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The Impact of a 1:1 Technology Initiative on Student Achievement in 10th Grade English Language Arts in a South Texas Public School District

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This dissertation, directed and approved by the candidate's committee, has been accepted by the College of Graduate and Professional Studies of Abilene Christian University in partial fulfillment of the requirements for the degree

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of the requirements for the degree of

Doctor of Education in Organizational Leadership

by

Lois E. Marshall Barker

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Dedication

To my daughter, Ava, and all the little Black girls out there: Never stop taking up space.

Acknowledgments

When I started this journey a little over three years ago, I started running on the fuel of the words of the great Shirley Chisholm: “If they don’t give you a seat at the table, bring a folding chair.” I started this journey with the idea that the knowledge acquired and climb in credentials would be my folding chair at the leadership table in my former school district or any school district seeking to transform traditional learning by integrating technology in learning. The more I learned and discovered who I was as a leader and an educator, the more excited I became to dive into my research, knowing the impact it could have. Nevertheless, excitement alone could not carry me through, especially during a global pandemic—I was blessed to have the support and encouragement of my colleagues, advisors, instructors, friends, and family. It was powerful to have friends and colleagues who had completed this journey to offer me guidance when the weight of writing became heavy. It was powerful to have instructors and a chair that offered immediate, thorough feedback, worked to troubleshoot problems, and offered solutions.

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Abstract

This study investigated the implementation of a south Texas public school district's 1:1 technology initiative to determine the impact on 10th grade English Language Arts student achievement. A mixed method approach was used for this exploratory case study. Multicase sampling was implemented to identify participants. Qualitative data were collected through virtual video conference interviews and analyzed to reflect five emerging themes: lack of quality professional development, teacher efficacy, leadership attitudes toward the initiative, misconceptions about student attitudes and technology skillset, and lack of communication between district administration campus stakeholders. Quantitative data were collected through the CBAM SoCQ and archival campus and district assessment data. The data were analyzed to confirm themes that emerged from the participant interviews. Results indicated that 1:1 initiatives could not positively impact student achievement when teachers do not receive quality professional development and adequate instructional support via instructional resources and coaching. Results also indicated that successful implementation of a 1:1 initiative is dependent on positive leadership attitudes towards technology, and open communication between decision-makers and key campus stakeholders. Based on the study's findings, it is recommended that district and school leaders can better implement 1:1 initiatives by ensuring that teachers can access quality professional development, instructional support, and a curriculum that reflects a pedagogical framework that supports technology integrations.

Keywords: technology initiatives, 1:1, student achievement, technology integration

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Chapter 1: Introduction

For the last two decades, 1:1 technology integration initiatives are increasingly popular in school districts globally. In the United States, school districts in North Carolina, Texas, California, and New York have been at the forefront of this charge to use technology to equip students with 21st-century skills, increase student academic performance, and improve teacher and student engagement (Chatterji, 2018; Simmons & Martin, 2016). Schools invest millions of dollars purchasing hardware and instructional software to close accessibility and achievement gaps, transform the traditional learning environment, all to increase student academic performance while equipping students with much needed technical skills necessary for an evolving global market (Imbralie et al., 2017).

However, the current body of research aiming to evaluate the success of these initiatives yields mixed results. There is limited research supporting the positive impact of technology integration initiatives on student achievement and even more limited research highlighting the successful implementation of 1:1 initiatives (Bulman & Fairlie, 2016; Hull & Duch, 2016). Studies have revealed the successes of school districts such as the Mooresville School District's Digital Conversion Initiative on student achievement, highlighting consistent student increases on state assessment every year after the program's implementation in 2007 (Hull & Duch, 2016; Mooresville Graded School District, 2013). Other studies have noted small gains in specific subjects such as math, science, and reading; however, these studies were not overall program evaluations exploring all components of districts' 1:1 initiatives (Zheng et al., 2016). The field is open to more studies exploring what successful initiatives look like informing other districts interested in implementing similar programs or districts in need of evaluating and improving initiatives already in place.

Background

The south Texas public school district (STPSD) is one of the nation's largest urban school districts. This south Texas public school district consists of roughly 280 schools and approximately 214,000 enrolled students. After studying 1:1 initiatives in other cities such as San Diego, CA and Mooresville, NC, the district determined that a 1:1 computing initiative would academically propel the district's standings in the state and nationally as well globally. In 2012, the South Texas public school district launched a 1:1 technology initiative.

The district decided to use a staggered-implementation approach rolling out implementation over three academic years: Phase 1, 2013-2014; Phase 2, 2014-2015; and Phase 3, 2015-2016. Although the initiative was expected to be implemented at the secondary level, only high schools received laptops for all students. Middle school teachers received laptops and laptop carts to be shared amongst students. Before the launch, district leaders, campus leaders, and district curriculum and professional development specialists worked closely with leaders from the Mooresville Graded School District. District specialists were then tasked with developing and facilitating professional learning sessions for teachers at the nine Phase 1 high schools. During the 2013-2014 and 2014-2015 academic years, teachers were expected to use showcased educational technology tools and use ItsLearning, the district's online learning management system, to assess students and house lesson plans. In 2015, the district reorganized, and with new leadership in the School Office of Curriculum and Development, the district launched an online curriculum called the Master Courses; blended lessons created for every instructional day in core content areas such as math, English, English as a Second Language (ESL), social studies, and science.

Before each phase, campuses led informational meetings with parents to review the purpose and goals of the 1:1 technology initiative, the instructional implications, hardware costs, and available family resources. Students were required to pay $25 to rent an HP laptop for a school year. Students were not responsible for repair or replacement costs. Students who could not afford the rental fee could apply for scholarships established at some campuses through business and alumni partnerships. All laptops were labeled with a district barcode, came in district-issued laptop shoulder case, and came with a tracking device to deter theft. The district also worked with local businesses to provide affordable internet packages for families so students could use the laptops at home. Before each phase, schools in their respective phases received updates to infrastructure to improve internet access and bandwidth capacity. Campus leaders, along with identified teacher leaders and a campus technologist, attended professional learning sessions to develop implementation action plans and instructional plans.

During the first three years of implementation, district specialists held frequent professional learning sessions to use ItsLearning and educational technology tools. There was no professional development on transforming teachers' mindsets towards blended learning from a traditional instructional framework. However, as the district launched a new curriculum, professional learning sessions started shifting. District specialists introduced teachers to the Technology Integration Matrix (TIM) created by the Florida Center for Instructional Technology (FCIT). This matrix served to guide teachers and help them evaluate how well they were moving via phrases of 1:1 integration during instruction, moving from entry-level integration to transformative integration. District specialists also developed how-to videos to help teachers understand the new blended learning frameworks, use instructional programs and software purchases for math, ESL, English courses, and popular educational technology tools.

As time progressed, the district invested more money in purchasing software and other digital programs for all core content areas. The goal was to improve student achievement and provide teachers with a plethora of resources to differentiate instruction. Many of the purchased digital programs were for the English Language Arts (ELA) content area. For years, the district has struggled to make consistent growth on the state's ELA assessments. The district's low-performing schools maintained those ratings from the state mainly due to low student achievement on the ELA assessments. With students having such personalized access to the internet and learning programs, the district partnered with local organizations to increase access to books and research material as a part of the district's literacy initiative to bridge literacy and technology.

However, the goal of sustaining teacher engagement and collaboration could prove challenging with the district's teacher attrition rate of 11.7% compared to the state's rate of 10.43% and the national rate of 8%. New teachers would have to learn to implement the initiative and use the available digital resources during instruction every year. District specialists offered summer training for new district hires; however, training throughout the school year only focused on curriculum usage and not tools and hardware functionality. As such, mid-year hires would not have received basic ItsLearning training—an essential part of implementing the initiative and technology integration.

With a district as large and dynamic as this south Texas public school district, significant undertakings such as the 1:1 initiative must be well-planned and communicated to ensure successful implementation. Without a plan and interventions, initiatives such as this district's 1:1 initiative can prove ineffective and costly. As the district strives to improve student performance

and teacher engagement via technology integration, it is essential to assess how the initiative is being implemented in classrooms and determine how the state goals are being fulfilled.

Statement of the Problem

The National Education Technology Plan (NETP) highlights technology as a powerful tool for advancing the relationship between teachers and students, shrinking inequity and accessibility gaps, and adapting learning experiences to meet all learners' needs (U.S. Department of Education, 2017). Thus, many U.S. school districts shifted from traditional learning settings to investing millions of dollars in instructional software and hardware to create technology-integrated learning environments via flipped learning and blended learning classrooms (Banister & Reinhart, 2015; Delgado et al., 2015). Much research has been done by the U.S. Department of Education and the International Society for Technology in Education (ISTE), documenting numerous benefits to technology integration such as increasing student achievement, equipping students with much needed 21st-century skills, and increasing teacher self-efficacy (Brown et al., 2016; Coyne et al., 2017; U.S. Department of Education, 2017).

Despite the positives of technology integration, many districts struggle with quality implementation and successful integration longevity (Lamb & Weiner, 2018). Simply providing teachers and students access to technology does not guarantee improved student learning outcomes (Grady, 2011; Waxman et al., 2013). As such, district leaders must assume the role of technology leaders to ensure quality implementation across their districts (Garcia et al., 2019; Metcalf & LaFrance, 2013). However, many district leaders fail to initiate technology integration plans without built-in structures to support and encourage pedagogical change to sustain a successful integration initiative (Lamb & Weiner, 2018; Miranda & Russell, 2012).

In 2012, this south Texas public school district invested roughly 100 million dollars as a part of a multimillion dollar bond program to provide technology upgrades to the district's high schools to prepare for the launch of its technology integration initiative. In 2012, the STPSD leadership introduced the initiative sharing the goal of integrating technology in schools "to create a personalized learning environment for today's 21st-century learners and to enable teachers to facilitate instruction, manage curriculum, collaborate with their peers, and engage today's digitally wired students" more effectively. However, five years into implementation, there is no clear indication the initiative significantly impacted student achievement and teacher engagement.

Lamb and Weiner (2018) stated although student engagement tends to spike during the initial implementation stages, engagement can be challenging to sustain. During the 2014-2015 and 2015-2016 school years, schools that implemented the initiative demonstrated gains in student achievement scores on state and district math and English assessments compared to the campuses that had not yet implemented the initiative. However, student scores did not continue to improve at the same rate during the 2017-2018 school year. Schools that once met state performance markers and showed increased engagement are now tiered as low performing schools.

In reports submitted to the STPSD school board, the interim superintendent's only indication that technology was being implemented was tracking teacher logins to supplemental math and reading programs, particularly at the district's low-performing campuses. For example, in several board meetings, the interim superintendent cited 3–5% increases in teacher and student logins as a blended learning success. However, reports from the STPSD instructional technology department indicated that, on average, teachers and students accessed the district's online

curriculum only 13 times a month during the first half of the 2018-2019 school year. It seems that district leaders do not have additional success measures or protocols to honestly assess the initiative's success. Although the south Texas public school district continues with the initiative, the initiative's full potential is failing to take hold. District leaders are continuing to invest money in more instructional software and hardware as a part of the initiative without a thorough analysis of the program to determine what is and is not working. District leaders need to examine the components of the initiative to ensure it is meeting district expectations.

Purpose of the Study

The purpose of this exploratory case study was to investigate the implementation of the South Texas public school district's 1:1 technology initiative to determine whether the program is being successfully implemented or if there are improvements to be made to ensure the program is fulfilling the stated goal of improving student academic performance in English Language Arts. The initiative is a significant financial investment for the district, and it is imperative to determine if it is implemented well and if the program's goals are being fulfilled. The following questions were designed to collect valid data to better understand the implementation and integration of technology in 10th grade ELA classrooms and student achievement:

Research Questions

Q1. How is the 1:1 technology initiative fulfilling the stated goals?

Q2. What impact does the initiative have on student performance on the state's 10th grade English Language Arts (ELA) assessment?

Q3. How are teachers integrating technology in 10th grade ELA classrooms?

Q4. What are the concerns of teachers in a south Texas public school district related to the initiative and technology integration in 10th grade ELA classrooms?

Q5. What changes can be made to improve initiative implementation in 10th grade ELA classrooms?

Definition of Key Terms

1:1 technology initiative. This refers to a program that provides teachers and students unlimited access to technology. Teachers and students receive a device such as a laptop or iPad to use as a learning tool in the classroom and/or at home. These initiatives result in a change in learning environments to incorporate digital resources and individualized instructional approaches (Harris et al., 2016; Hull & Duch, 2016).

21st century learning skills. These are skills that foster learning for the 21st century and a global market. These are skills include communication, collaboration, critical thinking, digital literacy, creative thinking, ethics, and values (Garthwait & Weller, 2005; McLester, 2011).

Blended learning. Blended learning is instruction that combines face-to-face classroom learning with online learning (Tucker, 2013). Researchers noted that blended learning occurs when a student learns in part at a supervised brick-and-mortar setting away from home and in part through online or virtual delivery with some student control over pace and path (Acree et al., 2017; Horn & Staker, 2011).

STAAR/EOC. The State of Texas Assessments of Academic Readiness is a series of standardized assessments used in the Texas public school systems. In high school, these assessments are also referred to as End of Course assessments. Core content areas such as mathematics, English Language Arts/Reading, social studies, and science are assessed. Students

in grades 3-8 and grades 9-11 are expected to take these assessments (Texas Education Agency, n.d.).

STPSD 1:1 initiative. STPSD 1:1 Initiative is the district-wide technology initiative aimed at digitally transforming 21st-century learning and teaching. This initiative is about providing access to all students via a 1:1 technology approach to equip them with 21st-century skills and prepare them for the global community. Two primary drivers of the initiative are technology and the learning management system. The district's online learning management system houses the district's curriculum, blended learning student lessons, digital resources, and instructional programs.

Technology integration. This refers to using technology tools and resources—computers, mobile devices, software applications, and online learning platforms—in daily classroom practices (Shapley et al., 2010).

Summary

Researchers noted that school districts with successful technology initiatives had created systems to monitor those programs' implementation. Other success factors include program planning, structured funding, and heavy investments in teacher development (Hull & Duch, 2016). As a district, such as this south Texas public school district, continues to promote technology initiatives, it is vital that stakeholders and decision-makers ensure that success factors are present and supported in all stages of planning and implantation.

