anticipated more students learning from home.
Mike
One of the critical decisions made early in the shutdowns was what video conferencing platform we would use.
Mike
We equipped each classroom with an iPad for teachers to use with Zoom, but sometimes audio was a challenge.
Mike
So, we ordered some belt-pack microphones and a speaker to help boost their voice levels.
Mike
Finally, the streaming requirements due to the pandemic have forced us to be innovative in our classrooms.
John
It is hard for teachers to plan this year.
John
We have all had to expand our comfort zones this year to make it work.
John
Another new challenge this year for me is chapel.
John
Ample, our teachers had to learn Zoom, and we all had to become Zoom experts overnight.
John
We have learned a lot through this about adapting and using technology creatively.
John
For years, we had all heard that Khan Academy and services like it were going to take over education. Although technology increased in schools, I think the pandemic proved that in-person learning is critical. Schools are not just for the transfer of knowledge. Students learn relationship and social skills. It is about the experience of being in school. Think about the things you remember in school; it is often what you learned socially and how to deal with those. I think the pandemic has shown the value of school and gives us a chance to show our purpose.
John
About technology is that nothing is ever finalized, so you know if things are rough, you can adjust, you can change its flow. We don't have to know every answer before we start.
John
When teachers have had to teach virtually, it is met with a lot of fear.
John
The pandemic pushed our teachers out of their comfort zones, and one thing I have had to help them understand is that it is not going to be perfect.
Sarah
We have experimented a lot this fall with different ways to engage remote learners, both ongoing and those in quarantine.
Sarah
Come back after the break. Most of the lower school returned, but we still have a few learning from home. Having students at school and some at home created a challenge as some teachers face a much heavier workload. In our third grade, one teacher had several remote learners, while the other only had one, which caused a lot of frustration. They both had to stay on Zoom all day with the remote students while maintaining a classroom full of students. I coordinated a meeting with our superintendent, the teachers, and their principal, to find a workable solution. We talked through bringing in an aide, which would not work out financially. We discussed moving them onto a rotating schedule like our 4th–6th grade, so they would only have to use Zoom part of the day, but that did not work out either. Finally, one teacher suggested that they each have a weekly rotation with the remote learners. Since the teachers use the same curriculum and pacing, we developed a rotation where now they have some time away from Zoom and can focus solely on their classes.

Sarah
We kept Zoom as our digital learning option for this school year, and it has worked well. We purchased Bluetooth headsets and microphones for our teachers to use with Zoom.
Sarah
During the summer, I attended many more meetings. I joined a group that focused on how simultaneous remote and in-person learning would look academically. We tried to envision what a classroom would look like with some students on Zoom but with most students in person. We tried to plan what that would look like for the teachers. I also attended meetings with our school nurse, local health care providers, and our administration on what school would look like when we all came back to campus. I noticed over the span of the spring and summer; my opinion mattered a lot more than what it did before.
Sarah
That Friday, while teachers and students were off, I met with other senior administrators to figure out how we would make this work.

Find a workable solution (1)

Sarah
Find a workable solution.

I adopted a dig in, pray, and get through it mentality (1)

Sarah
I adopted a dig in, pray, and get through it mentality.

I normally like to test equipment thoroughly before purchasing (1)

Sam
I normally like to test equipment thoroughly before purchasing.

Provide remote support (1)

Sam
Provide remote support.

Provide was remote technical support (1)

Mike
Provide was remote technical support.

Adapted to fit the needs of our current remote learners and students in quarantine (1)

Sarah
Adapted to fit the needs of our current remote learners and students in quarantine.

Adjust on the fly (1)

John
Adjust on the fly.

Assure everyone that it will be ok (1)

Sarah
Assure everyone that it will be ok.

But the pandemic certainly accelerated our adoption (1)

Sam
But the pandemic certainly accelerated our adoption.

Class in quarantine (1)

John
Class in quarantine.

Continually trying to find out what works best with Zoom (1)

Sarah
Continually trying to find out what works best with Zoom.

Engage remote learners (1)

Sarah
Engage remote learners.

Face new challenges with it (1)

Sarah
Face new challenges with it.

Hard to plan (1)

John
Hard for teachers to plan.

Learning virtually (1)

John
Learning virtually.

Multiple learning scenarios (1)

John
Multiple learning scenarios.

Must provide ongoing support (1)

John
Must provide ongoing support.

One day to the next (1)

John
One day they have their full class, and then the next day.

Ongoing challenge with remote learning (1)

Sarah
Ongoing challenge with remote learning.

Looking for a short-term solution to our remote learning issues (1)

Mike
Looking for a short-term solution to our remote learning issues.