Chapter 2: Literature Review

Overview

The purpose of this exploratory case study was to assess a south Texas public school district's 1:1 technology initiative to determine whether the program is working or if there are improvements to be made to ensure the program is fulfilling the stated goal of improving student academic performance in 10th grade English Language Arts (ELA). Tenth grade is a critical grade for many schools across the state. In previous years, under No Child Left Behind (NCLB), Texas schools received ratings based on several factors, including Adequate Yearly Progress (AYP) based on 3-8 grade and 10th-grade student assessment data. In 2015, NCLB was replaced with the Every Student Succeeds Act (ESSA), and the Texas Education Agency revised its school accountability rating system. This new system consists of three domains, including school progress. School progress is measured by assessing student growth by comparing 10th-grade assessment performance to 9th-grade assessment achievement.

For this reason, many schools in this south Texas public school district placed much attention on 10th-grade achievement and instruction. Part of the district's plan to ensure high ratings from the state is the use of technology in classrooms, and as such, the initiative is a significant financial investment for the district. It is imperative to determine if it is being implemented well and if the goals are being fulfilled.

To highlight the gaps in the current literature exploring the effects of 1:1 initiatives on student achievement and examining models of successful technology initiatives, I focused my research on studies that examined the impact of technology on student achievement and student achievement, specifically in English Language Arts and reading, and evaluations of 1:1 initiative implementations. Based on the trends and themes from primary studies, I then broadened my

search to include the following: school leadership perceptions of technology, the impact of leadership on technology integration, teacher perceptions of technology, TPACK framework, and both successful and unsuccessful 1:1 initiatives in school systems. I conducted these searches using digital platforms such as EBSCO host via Abilene Christian University's Brown Library online catalog, Google Scholar, and the Education Resources Information Center (ERIC). I read several books on program evaluations, flipped classrooms, blended learning, and technology integration.

This literature review aimed to explore the successful implementation of technology initiatives and the impact of technology initiatives on student achievement. This review starts with an overview of the rise of technology initiatives in school systems over the last two decades. It was essential to establish a historical context to understand the current implications for school districts seeking to implement and sustain 1:1 technology initiatives. The following sections of this literature review explored the impact of technology on student achievement, leadership roles in technology integration, the role of professional development, and frameworks used to design and implement technology programs in school systems.

Historical Context of Technology Integration and Initiatives

For more than two decades, technology has assumed a larger role in education. Many school districts now view technology as the answer to many of their instructional woes. School leaders believe that adopting technology will equip students with 21st-century skills, motivate students to higher levels of academic achievement, improve assessment quality, and engage both teachers and students in new modes of learning (Frazier et al., 2019; Harris et al., 2016). In 1986, Apple became the first provider of 1:1 access for teachers and students through the Apple Classrooms of Tomorrow (ACOT) program (Garthwait & Weller, 2005; Harris et al., 2016). The

goal of ACOT was to change the context of teaching and learning (Garthwait & Weller, 2005). Within two years of implementation, although there was no instructional software available for Macintosh computers, teachers found ways to engage students with technology, starting with the development of foundational skills such as keyboarding and utilizing productivity tools such as word processing and graphics and spreadsheet integration (Garthwait & Weller, 2005; Harris et al., 2016). In 1992, with funding from the National Science Foundation, the ACOT program started experimental, ongoing teacher practicums and summer institutes in Ohio, California, and Tennessee (Dwyer, 1994). For the last twenty years, studies tracking the implementation of ACOT discovered that in classrooms where technology was integrated, learning was student-centered, and there were more teacher-student and student-student collaboration than in a traditional learning environment (Dwyer, 1994; Garthwait & Weller, 2005). These studies also noted that students who participated in student-centered learning environments performed higher on standardized assessments than their peers in a traditional, teacher-focused learning environment (Garthwait & Weller, 2005). ACOT's success influenced other technology companies to invest in innovating education and revamping the traditional classroom model.

In 1996, 10 years after Apple's ACOT debut, Microsoft and Toshiba launched Microsoft's Anytime Anywhere Learning (AAL) Program (Belanger, 2000). AAL started with 52 pilot schools and expanded to more than 200 schools a year later. Researchers noted that AAL educator participants shifted from teacher-centered instruction to small group, project-based, and personalized learning approaches (Belanger, 2000). Studies revealed an increase in student engagement and students taking ownership of their learning due to receiving live data and immediate feedback (Belanger, 2000). Toshiba provided notebook computers, financing, and insurance to AAL participants. Microsoft sponsored teachers' professional development via

how-to videos, case studies, resource books, and online forums for teachers to collaborate and troubleshoot implementation and instructional problems (Belanger, 2000). Like Apple, Microsoft supported annual AAL summits to provide educators with opportunities to discuss and design better approaches to building more robust technology programs.

The success of ACOT and AAL, including the global success of technology initiatives in countries like Australia, influenced many administrators and legislators to champion the rise of technology in schools. In the race to ensure that American students can compete in an ever-evolving, innovative global market, many presidents signed bills to promote technology use in schools. In 1994, President Bill Clinton signed The Goals 2000: Educate American Act (Goals 2000: Educate America Act, 1994). Part C of the bill required the Department of Education to design a national strategy to integrate technology into all educational programs and state and local school systems (Goals 2000: Educate America Act, 1994). This section of the bill also called upon the Department of Education to develop an understanding of how technology can be used to enhance instruction, to demonstrate how technology can be used to create an equal opportunity for all students to meet state education requirements successfully, and to design quality professional learning opportunities for educators with the ability to infuse technology into their classroom instruction (Goals 2000: Educate America Act, 1994; Harris et al., 2016).

In 2001, President George W. Bush passed the No Child Left Behind Act (NCLB; U.S. Department of Education, 2002). In Part D of the bill, legislators proposed that student achievement can be improved with technology (U.S. Department of Education, 2002). The bill included assistance to states to implement and acquire technology for students and educators (U.S. Department of Education, 2002). In addition to funding, the bill called for professional development opportunities for teachers and school leaders, and school systems to launch

technology initiatives to decrease the digital divide between students (U.S. Department of Education, 2002). Not only did NCLB mandate school districts to use technology but added extra pressure on educators and leaders to raise academic achievement. NCLB forced many districts to launch costly technology initiatives revamping most adoption structures from simple computer labs to ensuring that all students have access to a personal device.

In 2002, Maine invested $37 million and launched its Maine Learning Technology Initiative (MLTI; McLester, 2011; Simmons & Martin, 2016). MLTI provided 30,000 of the state's seventh and eighth-grade teachers and students with Apple iBooks (McLester, 2011). Districts invested heavily in infrastructure and teacher development. Middle schools were equipped with wireless internet, and teachers received professional development on integrating technology into the existing curriculum (Hull & Duch, 2016; McLester, 2011). Studies revealed that after two years of implementation, eighth-grade student writing achievement scores increased compared to student performance before MLTI implementation (Hull & Duch, 2016; Kirkpatrick et al., 2018). Maine's technology initiative sparked the technology movements in states such as Texas and Michigan.

In 2003, the Texas Legislature created the Technology Immersion Pilot (TIP) based on the notion that technology immersion would improve student achievement in public schools (Shapley et al., 2009). The Texas Education Agency (TEA) invested over $20 million in federal funds to fund technology immersion programs at high-need middle schools through a grant process (Shapley et al., 2009). Studies revealed the program had no impact on reading assessment scores and school satisfaction (Hull & Duch, 2016; Kirkpatrick et al., 2018). In 2005, the state of Michigan invested $7.5 million to launch the Freedom to Learn (FTL) program, which sought to improve student learning and achievement (Harris et al., 2016). FTL aimed to

provide teachers and leaders with professional development to equip them with the skills and practices needed to support student technology use and integrating technology in current instructional practices (Harris et al., 2016). Over 20,000 students and 1,500 educators from the state's low-performing middle schools received HP notebook computers. Leaders realized that for FTL to succeed, educators and school administrators needed extensive ongoing professional learning opportunities and thus developed a professional development model with the Michigan Association for Computer Users in Learning (MACUL; Allen et al., 2009; Harris et al., 2016). Researchers noted that FTL implementation success depended on leadership support and ongoing teacher development (Allen et al., 2009; Harris et al., 2016).

In 2007, Mooresville's Graded School District launched the Digital Conversion Initiative to close equity and achievement gaps (Department of Education Office of Educational Technology, 2014). The initiative's goals were to ensure all students received the same classroom opportunities in a 21-st century learning environment (Department of Education Office of Educational Technology, 2014; Simmons & Martin, 2016). By 2011, all students, grades 3 through 12, received laptops. The district invested in school infrastructure and teacher development. In addition to hardware purchases, the district invested in digital learning programs and instructional resources. Studies revealed that after eight years of implementation, student achievement increased in both reading and math on state assessments (Department of Education Office of Educational Technology, 2014; Hull & Duch, 2016; Simmons & Martin, 2016).

Although Texas's Technology Immersion Pilot (TIP) was not entirely successful in improving student achievement in select Texas middle schools, this school district believed that technology integration would help turn around some of its neediest campuses. In 2013, this study's south Texas public school district launched a 1:1 technology initiative to equip students

with 21st-century skills, improved student achievement on state and district assessments, and increased student and teacher engagement. Before the launch, the district collaborated with Mooresville Graded School District because of Mooresville's success with technology integration. After five years of implementation, the school district's 1:1 initiative is yet to live up to its full potential. The district continues to have some of the lowest teacher retention rates in the state, and increased student academic performance on state and district assessments have not been consistent as some of the district's high schools are designated low performing by the Texas Education Agency. Others are being monitored as they are close to being labeled low performing. Despite unfulfilled goals, the district continues to invest thousands of dollars in purchasing new hardware and instructional programs for core subject areas. District leaders justify continuing the program by tracking teacher and student logins into the district's online learning management system, and district purchased digital programs to improve reading and math state assessment scores. The district continues a program by evaluating its effectiveness.

With the increase of schools implementing 1:1 initiatives, so has the research on this topic. However, the current body of research remains mixed on the overall effectiveness of 1:1 learning initiatives. Some studies indicated that programs fail in districts for several reasons—lack of professional development, cost, and poor planning (Chen, 2010; Wagner, 2010). However, program evaluations have identified success factors of effective 1:1 initiatives, including staggered implementation, continuous professional development, and budget restructuring (Levinson, 2012; Ntuli, 2017; Simmons & Martin, 2016).

Technology Integration

Over the last decade, the United States has spent over 60 billion dollars on funds allocated to technology integration in education (Lei, 2010). With the increase of technology in

public schools across the nation, technology types have also become increasingly diverse. Current technology is more than laptops and tablets in educators and learners' hands but includes interactive whiteboards, digital document cameras, and computer software programs. Technology integration requires more than simply using a device to perform a task or collect data. With the growing interest in technology, district and campus leaders must investigate how teachers should best utilize technology during instruction.

Some researchers argued that technology integration in the classroom could increase student academic achievement by offering an alternative method for students to learn content information more effectively and demonstrate mastery of state standards on assessments. In a study of elementary students in a Montessori School, Montminy (1999) discovered that technology integration allowed students to access the same content as delivered during teacher-directed instruction differently, providing students with extended examples of a concept. Montminy (1999) noted that technology provided students with expanded knowledge and additional examples of concepts promoting a deeper understanding of content. Other studies noted that virtual learning enhanced student learning and motivation compared to traditional instruction (Harris et al., 2016; Judson, 2010; Ryan, 2000).

Some researchers also credited technology integration as an effective means to close the achievement gap by providing teachers more ways to differentiate and personalize learning, thereby offering more precise support to build upon students' strengths and areas of deficiency (Harris et al., 2016; Judson, 2010). Most instructional intervention programs have built-in benchmarks and data tracking features allowing teachers to monitor and target students' areas of weaknesses, and over time, with personalized intervention, students can show academic improvement. Studies of students at risk for failing assessments in core content areas such as

language arts and mathematics revealed that students in technology-infused settings experienced academic gains compared to students in traditional classrooms (Judson, 2010; Neill & Mathews, 2009).

While some researchers have noted academic gains in students receiving technology-enriched instruction, other researchers highlighted the benefits of technology on students' academic achievement and their engagement, classroom behavior, and motivation (Fenton, 2017; Frazier et al., 2019; Kirkpatrick et al., 2018). Student engagement means that students are exhibiting behaviors that support learning and, as such, can positively impact student academic achievement. In a fourth-grade classroom study in a Title I Chicago school, Harris et al. (2016) discovered technology integration contributed to higher assessment scores and increased student engagement.

The technology itself does not ensure effective instruction and students' academic success but can hinder both teacher and student success. Lei (2010) discovered the amount of technology did not impact student academic achievement, but it was the instructional best practices and quality of technology use during instruction that positively impacted student achievement. Lei (2010) noted teachers created more student-centered classrooms using sound instructional design, only incorporating technology as needed, did student engagement and achievement show improvement. Padron et al. (2012) discovered many teachers used technology for administrative and lower-level thinking tasks, and as a result, there was no impact on student engagement and achievement. When teachers effectively integrate technology in daily instruction, student perception of technology changes, and over time students become more efficient learners and users of technology, thus improving academic achievement and engagement (Frazier et al., 2019; Heath, 2017).

Technology Integration Models and Pedagogical Frameworks

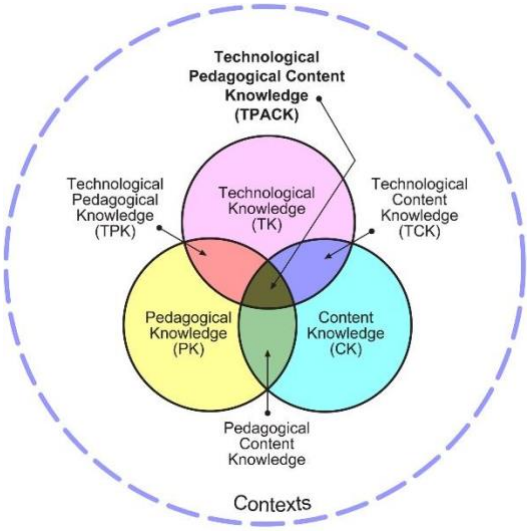
The presence of technology in a classroom does not always translate into effective integration and student learning. Teachers must be cognizant of learning about and using technology and the methods and frameworks to utilize technology for their purposes effectively. Research on technology integration models emphasized the importance of selecting a model that is an appropriate fit for a school or district's curriculum, student learning styles, and desired academic results (Fenton, 2017; Heath, 2017). Historically, educators focused on expanding content and pedagogical knowledge. However, with the rise of technology programs in school systems, there must be a shift in teacher knowledge. In 2006, researchers Mishra and Koehler developed the Technological Pedagogical Content Knowledge (TPACK) framework to offer educators a guide to effectively integrate technology (Jones, 2017; Kurt, 2018). TPACK represents the intersections among the three critical domains of technology, pedagogy, and content (Jones, 2017; Mishra & Koehler, 2006).

Content knowledge refers to knowledge about the actual content matter that must be learned or taught (Mishra & Koehler, 2006). Teachers must have a thorough comprehension of facts, concepts, theories, and procedures within their field of study or assigned teaching content (Jones, 2017). Teachers who lack content knowledge mispresent information to their students (Mishra & Koehler, 2006). Pedagogy refers to a deep understanding of the process and methods of teaching and learning. Pedagogy entails foundation skills such as classroom management, lesson planning, lesson facilitation, and student assessment (Mishra & Koehler, 2006). Without pedagogy, teachers do not have a guide on how to structure and deliver content. Technological knowledge refers to common knowledge about technologies such as the internet, laptops, smartboards, and other digital resources. This knowledge includes understanding operating

systems, computer hardware, and software (Lefebvre et al., 2016; Mishra & Koehler, 2006). These three intersecting components create three subsets of knowledge (see Figure 1).

Figure 1

The Technological Pedagogical Content Knowledge (TPACK) Model



Note. This model shows the three components or primary forms of knowledge, but most importantly how those three components intersect highlighted how multifaceted teaching with technology is. Reproduced with permission of the publisher, Copyright 2012 bytpack.org

Chen (2010) noted it was important the right curriculum and highly skilled teachers were able to facilitate effective implementation in the classrooms. Lefebvre et al. (2016) noted that for teachers to integrate technology during instruction effectively, TPACK must be explicitly employed during professional development opportunities. Lefebvre et al. (2016) also discovered teachers with over 10 years of experience were more familiar with TPACK and had more success with technology integration in their classrooms. It is important to note instructional planning involved teachers' beliefs and perceptions of technology and their pedagogical depth. Hammond and Manfra (2009) suggested that a teacher's pedagogical beliefs will impact how they integrate technology in classroom instruction. Some teachers view technology as a threat as

technology provided students with an opportunity to access information directly via internet search engines (Holen et al., 2017; Topper & Lancaster, 2013). Holen et al. (2017) revealed that for technology integration to impact student achievement and engagement, there must be an instructional shift from being teacher-centered to more student-centered. Hence the importance of teacher development in the technological pedagogical knowledge in the TPACK framework.

Other researchers have noted that technology integration in the classroom often falls short due to a lack of quality professional learning available to new teachers (Brown et al., 2016; Coyne et al., 2017; Metcalf & LaFrance, 2013). Hammond and Mantra (2009) suggested that when leaders design and facilitate professional learning opportunities, they must consider teacher perceptions of technology and pedagogical beliefs to ensure teachers plan practical instructional approaches. Leaders must consider teachers' technological knowledge as it is a good indicator of teacher attitudes toward technology (Abbitt, 2011; Hammond & Mantra, 2009). Hershkovitz and Karni (2018) noted that teachers Mishra and Koehler (2006) argued against teaching technology skills in isolation and suggested an integrated approach. Fransson and Holmberg (2012) noted that learning environments must allow both students and teachers opportunities to explore technologies in the context of content material (Coyne et al., 2017; Jones, 2017; Mishra & Koehler, 2006).

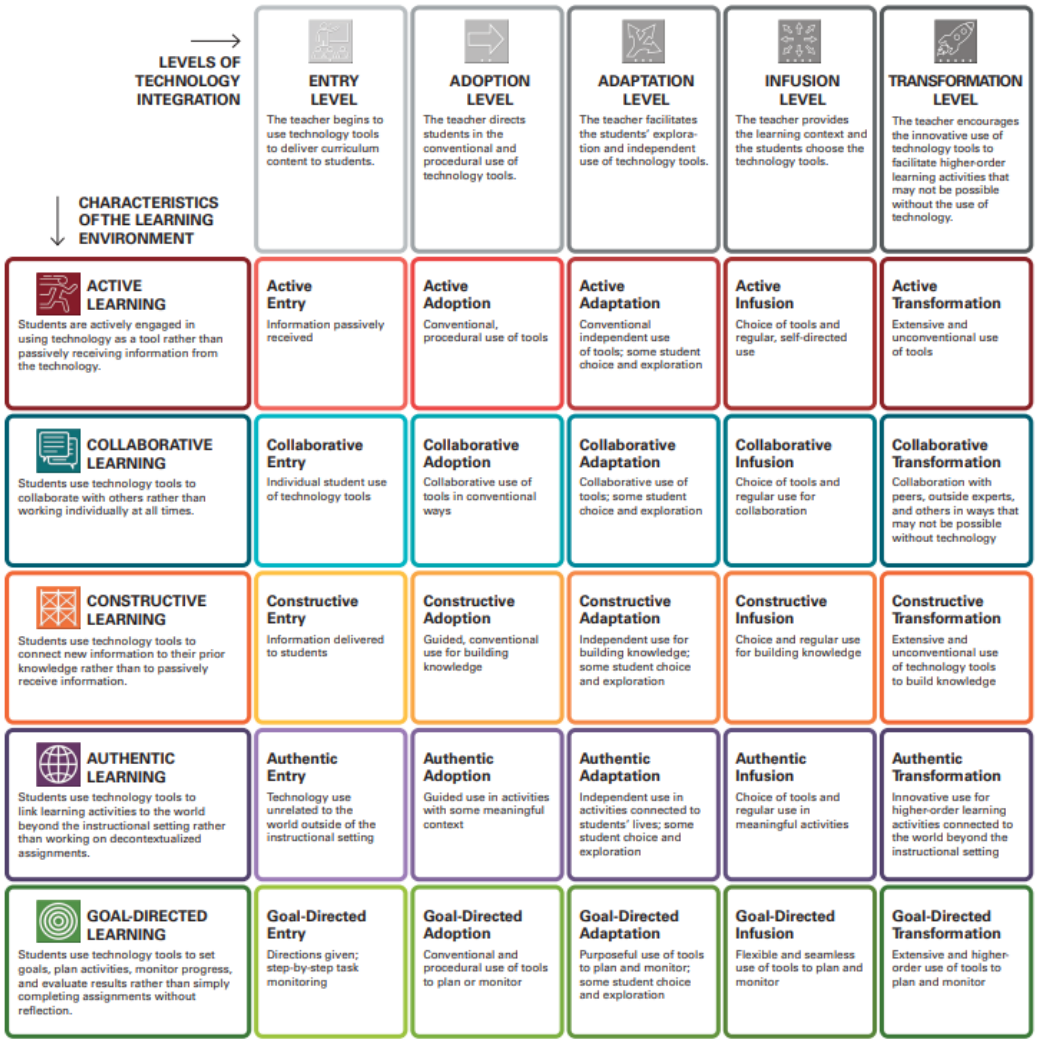
Another common integration model is the Technology Integration Matrix (TIM) developed by the Florida Center for Instructional Technology. This matrix was developed in 2003-2006 to offer a common language for pedagogically sound technology integration for educators, school leaders, specialists, and district leaders based on the constructivist learning theory. The TIM incorporates five interdependent characteristics of meaningful learning environments associated with five levels of technology integration (see Figure 2). Together, the

five characteristics and five integration levels create a matrix of 25 cells used to evaluate instruction and structure instructional coaching and professional learning opportunities. The south Texas public school district, in this study, adopted this model. The district's instructional specialists utilized the TIM to introduce teachers to technology tools to enhance student engagement and help teachers collect real-time assessment data. Most of the learning focused on technology tool application instead of using the matrix to evaluate instruction and quality technology integration. Workshops also focused on how to use technology tools and not on understanding the theoretical framework. Martin et al. (2010) noted that high-quality professional development introduced teachers to the theory behind best practices while showing them how to execute engaging tasks in a classroom setting. Other researchers suggest that in addition to technology integration training, teachers need onsite coaching from instructional technology coaches or specialists to not only receive immediate feedback and instructional planning support but observe effective integration via lesson modeling by an expert (Project Tomorrow, 2012; Smith, 2012).

Both TIM and TPACK offer teachers frameworks to successfully learn and practice their understanding of content and technological skills (see Figure 2). Both TIM and TPACK are also useful for school and district leaders who wish to design and facilitate professional development for teachers as a part of that school systems' technology integration initiative.

Figure 2

The Technology Integration Matrix (TIM)



Note. Developed by the Florida Center for Instructional Technology at the University of South Florida, College of Education. Copyright 2005-2019, University of South Florida. Reprinted with permission.

Leadership Roles in Technology Integration

Chen (2010) stated for 1:1 initiatives to be successful, there must be effective organizational leadership. Principals oversee the daily operations of schools. They control the

campus's priorities and are responsible for spearheading decisions on instruction, testing, and budget. As more school leaders consider implementing technology initiatives, they must ensure that all the necessary structures are in place for integration to impact student learning and teacher practices successfully. Simmons and Martin (2016) interviewed leaders from six districts with successful 1:1 technology programs. Simmons and Martin (2016) noted four elements that must be in place for technology integration to be successful: planning, professional development, funding, and self-efficacy.

Designing a vision and a plan are essential for technology initiatives to work. Principals must communicate the vision and plan to stakeholders such as teachers, students, and parents and support the vision and plan through actions. Researchers noted that successful technology initiatives were launched after extensive planning (O'Reilly, 2016; Simmons & Martin, 2016). Metcalf and LaFrance (2013) discovered when leaders do not view themselves as technology experts spearheading integration, teachers were less inclined to effectively integrate technology in the classroom, which negatively impacted student achievement and engagement. Bauer and Kenton (2005) noted that teachers' instructional practices reflect the professional training received and the direction of school and district leadership. Baur and Kenton (2005) suggested that campus and district administrative teams should position themselves as technology experts in selecting programs, software, and hardware to lead instructional and professional learning and make essential decisions appropriate to teacher and student needs. Plair (2008) called on campus and district leaders to strategically place instructional technology specialists in schools to provide daily ongoing onsite support. Other researchers note that onsite technology support provides teachers with ongoing learning support but also reduces the need for costly professional development (Fenton, 2017; Smith, 2012). Uslu and Bumen (2009) viewed traditional

professional development and short-term classes to introduce technology integration and best practices to educators and not as an ideal structure for ensuring effective, long-time implementation of technology and deepening of pedagogical practices.

Chang (2012) discovered the role of a principal is multifaceted. Chang (2012) described principals as curricular and technological leaders. The research revealed that schools with principals who expanded their role to technology leaders and participated in frequent learning opportunities had higher levels of technology integration success (Chang, 2012). When principals model how to engage in ongoing learning of technology integration and application in the school setting, teachers are more inclined to shift their views about technology integration in the classroom (Machado & Chung, 2015). Inan and Lowther (2009) noted that teacher technology integration impacted teacher characteristics and instructional abilities and their perception of the school environments. It is a principal's job to ensure the campus understands the purpose and role of technology in the classroom and ensures the campus has a positive view of technology. Machado and Chung (2015) suggested that principals revise school policy to reflect technology integration's importance and process. It is imperative for principals to consistently model the effective integration of technology in interactions with staff and students. Studies revealed that principals who created and shared a clear technology vision plan with teachers and demonstrated an understanding of integration pedagogy teachers were more inclined to effectively integrate technology, which impacted student perception of technology (Chang, 2012).

Barriers to Technology Integration

Although technology integration is considered a best practice, the reality is teachers are not implementing technology as effectively as expected by many of these district 1:1 technology

initiatives (Fenton, 2017; Frazier et al., 2019). Therefore, the reason for low levels of integration or a complete lack is due to various barriers. Studies revealed that barriers could be classified into two main categories: institutional barriers and personal barriers (Heath, 2017; Metcalf & LaFrance, 2013). Teachers' most common personal barriers are categorized into three levels of concern (Aldunate & Nussbaum, 2013). One such level of concern is a self-perceived lack of competency, knowledge, and self-confidence with technology (Heath, 2017). According to Heath (2017), teachers reported not feeling tech-savvy or as technology leaders. They express a lack of uncertainty on using technology or implementing programs apart of campus or district initiatives (Aldunate & Nussbaum, 2013).

Another level of concern is the anxiety of appearing uncomfortable with technology and ignorant of how to integrate technology in front of students effectively. Some teachers noted this anxiety could disrupt instruction flow and disrupt classroom management (Heath, 2017). Researchers noted that when teachers show enthusiasm about learning how to grow technological abilities and learning with technology, student motivation and beliefs in their abilities increased (Ching et al., 2006; Ryan, 2000). As students recognize their technological abilities, they become more motivated to engage with technology and master content (Chandra & Lloyd, 2008). Most teachers' final level of concern is curriculum overload and heavy emphasis placed on meeting performance markers for standardized assessments. When technology is not effectively integrated within the existing district curriculum, teachers often see it as an additional thing they must add or do in their classrooms. Given the pressure of high stakes testing and meeting performance markers, teachers indicate there is no time to truly internalize how to integrate technology while meeting other instructional requirements (Heath, 2017; Metcalf & LaFrance, 2013).

Like personal barriers, institutional barriers can be categorized into three levels. The first level of institutional barriers pertains to the administration's attitude towards technology. When the administration does not value the role of technology in instruction, nor do they utilize technology in the daily functions of the campus, teachers tend to feel unsupported in their quest to implement technology (Simmons & Martin, 2016). Not only do teachers feel unsupported, but reluctant teachers will adopt the administration's attitudes and refuse to integrate technology or continue to low-level integration (Metcalf & LaFrance, 2013; Simmons & Martin, 2016).

The next level of barriers relates to the lack of or limited professional learning opportunities from district and campus leadership. According to Brown et al. (2016), when teachers do not have access to well-designed professional learning opportunities and campuses and districts do not budget for technology-focused training and conferences, teachers will not develop the technological and pedagogical skills necessary to integrate technology in the classrooms effectively. When teachers have access to limited or low-quality professional learning opportunities, their instruction does not improve, which negatively impacts student achievement (Metcalf & LaFrance, 2013; Simmons & Martin, 2016). The final level applies to a lack of instructional coaching and technology support. In districts that had success implementing 1:1 technology initiatives, providing teachers and campus leaders with technology specialists and instructional support was vital in helping teaches and campus administrators view themselves as technology leaders (Fenton, 2017; Simmons & Martin, 2016). In districts that do no prioritize hiring sufficient technological support, current coaches are overwhelmed with the number of teachers they are assigned to support (Fenton, 2017).