Out of comfort zones (1)

John
Out of their comfort zones.

Positives of COVID (1)

John
Their teacher is still teaching them, and there is something pretty cool about that.

Prepare for remote learning (1)

Sam
Prepare for remote learning.

Remote learning was extremely stressful at first (1)

Sarah
Remote learning was extremely stressful at first.

Some are at home (1)

John
Some are at home.

Spent many hours in meetings planning (1)

Mike
Spent many hours in meetings planning.

Streaming requirements due to the pandemic (1)

Mike
Streaming requirements due to the pandemic.

Stress of COVID (7)

Sam
Trying to teach both in-person and remote learners provides teachers with a significant challenge, so we try to minimize the number of remote learners and restrict it to those in quarantine or those with health concerns.
Sam
We also had very little time to train teachers on how to use the new cameras and software.
Sam
I felt behind throughout the summer due to the rush of receiving and installing all of the new technology while also completing all of the normal work we perform during the summer.
Sam
I normally like to test equipment thoroughly before purchasing and installing it, but this summer we had to rush to purchase everything.
John
We have all had to expand our comfort zones this year to make it work.
Sarah
Everyone's stress levels have been high.
Sarah
The initial weeks of the COVID-19 shutdowns and remote learning were extremely stressful at first.

Students in quarantine (1)

John
Students in quarantine.

Appendix E: From Codes to Themes (Sample)

Table E1

From Codes to Themes (Sample)

First Cycle: Initial Codes	Second Cycle: Focused Codes	Subtheme	Theme
Can learn new skills quickly.	Teacher Attitudes	Encouragement	Supporting
See myself as a facilitator.	Teacher Attitudes	Encouragement	Supporting
Technology can provide teachers with efficiencies.	Teacher Attitudes	Encouragement	Supporting
Try to contact our faculty and see what their needs are for the next year.	Teacher Attitudes	Encouragement	Supporting
"I hate this" and "I am too old for this."	Teacher Attitudes	Encouragement	Supporting
A little kindness and listening go a long way.	Teacher Attitudes	Encouragement	Supporting
Advising.	Teacher Attitudes	Encouragement	Supporting
Broken technology can hurt teacher morale.	Teacher Attitudes	Encouragement	Supporting
Build a good rapport within our school community.	Teacher Attitudes	Encouragement	Supporting
Cause problems for the teacher.	Teacher Attitudes	Encouragement	Supporting
Control the damage and fix relationships.	Teacher Attitudes	Encouragement	Supporting
Doing the best.	Teacher Attitudes	Encouragement	Supporting
Had to start doing it.	Teacher Attitudes	Encouragement	Supporting
Make sure everything works smoothly.	Teacher Attitudes	Encouragement	Supporting
Emphasized the technology side but did not want to deal with people.	Teacher Attitudes	Encouragement	Supporting
Now they find it beneficial.	Teacher Attitudes	Encouragement	Supporting
Shows patience.	Teacher Attitudes	Encouragement	Supporting
Talking to people.	Teacher Attitudes	Encouragement	Supporting
We have a tremendous influence on the adoption and integration of technology in our school.	Teacher Attitudes	Encouragement	Supporting
Remove the roadblocks.	Teacher Attitudes	Encouragement	Supporting
Not going to be perfect.	Teacher Fears	Encouragement	Supporting
See people when they are completely frustrated and upset.	Teacher Fears	Encouragement	Supporting
Which caused a lot of	Teacher Fears	Encouragement	Supporting

First Cycle: Initial Codes	Second Cycle: Focused Codes	Subtheme	Theme
frustration.			
You can adjust.	Teacher Fears	Encouragement	Supporting
You can change.	Teacher Fears	Encouragement	Supporting
It will be ok even.	Teacher Fears	Encouragement	Supporting
They just need me to sit and listen while they talk through it.	Teacher Fears	Encouragement	Supporting
Calm everyone's fears.	Teacher Fears	Encouragement	Supporting
Calming teachers' fears about using technology.	Teacher Fears	Encouragement	Supporting
Caused stress among teachers.	Teacher Fears	Encouragement	Supporting
Coming to my office and breaking down.	Teacher Fears	Encouragement	Supporting
I feel like I have become a technology counselor.	Teacher Fears	Encouragement	Supporting
Met with a lot of fear.	Teacher Fears	Encouragement	Supporting
Reassure our faculty.	Teacher Fears	Encouragement	Supporting
They figure it out on their own while they talk to me.	Teacher Fears	Encouragement	Supporting
We had several teachers breakdown.	Teacher Fears	Encouragement	Supporting
I am just reactive.	Providing Device Support	Technical Support	Supporting
Issues stay hidden.	Providing Device Support	Technical Support	Supporting
Random things come up.	Providing Device Support	Technical Support	Supporting
Schedule to refresh our hardware.	Providing Device Support	Technical Support	Supporting
Always be failures with technology equipment.	Providing Device Support	Technical Support	Supporting
Available when something goes wrong.	Providing Device Support	Technical Support	Supporting
Fix problems with many variables.	Providing Device Support	Technical Support	Supporting
Have to figure out.	Providing Device Support	Technical Support	Supporting
Help desk for open tickets.	Providing Device Support	Technical Support	Supporting
I want technology to work.	Providing Device Support	Technical Support	Supporting
Keep an eye out for any issues.	Providing Device Support	Technical Support	Supporting
Need them to work immediately.	Providing Device	Technical Support	Supporting