Possible Solutions to Technology Integration

In exploring the successful implementation of 1:1 technology initiatives, researchers have discovered solutions to many barriers to effective technology integration. Studies have suggested that the most efficient approach to eliminating many barriers to integration is through ongoing professional learning opportunities and onsite instructional support (Fenton, 2017; Heath, 2017; Simmons & Martin, 2016). According to Smith (2012), to achieve successful and sustainable technology integration in classrooms, district, and campus leaders must invest in ongoing professional learning opportunities for teachers. Leaders must also secure funding to employ technology specialists and other instructional support to ensure that teachers receive job-embedded coaching to internalize and implement information and practices acquired via professional development.

Like students, teachers acquire technology skills and knowledge through learning opportunities. Studies indicated that when teachers have access to learning opportunities that model how to integrate technology and design instruction using frameworks, personal and institutional barriers to technology integration were reduced (Fenton, 2017; Uslu & Bumen, 2012). Researchers have also suggested the weight of learning must not solely fall on district support but also on preservice and university-level teacher preparation programs (Metcalf & LaFrance, 2013; Uslu & Bumen, 2012). Metcalf and LaFrance (2013) noted if teacher preparation programs provide learning based on technology integration, then new teachers will enter the field with reduced personal barriers regarding technology integration.

Training will not only enhance teachers' technological skills and knowledge but can also impact their level of fear and confidence regarding implementing technology during instruction (Heath, 2017). It is common to find more students who are digital natives than teachers who

view themselves as tech-savvy (Fenton, 2017; Simmons & Martin, 2016). Teachers fear releasing control to students to guide their learning or accept modeling from students. Teachers are less willing to accept students' help regarding how to use technology and navigate instructional tools and programs. This attitude can negatively impact classroom dynamics, instruction, and in turn, student achievement. However, with professional development, teachers have an opportunity to not only acquire knowledge and skills but a chance to practice instructional strategies before classroom delivery (Smith, 2012). These opportunities boost teachers' confidence and ability to perform in front of their students (Heath, 2017).

Another solution to removing barriers to integration is through technology coaches and specialists. Like athletes who consistently practice improving skills and performance levels with coaches' assistance, teachers also need support as they practice instructional skills and deliver instruction (Fenton, 2017; Simmons & Martin, 2016; Uslu & Bumen, 2009). After teachers receive adequate training, they need onsite guidance to integrate technology via sound instruction appropriately. Most teachers attend one-day technology workshops that do not always allow time for practice and reflection of instructional best practices. However, by providing teachers with access to onsite coaching, they have an opportunity to reflect on new learning, observe modeling of practices, and practice those practices before classroom delivery (Machado & Chung, 2015). In these spaces, teachers receive immediate feedback and fine-tune their instruction and integration of technology. Technology coaches not only support classroom instruction, but support leadership to encourage campus-wide technology integration (Plair, 2008). Technology coaches and specialists are well-trained in technological skills and knowledge. They can influence how campus leaders design and implement technology initiatives. They can also offer personalized, campus-wide professional learning (Plair, 2008).

This ensures that campuses share a unified understanding of technology's role in instruction and establish a positive culture around technology initiatives.

Evaluation of Technology Initiatives and the Impact on Student Achievement

With the push for districts to meet state-mandated requirements to demonstrate high student growth on state assessments, district and school leaders have grown desperate for finding quick fixes. Many districts have opted to integrate technology as a guaranteed approach to improving student achievement and student engagement despite conflicting results from current bodies of research and very few school districts to serve as models of success. There is a limited body of research evaluating the effectiveness of these technology integration programs (Bulman & Fairlie, 2016; Ntuli, 2017). Many current studies measured the effectiveness of specific digital learning programs or the impact of specific technology tools on learning core content areas such as reading and math (Ntuli, 2017). This limited scope does not offer insight into the overall effectiveness of program implementation and components to sustain such programs in school districts (Hull & Duch, 2019; Ntuli, 2017).

In addition to exploring the impact of educational technology tools on learning, other bodies of research attempting to evaluate 1:1 initiatives are confined to a small-scale examination of technology integrated lessons in various classroom settings. Ntuli (2017) evaluated instructional technology's effectiveness as a part of a 1:1 initiative at the early childhood level. However, Ntuli's study only explored the strategies early childhood teachers used to evaluate the effectiveness of tools after lesson integration and not the overall impact of the initiative on student achievement and teacher engagement (Ntuli, 2017).

Studies of Texas's Technology Immersion Program revealed the program did fulfill the goals of equipping students with 21st-century skills and improving academic achievement.

Bebell and Kay (2010) noted that technology was used in more English Language Arts and social studies classrooms compared to other core content areas. Shapley et al. (2010) revealed teachers and students used technology primarily for internet searches and word processing in the initial stages of the program. Studies indicated that exposure to technology did not significantly impact student achievement on state math and English Language Arts assessments (Kirkpatrick et al., 2018). Other studies noted although students have access to personal devices, several other factors such as a shift to more student-centered learning, student technical abilities, and quality of instruction also influenced their success (Holen et al., 2017). Shapley et al. (2010) noted that improved student achievement depended on teacher buy-in and instructional preparedness to integrate technology. After four years of implementation, some of the failures of Texas's TIP were due to a lack of quality professional development for teachers and campus leaders; insufficient planning time between pilot periods and actual implementation; poor communication with key stakeholders; high teacher and administrator turnover; and lack of quality instructional resources (Bebell & Kay, 2010; Kirkpatrick et al., 2018).

In a study exploring a 1:1 initiative in the Los Angeles Unified School District, Lamb and Weiner (2018) discovered that iPads did not immediately positively impact student achievement in ELA. Researchers noted the initiative could have had a more significant impact on student achievement if district leaders invested more time planning roll-out and implementation. Other studies discovered that implementation was difficult due to hardware theft, increasing cost of maintaining hardware, renewing instructional programs and updating instructional software, and budget limitations to allocate more funding to professional development and infrastructure updates (Levinson, 2012; Simmons & Martin, 2016). Levinson (2012) noted the importance of

developing systems to monitor implementation to make adequate adjustments to the program before blindly investing more money into a program that may potentially fail.

During the 2002-2003 school year, the Maine legislature approved technology implementation at the 7th grade level across the state (Silvernail & Lane, 2004). This became known as the Maine Learning Technology Initiative (MLTI). As a part of the MLTI legislature, the Maine Education Policy Research Institute (MERPI) led research examining the effectiveness of the technology initiative (Harris & Smith, 2004; Silvernail & Lane, 2004). After the two years of implementation, reports noted an increase in student engagement and student achievement in core content areas on district and campus benchmarks in core areas such as math and ELA (Silvernail & Lane, 2004). However, gain on state assessments was not linked to ubiquitous technology usage (Fairman, 2004).

As Maine launched its technology initiative, Michigan launched the Freedom to Learn initiative. Research conducted after the initial stages of implementation revealed that teacher-parent communication did not improve, and student-issued technology at home was extremely low (Freedom to Learn, 2004). Surveys indicated only 32% of principals believed the initiative would positively impact student learning (Freedom to Learn, 2004). The initiative could have a statewide impact as the economic downturn impacted state funding.

Few districts have successfully created systems to monitor the implementation of 1:1 initiatives. Simmons and Martin (2016) noted that Mooresville Graded School District and Henrico County Public School District were two of the few models of successful implementation of district-wide 1:1 computing initiatives. Researchers noted that programs were successful in those districts due to thorough planning, clear and frequent communication with stakeholders,

implementation monitoring systems, structured funding, and heavy investments in teacher development (Imbriale et al., 2017; Mooresville Graded School District, 2013).

Studies that examined the success of the Henrico County Public School District noted that 1:1 instruction was not the primary reason for the initiative's success, but more so the increased connections between home and school (Edwards, 2004). The district facilitated mandatory training of parents and students before laptops were provided to students (Edwards, 2004). These training sessions oriented parents and students with the technology program and the relevant software and hardware. The sessions established a relationship between parents and schools, thereby strengthening stakeholder buy-in and create positive community and campus attitudes toward technology (Edwards, 2004; Lemke & Martin, 2004). Critics of the program noted that the technology in the district's high schools increased student distractions and off-task behaviors, resulting in costly filtering software (Lemke & Martin, 2004). While the program increased student engagement and achievement, it also opened students to distractions and information not conducive to learning. Despite initial implementation problems, Mooresville and Henrico County served as models for other school districts who wanted to experience academic gains.

After eight years of implementation in the Mooresville Graded School District, student achievement increased in both reading and math on state assessments (Hull & Duch, 2016; Simmons & Martin, 2016). Researchers discovered the district's success in improving student achievement relied heavily on the district's investment in teacher training and onsite support (Harris et al., 2016). The Mooresville superintendent believed that sound instruction, in addition to professional learning, would ensure that classrooms were engaging, and students would, in turn, achieve success (Harris et al., 2016; Hull & Duch, 2016). Teachers were trained on how to

differentiate instruction and how to create blended learning environments. Technology and instructional software selected were vetted to ensure proper alignment to instructional models (Hull & Duch, 2016; Simmons & Martin, 2016).

Summary

The question of whether 1:1 initiatives have positively impacted student achievement remains highly contested in the literature thus far. Close analysis of early bodies of research has suggested that with the mandate to equip students with 21st-century learning skills, districts have rushed to technology integration without effective models in place, and as such, there are limited models of success to guide current districts. Current evaluations of 1:1 initiatives have been limited to exploring leadership impact on success, highlighting barriers that district leaders face, offering partial insight into how technology impacts achievement. The literature also indicated the focus of most studies on technology and student achievement has been on examining the relationship between specific instructional programs and software on student achievement in core subject areas such as math and English Language Arts. While some studies noted the impact of technology on student engagement and achievement, studies also noted the impact of technology was dependent on teacher abilities, teacher attitudes towards technology, and campus leadership's role as a technology expert. As districts continue to invest in 1:1 technology initiatives, there is a need to expand further research evaluating 1:1 initiatives to examine successes and areas in need of improvement and the impact of student achievement.

Chapter 3: Research Method

Many school districts have adopted the belief that technology integration via costly technology initiatives will improve student achievement and performance on state and district-mandated assessments, provide students with much needed 21st-century skills, and improve teacher and student engagement. However, as districts continue to create and implement 1:1 programs, many do so without a thorough scope of what successful implementation looks like. By evaluating the implementation of technology initiatives in schools, school districts will better understand how to design technology initiatives, factors necessary to implement technology in classrooms successfully, and how technology can impact student achievement. The purpose of this exploratory case study was to investigate the implementation of a south Texas public school district's 1:1 technology initiative to determine whether the program is working or if there are improvements to be made to ensure the program is fulfilling the stated goal of improving student academic performance. The initiative is a significant financial investment for the district, and it is imperative to determine if it is implemented well and if the program's goals are being fulfilled.

Research Questions

Q1. How is the 1:1 technology initiative fulfilling the stated goals?

Q2. What impact does the initiative have on student performance on the state's 10th grade English Language Arts (ELA) assessment?

Q3. How are teachers integrating technology in 10th grade ELA classrooms?

Q4. What are the concerns of teachers in a south Texas public school district related to the initiative and technology integration in 10th grade ELA classrooms?

Q5. What changes can be made to improve initiative implementation in 10th grade ELA classrooms?

This chapter described the research design and methodology, and procedures used in this case study. This chapter was organized into the following sections: (a) description of the research design and methodology, (b) population and sample, (c) instrumentation, (d) data collection and analysis procedures, (e) methods of establishing trustworthiness, (f) researcher role, (g) ethical considerations, (h) assumptions, (i) limitations, (j) delimitations, and (k) summary.

Design and Method

A case study involves in-depth research into a problem or situation to collect rich information to understand its functionality and successes (Patton, 1987). Case studies try to illuminate a set of decisions exploring why they were made, how they were implemented, and what the outcomes were (Yin, 2018). Case studies investigate "contemporary phenomenon in depth and within a real-world context" (Yin, 2018, p. 15). This design was fitting for this study as I investigated the implementation of a 1:1 technology initiative and its impact in the context of high schools within a south Texas public school district. This research generated insight into how the program was implemented and its failures and successes that can be used to inform district officials who continue to fund the initiative without evaluating it but to inform other school districts who seek to implement their technology initiatives and need a model.

Previous studies exploring technology integration initiatives and the impact of those programs on student achievement have been researched through quantitative and qualitative approaches. Although most of the research presented in this field has been quantitative or qualitative, this case study employed both approaches to provide a well-informed picture of how the 1:1 technology initiative was implemented in this south Texas school district and its impact on student achievement. A major component of the initiative is technology integration in classrooms. English Language Arts (ELA) teachers are expected to use laptops and online

district instructional resources with students. According to the initiative's goals, this integration would positively impact student achievement on state assessments like the ELA STAAR/EOC assessment. A qualitative approach was necessary. Qualitative research provides an opportunity to understand participants' perspectives and offers more details and depth about a program to provide an in-depth view of how technology was being integrated into ELA classrooms and gain perspective on the potential program improvements (Merriam, 2009; Patton, 1987). The qualitative methodology shapes research via themes and patterns (Gall et al., 2007). I employed qualitative tools such as questionnaires and interviews to gain a deeper perspective of how the program was working for key participants and what changes needed to improve the program.

This case study's quantitative portion addressed how the initiative impacted student achievement on the state's 10th grade STAAR/EOC ELA assessment. The quantitative approach helps the researcher understand the relationships between variables or groups to explain what is observed (Creswell, 2009; Gall et al., 2007). Quantitative research focuses on numeric and unchanging data and detailed, convergent reasoning (Brians et al., 2016). In this study, I analyzed the 10th grade ELA assessment data from the district and the related campuses. Tenth grade is also a crucial year for many schools regarding school accountability ratings by the Texas Education Agency (TEA). According to the state's accountability manual, one domain in the accountability rating system is school progress, measuring student growth and measuring student growth on the STAAR/EOC assessments over two years. The manual uses ninth grade data as the baseline to measure growth. Many schools place a heavy focus on 10th grade to perform highly on assessments to show growth and receive a favorable rating. I examined data from 2014 to 2019 to create a picture of student performance before implementation and after. In quantitative research, the researcher is expected to describe trends, compare groups or

relationships among variables (Brians et al., 2016; Creswell, 2009). This collection of assessment data provided an opportunity to examine student performance changes after the introduction of technology. It is important to note the researcher must note the limitations of the approach and possible factors that could contribute to the changes signified by the data. Other possible factors impact assessment scores; however, as this was an exploratory case study, the data from the questionnaire and interviews would support or add to the quantitative findings.

Population and Sample

The case study was conducted within the boundaries of a south Texas public school district. The district serves nearly 214,000 students. There are roughly 12,000 teachers in the district, most of whom are female at 74%. Thirty-six percent of teachers are African American, 28% white, and 28% Hispanic. Over 40% of teachers have less than five years of experience, compared to 30% with over 10 years of experience. Nine-one percent of high school students are labeled Title I, and 79% are coded as economically disadvantaged. High school teachers and students received personal HP laptops in three phrases starting in 2013 and ending in 2015. I explored the implementation and the impact of the program at seven sites based on participants' teaching assignments. Saldana and Omasta (2018) suggested that researchers use multicase sampling to conduct a more robust study. Multicase sampling requires the researcher to invite participants from different sites to participate in the case study. After receiving IRB approval, teachers were invited to participate in this study via social media platforms such as Facebook and Twitter. Interested teachers were provided with an introduction post with a link to the study's consent form. After signing the consent form, teachers were provided with an acknowledgment email that contained a copy of the signed consent form and links to the CBAM SoCQ and the sign up to schedule the Zoom interview. The CBAM SoCQ explored their perceptions and

concerns about the initiative and implementation in the classroom. The survey also gathered data such as years of teaching experience and years of teaching in the district to add context to teacher exposure to the initiative. In the individual Zoom interviews, teachers reflected on technology integration in their classrooms, support received during implementation, the impact of student and teacher engagement, and perceived issues with the program. This data helped answer whether the program fulfills the state goals, how teachers are integrating technology in ELA classrooms, and what changes should be made to improve the initiative.

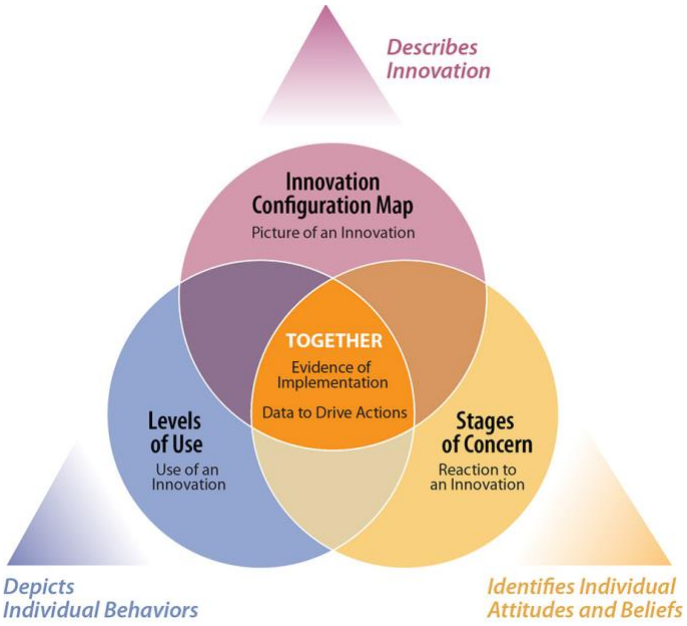
I collected STARR/ELA data via the district's website and TEA's school and district report cards and performance data that are all available to the public without special requests and access approval. The 10 participants came from seven high schools. I collected performance data ranging from 2014-2019 for all campuses and then compared them against each other and the district's overall performance. This data were used to support the information collected from the questionnaire and interviews to determine the initiative's impact on student achievement.

Instrumentation

An online survey was used to collect data from ELA teachers. The instrument for this survey was the Concerns-Based Adoption Model (CBAM) Stages of Concern Questionnaire (SoCQ) developed by the University of Texas in the 1970s and 1980s by a team of researchers at the Research and Development Center for Teacher Education (George et al., 2006). The 35-item questionnaire addresses seven stages of concern when adopting an innovation. The CBAM is a conceptual framework that provides tools that capture the human element of adopting an innovation. As shown in Figure 3, the model has three diagnostic dimensions that help gauge the concerns of implementers and programs used to provide the support needed for successful continued implementation.

Figure 3

The Concerns-Based Adoption Model (CBAM)



Note. This model presents the three components for assessing and guiding the effective implementation of a new innovation. The Concerns-Based Adoption Model was developed in the 1970s and 1980s at the Research and Development Center for Teacher Education at the University of Texas at Austin. Copyright 2006, sedl.org. Reprinted with Permission.

For this case study, I only used the Stages of Concern Questionnaire (SoCQ) to assess teachers' concerns towards the 1:1 initiative. The CBAM SoCQ assesses the seven stages of concerns, including unconcerned, informational, personal, management, consequence, collaboration, and refocusing concerns, at three levels of intensity, including self, task, and impact (George et al., 2006). This questionnaire provided insight as to where ELA teachers are on this spectrum. This tool is intended for diagnostic purposes and is not used to evaluate participants. Questions on the SoCQ cannot be customized, and as such, I used interviews to gain more insight into teacher integration and implementation.

Yin (2018) deemed interviews as one of the most important sources of evidence for a case study. Interviews are essential to answer the "how's" and "why's" of events as well as offering insight into participants' perspectives (Yin, 2018). The tenth grade ELA teachers participated in individual Zoom interviews. Questions were open-ended and structured to focus on support received, teacher perception of the initiative and technology, use of online district curriculum and resources, student achievement and engagement, and improvements needed to ensure successful implementation. Individual interviews created a more private setting that allowed participants to feel comfortable and more inclined to share honest, insightful responses. These interviews also reduced participants' need to change responses to match the responses of other participants if interviews were done in a group setting.

In addition to the CBAM SoCQ and semistructured interviews, I used archival student data for document analysis. I retrieved STAAR/EOC ELA data for the 2014-2019 administrations from TEA's public database and from the district's website. This data were used to support or add to data collected from the SoCQ and interviews. The data helped determine whether student performance improved or declined after implementation. These instruments were used to collect data from multiple sources for this case study (see Table 1).

Table 1

Data Collection Matrix

Research Question	Interview Questions	Data Collection
1. How is the 1:1 technology initiative fulfilling the stated goals?	● How has the initiative impacted your students' ability to collaborate, critically think, and communicate? ● How has technology integration impacted student engagement? ● How has the initiative impacted your ability to network with other teachers in the district? ● How has the initiative impacted your ability to interact with students? ● How has the initiative impacted your classroom instruction?	● Interviews ● STAAR/EOC Data
2. What impact does the initiative have on student performance on the state's 10th grade English Language Arts (ELA) assessment?	● How do you use technology to prepare students for the STAAR/EOC? ● How has technology impacted your students' performance on the ELA STAAR/EOC?	● Interviews ● STAAR/EOC Data
3. How are teachers integrating technology in 10th grade ELA classrooms?	● What type of support was provided during the first year of implementation? ● What did support look like after implementation? ● What type of technology and instructional resources do you use during instruction? ● What type of district curriculum and instructional services were provided? How did you use them? ● How do you select tools to provide ELA instruction? ● What type of strategies do you use to combine technology and ELA instructional practices?	● Interviews
4. What are the concerns of teachers in a south Texas public school district related to the 1:1 initiative and technology integration in 10th grade ELA classrooms?	● How did the district seek teacher input prior to implementation? ● How did the district seek feedback from students and teachers after initial implementation? ● How did the district respond to feedback?	● CBAM SoCQ ● Interviews
5. What changes can be made to improve initiative implementation in 10th grade ELA classrooms?	● What are some successful components of the initiative? ● What are some unsuccessful components of the initiative? ● What are things that can be done to enhance technology integration in your classroom?	● Interviews

Data Collection and Analysis

According to Yin (2018), the strength of a case study is using multiple different sources of evidence. The use of many different data sources allows for the triangulation of data, enhancing the quality of the study and the validity of the findings (Merriam, 2009; Yin, 2018).

Questionnaire

This study used the CBAM Levels of Concern questionnaire (SoCQ) to understand where ELA teachers were in technology usage and initiative implementation. Items addressed participants' perception of technology, adoption, and concerns. Leavy (2017) stated that survey delivery was an important decision as it impacts response rate, budget, and time concerns. Participants received a survey link directing them to a password-protected website to complete the questionnaire. Participants had two weeks to complete the online survey. All 11 10th grade ELA teachers who agreed to participate in the study completed the survey within two days of receiving the link and password. Their responses were stored online and were password protected. Questionnaire responses were scored automatically using AIR's online platform. Questionnaire results were analyzed with the SoCQ scoring tool to identify patterns of concern for individual teachers. The questionnaire data were summarized with considerations for anonymity and confidentiality. Individual participant profiles were shared with participants to add to the interview process.

Interviews

Of all those who completed the questionnaire, one participant indicated he was unwilling to be interviewed as he planned to resign from the district. Before conducting interviews with participants, I had an expert panel of ELA Teacher Specialists and ELA teachers participate in a mock virtual interview to ensure the interview questions were aligned to the study's research

questions and would yield valid data. Participants selected a time and date using a Sign-up Genius scheduling tool. Participants were informed the interviews would be recorded for transcribing purposes and had the opportunity to keep their cameras off and use pseudonyms. All participants wanted their cameras on and choose to be referred to by their real names. I interviewed each participant for approximately 20-40 minutes. The average interview was 25 minutes. These interviews were all virtual and took place on Zoom.

The interviews were open-ended and structured as guided conversations to obtain the most information from participants. Yin (2018) noted it is vital to remain adaptive when conducting interviews as they are fluid and move depending on their responses. In March 2020, the school district switched to virtual learning due to the COVID-19 pandemic. Teachers and students would remain in an entirely virtual learning environment until October 12th. Although the district had infrastructure and curriculum in place, there were essential adjustments that needed to be made to the curriculum to accommodate all learners and additional purchases to ensure that all students had a device and access to the internet. All interviews were conducted before the district offered synchronous learning on October 19, 2020. Participants were allowed to respond to all interview questions using the spectrum of pre-COVID and during-COVID.

All interviews were recorded via Zoom; however, only the audio files were saved to maintain the privacy and anonymity of the participants. Audio files were then uploaded to Otter for transcription. After transcription, audio files were listened to and compared against Otter's transcripts to check for accuracy. Filler words such as "um," "like," and "hmmm" were removed, and names were redacted. Otter provided a summary of keywords for each transcript. I compared the keywords and looked for trends. Those keywords were then compared to trends from the results of the questionnaire to create codes. Leavy (2017) noted that coding serves to classify and

reduce data. The coding process was linked to the summary transcription summary words, research questions, and trends from the questionnaire responses. Leavy (2017) suggested that researchers ask key questions when analyzing data collected. The questions that guided this process were (Leavy, 2017):

- What are the relationships between the categories, themes, and concepts?
- What patterns have emerged?
- What is the essence of the data telling me?
- What do I learn by placing the data in the context of existing literature?
- How might I respond to my research questions?

Each transcript was analyzing using those guiding questions. Sections of transcripts were color-coded based on common themes. Highly contrasting data were also identified. A visual display was created to examine the codes and patterns and the relationship between the questionnaire and archival data.

All audio recordings and transcription data were uploaded to the ACU's doctoral course and stored in my personal Google Drive. I will keep such data for three years following this research's completion, and then I will delete them. I will keep the de-identified coding summary and processes for future reference. My dissertation chair, Dr. Leah Wickersham-Fish, will also keep secure, password-protected copies on her Google Drive.

Assessment Data

In addition to the interview and CBAM questionnaire data, student assessment data were collected. Hatry (2010) defined agency records as data collected and entered into an agency's or organization's record system by a representative of the organization. For data to be considered

reliable, there must be consistency in data source and collection methods (Poister, 2010). Archival data were collected from the district's website and TEA's school and district database. STAAR/EOC data from 2014 (before student access to the initiative) to 2019 (full district implementation of the initiative) was collected and presented in a graph to show changes in student performance. STAAR/EOC data from the 2013 administration was not considered because the assessment format was different and would not present for an accurate comparison. District data and the individual campus data based on the participants' assignments were graphed to tell better a story of changes in student performance following the initial phases of implementation to full district implementation.

Methods for Establishing Trustworthiness

Lincoln and Guba (1985) proposed four perspectives to establish trustworthiness: credibility, transferability, dependability, and confirmability to establish such trustworthiness.

Credibility

Saldana and Omasta (2018) defined credibility as the researcher's ability to convince the audience the study was conducted well and effectively planned. One way to achieve and establish trustworthiness through credibility is through triangulation. By employing multiple data sources such as results from state assessments, CBAM questionnaires, and interviews with teachers, the evidence could be examined to see whether different sources supported each other, resulting in more credible findings (Creswell, 2009; Saldana & Omasta, 2018; Yin, 2018). Member checking was used to ensure that participants feel the findings are accurate. I scheduled frequent check-ins, or peer debriefings, with my dissertation chair, Dr. Wickersham-Fish, to discuss data trends and student data interpretation to ensure a detailed story was presented.

Transferability

I provided a detailed profile of the district and sites in the study so that researchers and other practitioners from other organizations understood the context and could make comparisons to similar situations within their contexts.

Dependability

I explicitly presented the study methods and data collection tools in this chapter and the appendices. The appendices include the consent forms, the CBAM SoCQ, the interview guides, the IRB approval, and permission from AIR to use the CBAM SoCQ and the SoCQ scoring device.

Confirmability

I triangulated data by collecting them from sources and in different forms. I shared my assumptions. An audit trail follows the researcher's path illustrating how all data were collected and analyzed (Shenton, 2004). I used an audit trail, which included check-in notes with my dissertation chair and interview questions.

Researcher Role

Posavac (2011) suggested that researchers should minimize potential conflicts. Participants can be reluctant to participate in studies due to concerns about employer retaliation and misinterpretation of the information collected. I explicitly ensured that participants understand their anonymity and privacy will be protected. As a former ELA Teacher Specialist for the south Texas public school district, I was aware of the direction technology implementation had taken since the introduction of the 1:1 technology initiative. I was also familiar with initiative and technology integration at the schools included in the study. The

questionnaire did not require identifying information from participants as they created a login code. This helped maintain my role as an observer.

Ethical Considerations

I have completed all required ethical and human subject research courses before seeking approval from Abilene Christian University's Institutional Review Board (IRB). This study did not cause any harm to human subjects. As the assessment data does not contain personal student data, no additional permissions were needed. Before posting the study invitation on social media platforms and in specific teacher groups on those platforms, I reviewed privacy and member agreements to ensure I did not violate community rules. The social media posts provided a detailed introduction explaining the nature of the research and a link to the Informed Letter of Consent. The form acknowledged that participants' rights would be protected during data collection. Participants were informed their privacy and confidentiality would be protected as they were assigned codes to respond, and the survey was completed and housed on a password-protected platform. Participants were also aware their responses would remain anonymous and not individually shared with campus or district leadership. During individual virtual interviews, teachers were given the option to use a pseudonym and not turn on their videos. Interview participants received copies of transcriptions to ensure their responses were not manipulated. All documents were stored securely in a password protected format in a Google drive and retained for at least three years.