First Cycle: Initial Codes	Second Cycle: Focused Codes	Subtheme	Theme
	Support		
One more point of failure.	Providing Device Support	Technical Support	Supporting
So many pieces involved.	Providing Device Support	Technical Support	Supporting
Started having an issue.	Providing Device Support	Technical Support	Supporting
Tried to troubleshoot the problem.	Providing Device Support	Technical Support	Supporting
Try to be proactive.	Providing Device Support	Technical Support	Supporting
We don't have to know every answer.	Providing Device Support	Technical Support	Supporting
Worthy of filing a ticket.	Providing Device Support	Technical Support	Supporting
Our Wi-Fi could not handle the load.	Providing Network Support	Technical Support	Supporting
Affected a large part of our campus.	Providing Network Support	Technical Support	Supporting
Any known issues.	Providing Network Support	Technical Support	Supporting
Caused many problems for our end-users.	Providing Network Support	Technical Support	Supporting
Everything was working fine.	Providing Network Support	Technical Support	Supporting
Maintain our network and devices.	Providing Network Support	Technical Support	Supporting
Narrow down the cause.	Providing Network Support	Technical Support	Supporting
Not easy to troubleshoot.	Providing Network Support	Technical Support	Supporting
Understanding how a network runs, managing the network, and fixing it.	Providing Network Support	Technical Support	Supporting
Which piece of the puzzle.	Providing Network Support	Technical Support	Supporting
Facilitating.	Providing Software Support	Technical Support	Supporting
New platform for many of our users.	Providing Software Support	Technical Support	Supporting
Try to search for new tools.	Providing Software Support	Technical Support	Supporting

Appendix F: Timeline of COVID-19 and Impacts on Schools

Figure F1

Timeline of COVID-19 and Impacts on Schools

Appendix G: Visionary Leadership Research

Table G1

Visionary Leadership Research

Source	Theory	Design	Scope of the Study	Leadership Characteristics	Context	Participants
This Study (2021)	Inductive	Qualitative Narrative	Empirical	(a) Supporting (b) Adapting	Independent Schools in Tennessee	Technology Directors
Taylor et al. (2014)	Visionary Leadership	Quantitative Surveys	Empirical	(a) Provide Guidance, Encouragement, and Motivation (b) Comprehend the Outside Environment, React Appropriately (c) Participation and Openness (d) Innovation and Adaptation (e) Commitment and Morale (f) External Support and Growth (g) Direction and Clarity	U.S. Nonprofit Organizations	Executives and their Subordinates
Kirkpatrick (2004)	Visionary Leadership	Literature Review	Theoretical	(a) Role Modeling (b) Empowerment (c) Image Building (d) Risk-Taking (e) Supporting (f) Adapting (g) Intellectually Stimulating (h) Developing the Organization		
Brown & Anfara (2003)	Visionary Leadership	Qualitative Case Study	Empirical	(a) Courage to Change (b) Plan to Involve Others (c) Be Open to Explore (d) Education (e) Provide Support (i) Build Trust and Consensus	United States	Middle School Principals

Source	Theory	Design	Scope of the Study	Leadership Characteristics	Context	Participants
Khatri et al. (2001)	Charismatic and Visionary Leadership	Quantitative Surveys	Empirical	(a) Expertise and Analytical Ability (b) Visionary and Futuristic Orientation	Companies in Singapore	Employees
Nanus (1992)	Visionary Leadership	Literature Review	Theoretical	(a) Direction Setter (b) Change Agent (c) Spokesperson (d) Coach		
Sashkin (1988a)	Visionary Leadership	Literature Review	Theoretical	(a) Focusing Attention (b) Communicating Personally (c) Demonstrating Trustworthiness (d) Displaying Respect (e) Taking Risks		

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