Assumptions

Given my prior relationship with the district as a former employee, I assumed participants would have the ability to provide useful and insightful information pertinent to this study. I explicitly stated my role as a graduate student at Abilene Christian University and did not

mention any district associations to avoid organizational politics from hindering participation or skew responses. I assumed participants were fully aware of the 1:1 initiative. However, as teacher turnover was an issue for the district, in the introduction of the questionnaire and virtual interviews, I provided an overview of the program and the purpose of the research. I also assumed participants honored the integrity of the study by keeping the contents of the online survey and interview private and not discussing survey items or interview questions with their colleagues.

Limitations

Although the purpose of the study was to evaluate a south Texas public school district's technology initiative, data were collected from only seven high schools to determine the program's functionality and successes, instead of examining data from all high schools implementing the program. The sample size was small, given the size of the district. Soliciting participants was restricted to school media. The only data used were the STAAR/EOC performance data to assess the impact of the initiative on student performance. Other factors may impact student performance and technology integration not included in this study.

Delimitations

In this study, I explored the implementation and impact of a south Texas public school district's technology initiative. Only 10th grade ELA teachers participated in this study. No campus or district leaders were invited to participate as they do not provide direct instruction to students and would not be able to describe firsthand experiences of integrating technology in ELA classrooms. The study reflected the personal views of the participating teachers.

In addition to a lack of campus and district leadership presence, another delimitation of this study was that students were not chosen to be participants. The literature exploring similar

studies indicated that student participants noted their attitudes toward technology were impacted by teacher attitudes and teachers' ability to integrate technology in their classrooms effectively (Harper & Milman, 2016; Heath, 2017). This study only included data from student ELA assessment and interviews and questionnaire responses from teachers. The study does not consider other data such as assessments from other content areas, teacher attrition, and school culture, all of which are considered important factors in exploring the implementation of 1:1 initiatives per literature explored in Chapter 2.

Summary

In this chapter, I summarized the rationale for conducting an exploratory case study at a south Texas public school district, the population and sample, methods for data collection and analysis, concerns this study may cause, and responses and strategies to address and minimize those concerns. I chose an exploratory case study design for this study, collecting data from multiple sources, including archival data, interviews, and questionnaire responses. I studied the participants' views and experiences both individually and comparatively, leading to conclusions about the implementation and impact of the district's 1:1 technology initiative. The following chapters present the results of the data analysis, conclusions, and recommendations for future research.

Chapter 4: Results

The purpose of this exploratory case study was to investigate the implementation of a south Texas public school district's 1:1 technology initiative to determine whether the program was working or if there were improvements to be made to ensure the program was fulfilling the stated goal of improving student academic performance. I used both a qualitative and quantitative approach to collect data from multiple sources to answer my research questions. Using a qualitative approach, I conducted individual Zoom interviews that focused on teacher perceptions of technology integration, student achievement, and overall implementation. Using a quantitative approach, I collected archival assessment data to analyze overall district performance and participants' assigned campuses ranging from pre-student interaction with technology to present, district-wide implementation. In addition to assessment data, participants completed the CBAM SOCQ, which addressed teacher concerns and type of implementation support provided. The sample of participants was comprised of 10th ELA teachers who responded to my social media research invitation.

Analysis Overview

In this chapter, I addressed archival student assessment data, teacher perceptions of the district's 1:1 technology initiative implementation, and the impact on student performance on the state's ELA assessment. I also explored possible relationships between teacher responses during interviews and on the CBAM SoCQ and the archival assessment data. The protocol for participant interviews was discussed in detail as well as participant demographics. Research questions were organized to highlight the main themes generated from the gathered data. Interview responses were categorized to reflect emerging themes. Responses from the CBAM SoCQ were displayed both as individual and summarized data via charts. There was a detailed

description of the level of concerns explored in the questionnaire. These areas of concern were analyzed in relationship to the emerging themes. District and campus archival data were graphed to display changes in student performance throughout the initiative's implementation.

Participants

Participants in this study were solicited via social media. Eleven 10th grade ELA teachers responded to the social media post and agreed to participate in the study. After signing the consent form, all 11 participants completed the CBAM SoCQ. As participants completed the questionnaire, they answered questions that gauged their concerns about implementing the initiative and levels of support received during the decision making and implementation stages. One participant opted out of the interview portion due to resigning from the district. Ten teachers participated in the Zoom interviews. Participants answered open-ended questions that explored their perceptions of the initiative's successes and failures, quality of integration, impact on student achievement, and how well the initiative fulfilled the overall goals. Participants were assigned pseudonyms based on their campus academic rating, to maintain anonymity and privacy. Participants with names beginning with F teach at schools that were formerly considered low performing. Participants with names beginning with H teach at schools that are rated as high performing. Participants with names beginning with H teach at high-priority or low-performing campuses. The number following their names indicates the phase when their campus launched the initiative (see Table 2).

Table 2

Participant and Campus Matrix

School	Academic Status	Phase	Participant*	Years of Implementation
1	Former Priority	1	Frank 1.	7
2	High Performing	2	Howard 2.	7
3	Priority/ Low Performing	1	Pam 1. Patrice 1.	3 2
4	Former Priority	3	Fran 3.	7
5	Former Priority	3	Finn 3.	3
6	Priority/ Low Performing	1	Pedro 1. Phoebe 1. Parker 1.	7 4 7
7	Priority/ Low Performing	3	Penny 3. Peter 3.	7 1

Summary CBAM Stages of Concern Questionnaire

The SoCQ results showed the most significant concerns among participants were unconcerned (unrelated; 81%), personal (78%), management (69%), and refocusing (60%; see Figure 4). Four patterns emerged from the aggregate results: first, self-concerns remained high, followed by impact concerns. Third, there was great interest in management concerns, followed by refocusing concerns. Although there was some diversity in individual questionnaire results, the top concerns were consistent for most participants.

Figure 4

A Line Graph of Aggregate SoCQ Results for Participants

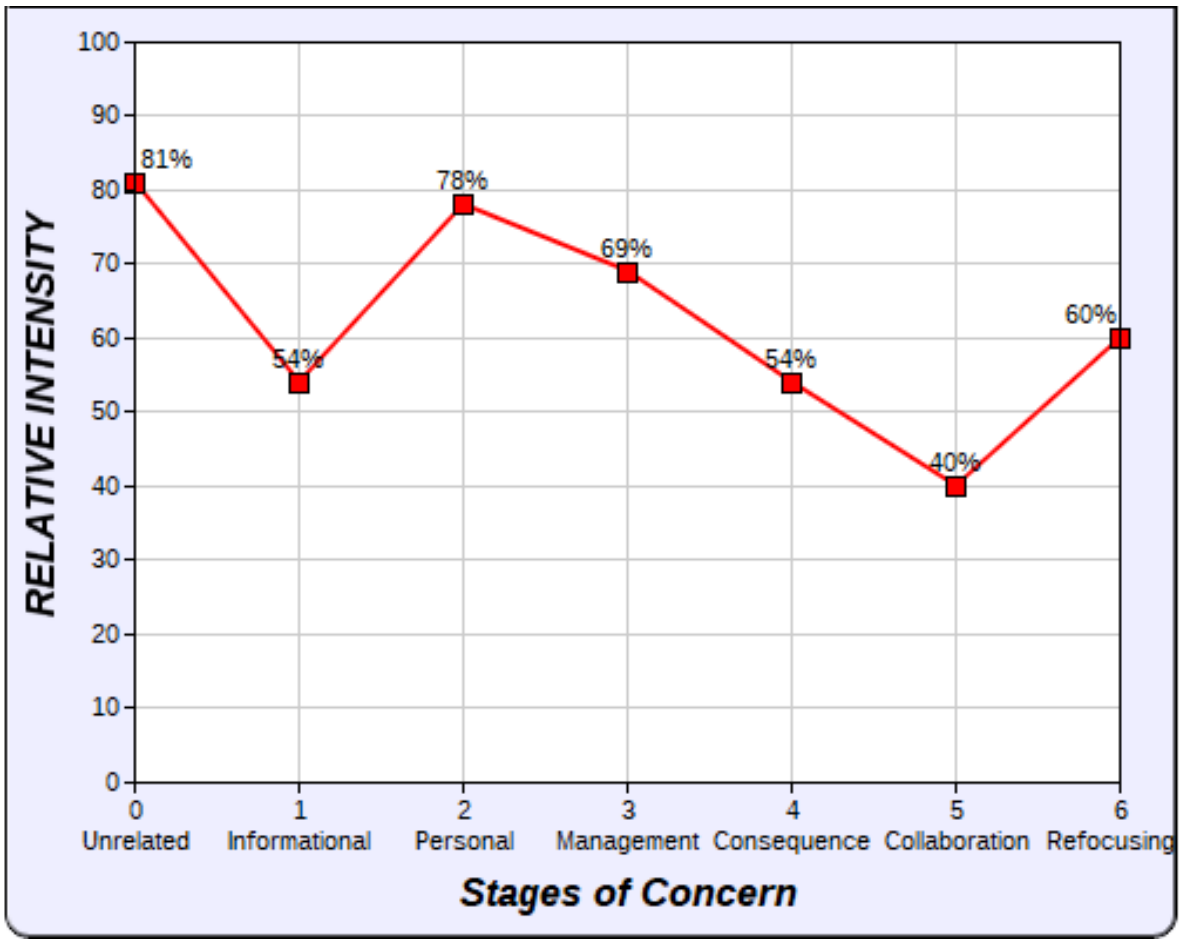
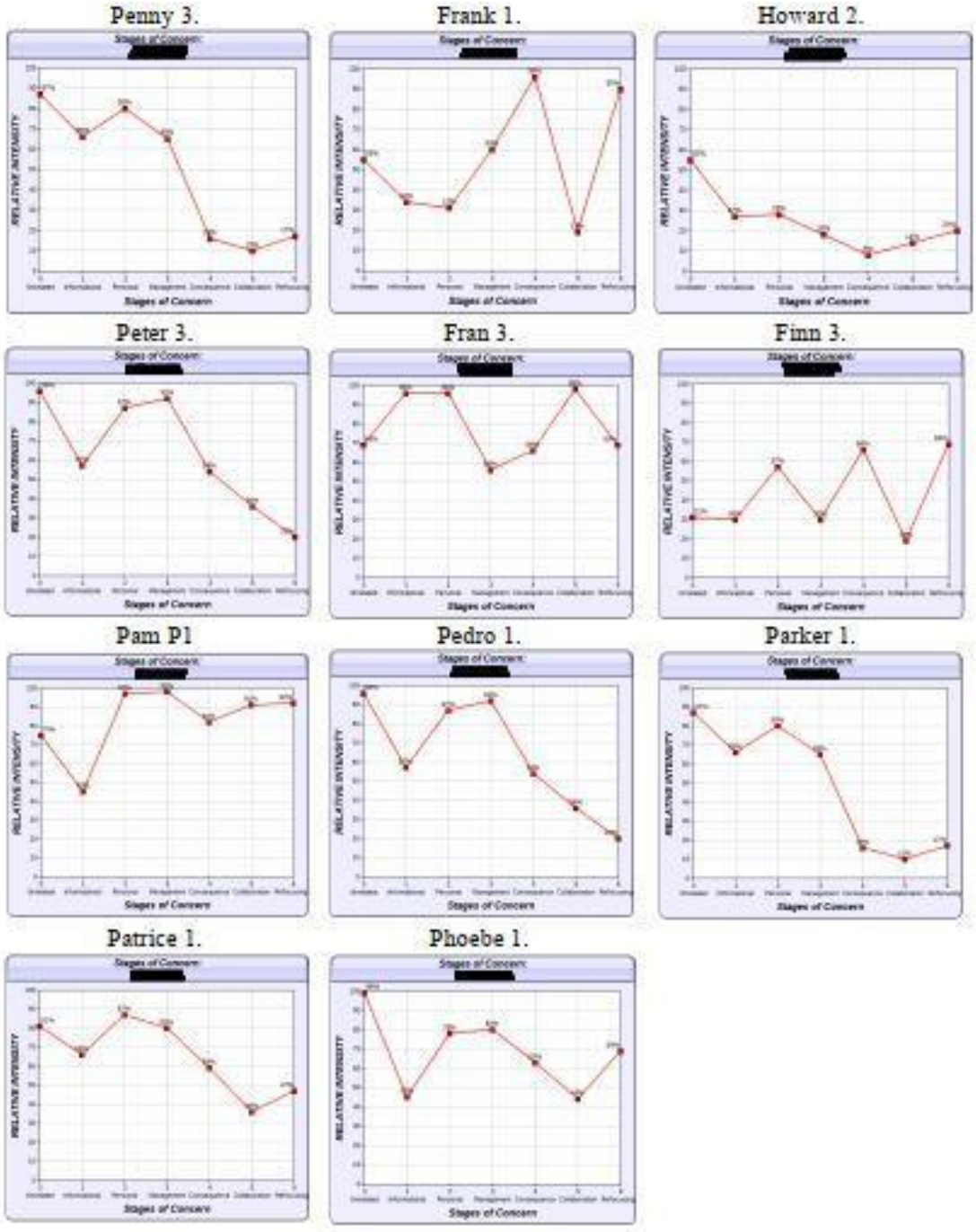


Figure 5

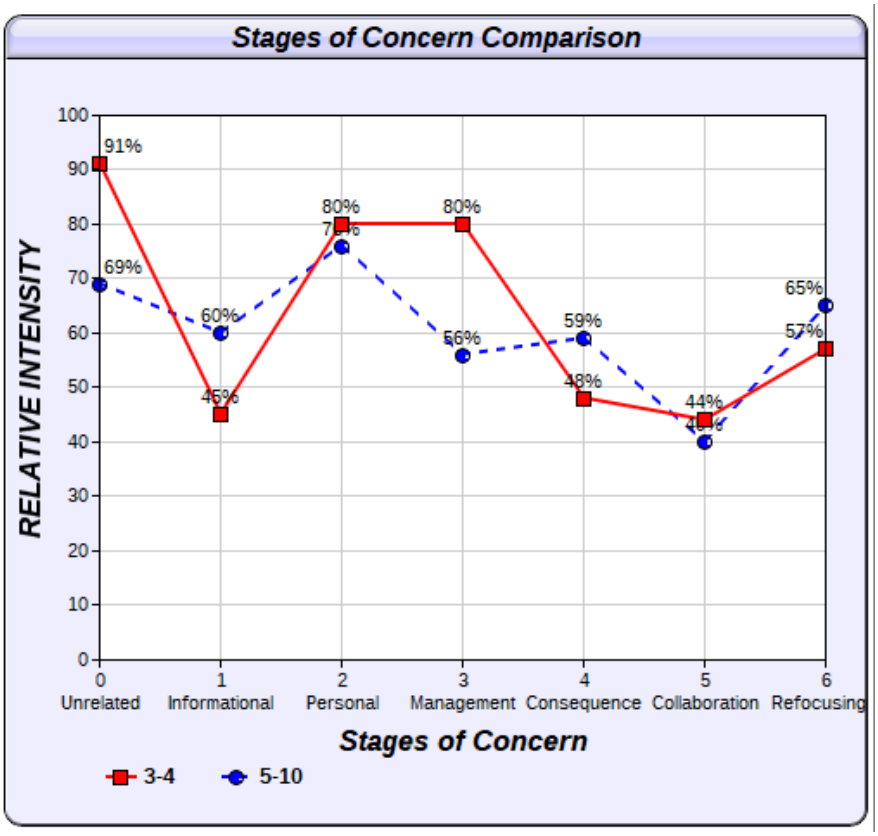
Line Graphs of Aggregate SoCQ Results for Individual Participants



Based on the scoring device, participants with high interests in the "self" category of the concerns consisting of "unconcerned" ("unrelated") and "personal concerns" see the initiative as still something new, or those participants might need more information about how to implement the initiative. The participants scoring highest in this concern were teachers with under five years of experience within the district and, as such, were not involved in the initial phases of implementation (see Figure 5). Participants with low interest in that area of concern feel they know enough about the initiative but might need more information on other aspects of implementation, such as tasks required and noninitiative concerns. According to the SoCQ, the refocusing concern shows "the individual focuses on exploring ways to reap more universal benefits from the innovation, including the possibility of making major changes to it or replacing it with a more powerful alternative" (George et al., 2006, p. 8). Most of the participants scoring high in this concern were involved in the initial implementation phases. Two of those participants were teacher leaders and involved in training other teachers on their campuses in technology integration. It is important to note that Howard 2 works at a campus that is considered a high performing campus and used as a model implementation campus for other schools new to the initiative. However, in looking at the two subgroups, teachers who entered after implementation also had potential ideas about improving the initiative (see Figure 6). It is fair to say that after exposure to the initiative, technology integration, and exposure to district support as a part of the initiative, these participants would have ideas on what worked and what did not work.

Figure 6

Line Graphs of Aggregate SoCQ Results for Two Subgroups



Note. Subgroups were created based on years of experience in the district.

Based on the scoring device, participants with high interest in "personal concerns" indicated concerns about how to manage implementation and aspects such as time and logistics. Although participants in the more experienced group would be familiar with the initiative, changes are always occurring within the district regarding leadership turnover and changes to curriculum and programs that are part of the initiative. This would pose challenges for both groups of participants. A drastic contrast in the two subgroups is the "management concern." Participants new to the district were more concerned about the impact of the initiative on students. The teachers new to the initiative are also new to the field of teaching. They are still developing their understanding of the ELA content and pedagogy. Hence the high interest in

areas such as unrelated and management concerns. The interview analysis section will provide additional about the concerns of both groups.

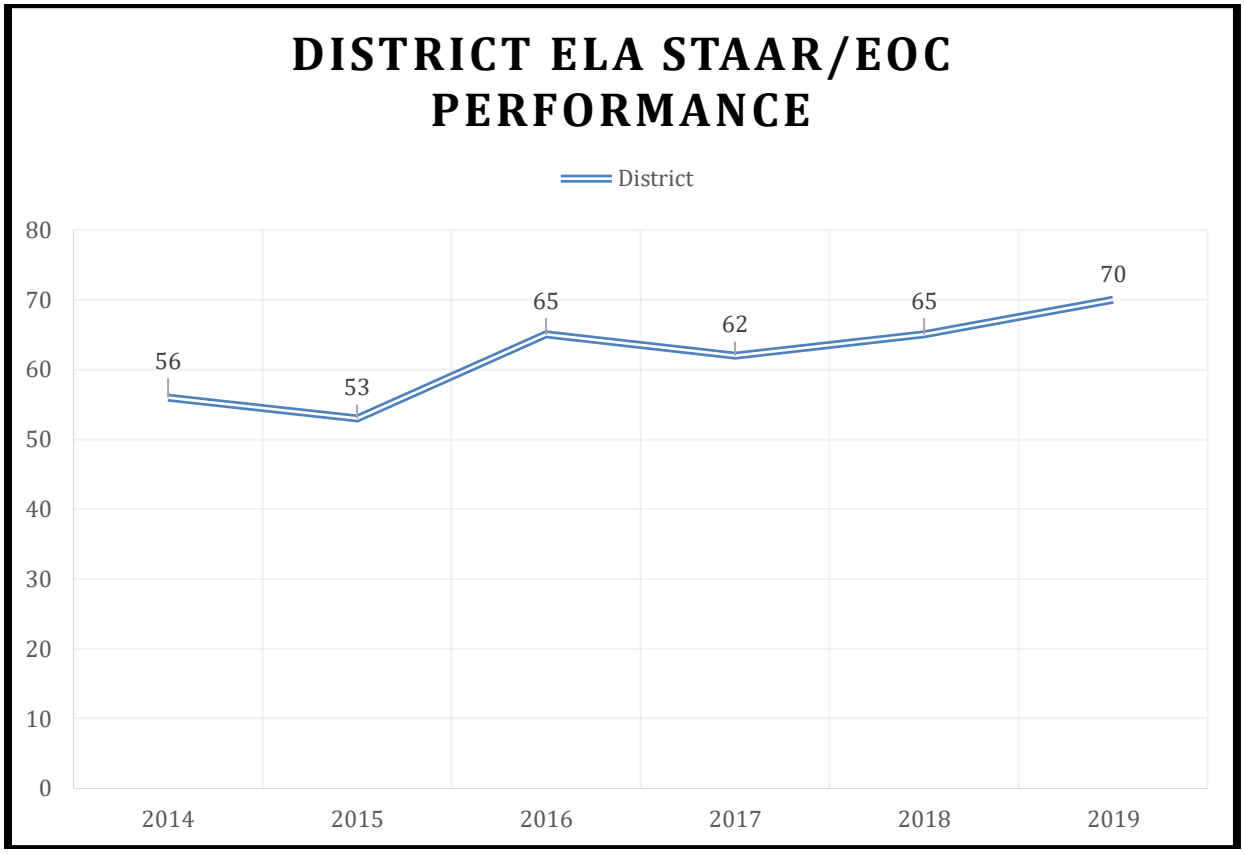
STAAR/EOC Performance Data

Archival data were collected from the district's website and TEA's district and school database to provide a picture of student performance on the state ELA STAAR/EOC assessment. I started with the 2014 STAAR/EOC and ended with the most current data, 2019. Before 2014, the state was transitioning from the previous assessment format, TAKS, to the current assessment format, STAAR/EOC. As such, this range presents a before and after-implementation view of student performance. Secondly, it is essential to note that although the first phase of implementation started during 2013-2014, teachers had access to the laptops and instructional programs purchased through the initiative in August 2014, and students at those schools received access in January 2014. In 2014, only 24% of STPSD high schools implemented the initiative during Phase 1. The following school year, an additional 19 schools were a part of the Phase 2 implementation. During the final implementation phase, the remaining high schools implemented the initiative.

Based on the archival data, after the second phase of implementation, the 2015 assessment administrations resulted in a decline in student performance (see Figure 7). Previous studies on 1:1 initiatives explored in Chapter 2 suggested that most districts saw a slight increase in student achievement on assessments after initial implementation. At this point, roughly 75% of the district high schools have implemented the initiative. After the final implementation phase, with all high schools implementing the initiative, the district's performance increased by approximately 12%. However, over the next two years, the district's performance fluctuated but managed to increase to a high of 70% compared to 56% after Phase 1.

Figure 7

Percentage of Students Earning a Passing Score on the State Assessment

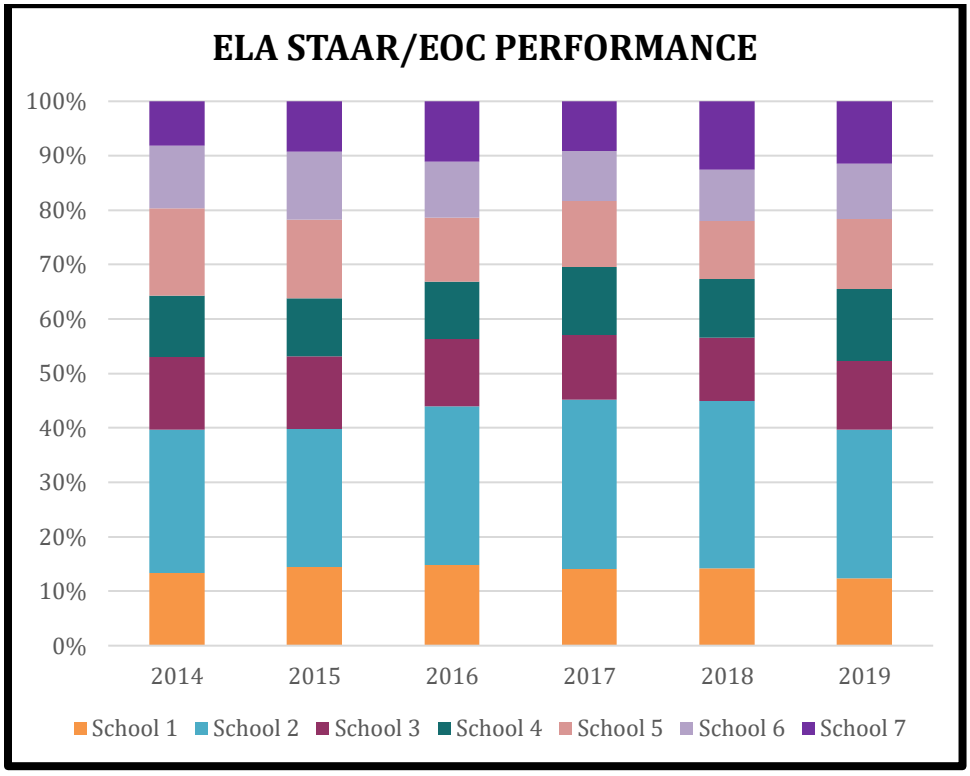


Note. District English 2 STAAR/EOC Archival Data.

In examining the archival data for the seven campuses involved in the study, much like the district's overall performance on the state's English 2 STAAR/EOC assessment, the campuses experienced fluctuations during the same years (see Figure 8). All schools experienced slight gains after their first years of implementation. However, most schools experienced a decline in performance the years following initial implementation, not sustaining student achievement growth as suggested by some of the literature in Chapter 2.

Figure 8

Percentage of Students Earning a Passing Score for Campuses in this Study



Note. Archival campus data.

Summary of Interviews

Following the questionnaire, I interviewed 10 of the 11 participants individually using Zoom videoconferencing. Table 2 shows these participants' profiles with their campuses represented by a number and pseudonyms assigned to each participant to maintain anonymity. Seven participants were a part of the initial phases of implementation, and three participants joined the district after the initial implementation of the 1:1 technology initiative. Three of the seven early implementers represent Phase 1 campuses, one a Phase 2 campus, and three represent Phase 3 campuses. The participants new to the district all belonged to a Phase 1 campus. This distribution of participants provide insight into not only decisions leading up to implementation but during and postimplementation experiences.

Protocol

During the interviews, open-ended discussion questions provided insight into teacher concerns about the initiative, implementation practices and support, and the initiative's impact on student achievement and classroom instruction (see Table 3). References to the CBAM SoCQ and district and campus archival data were referenced in addition to probing questions to offer clarity. The interview protocol was structured around the five research questions. Teachers were teaching virtually since March due to the COVID-19 pandemic, and for the purposes of the interview, participants could answer questions based on their pre-pandemic and current pandemic experiences and perceptions of the initiative.

Coding

At the end of each interview, zoom recordings were downloaded to my computer and then uploaded to Otter for transcription. Each Otter transcript highlighted keywords from the interview, which served as a baseline for coding. Memos were handwritten during the interviews, so I referred to those as participants' responses were coded and analyzed. I also noted relationships between SoCQ responses and trends while coding.

Table 3

Interview Questions

Research Question	Interview Questions
1. How is the 1:1 technology initiative fulfilling the stated goals?	● How has the initiative impacted your students' ability to collaborate, critically think, and communicate? ● How has technology integration impacted student engagement? ● How has the initiative impacted your ability to network with other teachers in the district? ● How has the initiative impacted your ability to interact with students? ● How has the initiative impacted your classroom instruction?
2. What impact does the initiative have on student performance on the state's 10th grade English Language Arts (ELA) assessment?	● How do you use technology to prepare students for the STAAR/EOC? ● How has technology impacted your students' performance on the ELA STAAR/EOC?
3. How are teachers integrating technology in 10th grade ELA classrooms?	● What type of support was provided during the first year of implementation? ● What did support look like after implementation? ● What type of technology and instructional resources do you use during instruction? ● What type of district curriculum and instructional services were provided? How did you use them? ● How do you select tools to provide ELA instruction? ● What type of strategies do you use to combine technology and ELA instructional practices?
4. What are the concerns of teachers in a south Texas public school district related to the 1:1 initiative and technology integration in 10th grade ELA classrooms?	● How did the district seek teacher input prior to implementation? ● How did the district seek feedback from students and teachers after initial implementation? ● How did the district respond to feedback?
5. What changes can be made to improve initiative implementation in 10th grade ELA classrooms?	● What are some successful components of the initiative? ● What are some unsuccessful components of the initiative? ● What are things that can be done to enhance technology integration in your classroom?

Exploring Participant Experiences and Perceptions

A series of questions accompanied each research question to get participants to think about aspects of the initiative, implementation, impact, and concerns. The average interview took 25 minutes. The longest interview was 40 minutes.

RQ1. How is the 1:1 initiative fulfilling the stated goals? Key goals of the initiative were to improve student achievement on state assessments, equip students with 21st-century learning skills, and enhance both teacher and student engagement. To explore this question, I asked a series of questions that addressed each of the goals in specific segments that build upon each other. When asked how the initiative impacted students' ability to collaborate, critically think, and communicate, all participants said there was a very noticeable change due to the COVID-19 pandemic. Participants noted that before virtual or quarantine teaching, the initiative did not significantly impact students' ability to critically think, collaborate, and communicate. Participants noted that due to the pandemic, the district encouraged the use of Microsoft Teams as the major platform to facilitate teaching, communicating, and collaborating. Participants believed this shift to Microsoft Teams positively impacted their instruction, relationship with students, and other teachers.

Pedro 1 teaches at one of the district's campuses that would be considered a low-performing or priority campus. He noted that before virtual teaching, via the initiative, the primary platform was the online learning management system, Itslearning. Pedro 1 said the platform did not foster student-to-student or student-to-teacher collaboration and communication very well. Before COVID-19, most students communicated with teachers face to face. Students collaborated, usually in groups during classroom instruction and rarely online. Sometimes, Pedro 1 had students work on projects via Google Docs and Hangouts. However, during the pandemic,

Pedro 1 said that students rose to the occasion. Pedro 1 noticed a drastic increase in emails and Teams messages from students seeking immediate feedback, assignment clarifications, and grade updates. He also noticed students reached out to each other to provide peer assistance to students who were late to class, missed class, or simply did not understand the content. There was an increase in student questions during instruction and students leading research to answer questions for each other, which helps build their ability to think critically. Pedro 1 felt this was missing during pre-COVID instruction.

When participants were asked how technology integration impacted student engagement, most participants noticed an increase in student engagement during virtual teaching compared to pre-pandemic teaching. Pam 1, Patrice 1, and Penny 3 teach at different campuses; however, they share similar demographics and academic ratings of being priority campuses. These participants shared that technology was more of a distraction for students. They felt that increased engagement was dependent upon the tool or lesson. Pam 1 said that students were more engaged by using technology for assessments, especially short assessments, on tools such as Quizziz or Kahoot. She also noted student engagement was high when students worked together to produce electronic products such as video responses on Flipgrid, Padlet, Itslearning, or electronic posters because it provided an accessible creative outlet. Table 4 captured the programs and educational technology applications commonly used among all participants and frequently promoted by district specialists and included in the district's curriculum.

Table 4

Initiative Technology Tools and Programs

Program/ Tool	Function	Brief Description
Kahoot Quizziz	Assessment/ Checks for Understanding	Assesses understanding through a timed game platform. Students receive immediate scores.
Flipgrid Padlet	Collaboration/ Checks for Understanding	Allows collaboration through the posting of text, videos, or images via a digital bulletin board set-up. Students and teachers can respond to each other's posts.
Achieve 3000 Edgenuity	Instruction/ Assessment preparation	Provides dynamic/ personalized instruction. Students take a diagnostic at the start of using the program. Learning paths are created based on student diagnostic results. Teachers can also assign content based on student data.
Vocabulary.com	Assessment/ Review	Provides vocabulary review and assessments over set terms. Teachers can create vocabulary lists to assess students based on reading content or frontloading important terms related to a text or unit of study.

Penny 3 and Patrice 1 both said that because of inadequate security and firewall features, students used technology to play games, watch video clips or shows during class instead of completing actual assignments, and so both participants minimized their use of technology in the classroom. When participants were asked to reflect on engagement during the pandemic, they all felt engagement had not drastically improved. Penny 3 noted students are not mandated to turn their cameras on during instruction, and as such, they opt out of participating in class, and engagement is down. For the other seven participants, engagement has increased during virtual teaching versus pre-COVID teaching. Out of that seven, one participant felt student engagement increased due to technology integration as a part of the 1:1 initiative and has maintained a

positive climb during pandemic teaching. Howard 2 taught at a campus that is considered one of the district's higher performing campuses. Although the student population is diverse in terms of economic background, most students come from the upper-middle class to affluent households, and as such, their exposure to technology is different from other campuses involved in the study. Howard 2 noted when the initiative was first introduced to the campus, student engagement increased as students were already familiar with some of the tools and hardware. He noted moving to an entirely virtual environment in March did not negatively impact student engagement. Howard 2 noted an increase in engagement level, especially with extremely shy students in face-to-face instruction. He said because students are not mandated to turn cameras on, they are more comfortable participating in class discussions and completing tasks.

I asked participants how the initiative impacted their ability to network with other teachers in the district. All participants felt a positive impact, especially during pandemic teaching. All participants noted the district has shifted to facilitating district-wide professional development sessions and Microsoft Teams meetings. Because these opportunities are virtual, district-wide attendance has drastically increased compared to pre-COVID sessions, and as a result, exposure to other teachers has increased. Teams also provide immediate and ongoing access to teachers beyond the participants' campuses. Frank 1 and Finn 3, in addition to teaching 10th grade ELA courses, also teach Advanced Placement (AP) ELA courses. The district has a particular learning community for these teachers. The learning community comprised all ELA AP teachers in the district and instructional coaches who worked in the district's advanced academics department. The community would meet at a high school location approximately once a grading period. Due to COVID-19, these meetings are now virtual in Microsoft Teams. Pre-COVID, when the initiative was launched, was supposed to be a space for teachers to share

lessons and collaborate. Finn 3 and Frank 1 shared this did not happen. District specialists in the AP department created modules and shared resources within those modules that were housed in the district's LMS, ItsLearning. However, that did not foster true inter-district collaboration. Finn 3 and Frank 1 both stated that moving ultimately to Microsoft Teams made it much easier to reach out to other AP teachers across the district, initiate meetings, planning sessions, create groups to share resources, and receive immediate feedback. Frank 1 and Finn 3 noted although the formal learning community met monthly, many informal meetings that were teacher-led and initiated. They both hoped this continues once they return to face to face instruction.

When asked how the initiative impacted classroom instruction, participants had mixed responses. Pam 1 and Patrice 1 noted they initially used technology more for substitution and differentiated instruction. Patrice 1 shared that programs such as Achieve 3000 and Imagine Learning were purchased as a part of the initiative. These programs assess students' reading levels and provide differentiated lessons and texts. She said these programs had a positive impact on her Special Education and Language Learners. Both participants entered the district after the initiative was initially implemented at their campus. Since then, they had three different principals at that campus, and all three principals did not place a heavy emphasis on technology integration to foster a blended learning environment as suggested by the district and a part of the initiative. Patrice 1 and Pam 1 noted they substitute certain paper-based activities with technology because of ease of use, quickness of grading and providing students with feedback, and to reduce the use of resources such as paper and ink.

Pedro 1 and Parker 1 shared the initiative has had a positive impact on their instruction. Like Pedro 1 and Parker 1, Pam 1 noted at first, she used technology as a substitute for a paper-based resource or task. However, after more professional development opportunities and self-

directed learning, Pam 1 has moved into a collaborative infusion level of integration. Parker 1 and Pedro 1 were Phase 1 implementors in the district and were introduced to the Technology Integration Matrix (TIM), developed by the Florida Center for Instructional Technology at the University of South Florida, College of Education. They used this matrix to guide to enhance their instruction. Parker 1 believed once she moved away from using technology as a substitute, but more as a means of personalizing learning, encouraging student choice in how they demonstrated mastery, and to network and collaborate with instructors from other campuses, states, and countries, she saw an increase in student engagement with the material and academic achievement. Parker 1 and Pedro 1 also noted they were forced to expand their understanding of the content and pedagogy to move along the matrix.

Although participants now see the initiative's movement towards fulfilling stated goals, they noted they were not sure this would be the case if it were not for COVID-19 forcing schools to move towards virtual learning. Participants felt that fulfillment was slow and inconsistent across the district. All participants wondered if there would be a negative impact on implementation progress once schools are entirely face-to-face once COVID-19 is no longer a health crisis.

RQ2. What impact does the initiative have on student performance on the state's 10th grade ELA assessment? A major driving force for designing and implementing the 1:1 initiative was to improve student performance on state and district assessments. The district has been a priority for the Texas Education Agency (TEA) as the district had schools that have been consistently low performing for five or more years. This history of low performance on high stakes standardized testing prompted TEA to observe the district's operations and instructional decisions at all schools, but specifically the low performing schools. District leaders promised

that with the integration of technology in classrooms via the 1:1 initiative, student performance would increase on state and district assessments. District leaders noted that through the initiative, teachers would have a better understanding of how to differentiate and personalize learning to target all learning groups. The district invested in learning programs to address learning gaps between Language Learners and Special Education students.

When I asked participants how they used technology to prepare students for the STAAR/EOC, participant responses were mixed. Howard 2 did not use technology to prepare his students for the state assessment. He noted most of his students were already performing at or above grade level, and as such, the emphasis at his campus is not on test preparation but just preparing them to excel at the current content and on national assessments such as College AP assessments and SAT/ACTs. Howard 2 used collaborative tools such as Google docs and Flipgrid for students to collaborate with other AP students across the district and education majors at two local universities. He stated that students would post their AP and SAT practice essays on Google or Flipgrid and would receive peer feedback or feedback from a college student or even a professor. He also noted he used the LMS's built-in assessment features to assess reading and vocabulary skills via multiple-choice tests. Howard 2 stated that at his campus, the focus is not on district benchmarks or state tests. The emphasis is on teaching the content via rigorous and engaging instruction. Howard 2 said state and district assessments gauged a student's basic understanding of grade-appropriate skills, so if students understand the content, they would be successful on any skill-based assessment.

The other nine participants noted they used technology to provide differentiated instruction and familiarize students with online testing tools. Pedro 1, Phoebe 1, and Parker 1 teach at the same priority campus. They noted the Special Education and Language Learners take

the online version of the STAAR/EOC assessments. To prepare those students, they assigned practice STAAR/EOC assessments to get them familiar with the online version of the test and used online features such as highlighting, annotating, and text to speech tools. They noted the other students took the paper version of the assessment. To prepare those students, they relied on programs such as Achieve 3000 and Edgenuity to provide differentiated instruction while covering skills students have historically performed lowest on—expository related skills.

Finn 3, Penny 3, and Pam 1 used technology to make test preparations more engaging. They used assessment tools such as Kahoot and Quizziz to provide immediate feedback to regroup students and adjust instruction immediately. They also noted that students were more engaged and concerned about performing well on the test when they received immediate feedback on benchmarks leading up to the test. Frank 1, like Howard 2, used technology to address the written composition component of the assessment. His students created Google folders that would serve as writing portfolios. He said that having students draft their essays on Google made it easier for him to observe various parts of the process to provide feedback and share links to practice activities and short instructional videos. He said students responded well to this type of instruction and preparation. In the past, students would have to wait at least 2 to 3 days before receiving feedback. Like Howard 2, Frank 1 also partnered with college students and adjunct instructors to provide feedback to his students.

All participants felt although the tools and programs provided were impactful, they shared the most impact on student assessment performance was the quality of curriculum available. Participants, especially at the priority campuses, noted that campus administration invested heavily in test preparation materials that were not always based on a quality curriculum. These participants noted that at times, the administration did not want them to use technology or

district created curriculum and focus solely on test practice using the purchased test preparation materials.

My next follow up question was how technology impacted students' performance on the ELA STAAR/EOC assessment. All participants were hesitant to state that any gains made were solely based on technology integration. Frank 1 believed that students' written composition score has increased from an average of 1 to 3 out of 4 because of technology integration and collaboration during writing instruction. However, Frank 1 has not seen significant gains in his Language Learners and Special Education students. He hoped personalization and differentiation provided through learning pathways created in the online learning management system and his use of Imagine Learning and Achieve 3000 should have been impactful. All participants noted scores slightly increased within the first two years of implementation, but there were years in which performance declined.

Howard 2 said that technology helped his students become more familiar with testing in an online environment as for the first two years of implementation, students took the online version of the test. However, in the most recent years, his campus administration opted for the paper version of the test because of technology and internet failures some schools suffered during previous testing windows. He said he could not equate student performance increases to technology use. Participants, except for Howard 2, revisited the mandated use of problematic test preparation materials. Pedro 1, Frank 1, Patrice 1, and Fran 3 restated that some of the test preparation books did not provide quality content, which played a part in students' continued poor performance on historically low standards assessed on the STAAR/EOC.

Phoebe 1 and Pam 1 stated their campus administrators hired tutors to lead test prep pull-outs. Pull-outs are when students are removed from a classroom during instruction to participate

in test preparation activities. These pull-outs would occur during English and elective class times closer to state testing dates. Phoebe 1 noted that some of these tutors were college students who did not possess a strong command of the content and understanding of the STAAR/EOC requirements. She said tutors were instructed to use test preparation worksheets with students to provide interventions to address poorly mastered standards. Pam 1 said tutors were not required to attend lesson planning sessions; thus, they did not, so they were not aware of common strategies, and methods students were familiar with. Pam 1 shared that some of her students who performed below grade level on their 9th grade ELA STAAR/EOC showed concerned about learning new strategies and different approaches to standards close to testing. Both Pam 1 and Phoebe 1 felt the tutors harmed student performance on STAAR/EOC.

All participants noted if testing is required in 2021, despite COVID-19 concerns, they believed students would be familiar with testing in an online environment as all instruction and assessments for the school year (2020-2021) and the end of the previous school year (2019-2020) have been all virtual due to pandemic quarantining. They also believed although testing online would not pose a problem, the gaps in instruction and social-emotional elements were important factors to consider in examining future assessment performance. Pedro 1 shared that assessing performance on the 2021 STAAR/EOC administration would be a similar experience to examining the performance on the 2018 administration after a delayed school start in 2017 because of Hurricane Harvey.

RQ 3. How are teachers integrating technology in 10th English Language Arts classrooms? When the district introduced the initiative, district leaders sought to transform classrooms into blended learning spaces. In 2015, during Phase 3 of implementation, the district's curriculum department relaunched the district's high school curriculum to incorporate

blended lessons housed on the online learning management system (LMS). The goal was to provide teachers with examples of how to integrate technology in their classrooms effectively. The district also created an instructional technology department to support schools in managing hardware and supporting teacher use of the LMS. The district also trained the Teacher Development Specialists (TDS) to provide an extra layer of support to teachers and campus administration in planning technology distribution and adapting to teaching with technology. The district later restructured the Instructional Technology Department. The original department changed names and now focused on hardware maintenance and cyber safety. The newer department kept the instructional technology name but was now housed in the office of curriculum and instruction. These specialists focused on the instructional aspect of technology integration. They helped teachers use and integrate tools and programs in their instruction.

When asked what type of support was provided during the first year of implementation, the responses were very similar. All participants stated they did not receive quality support during the first year of implementation. They believed most of the professional development received show them how to use the hardware, the LMS basics, and tools for activities. For participants such as Frank 1, Phoebe 1, Pedro 1, and Parker 1, they only received professional development on tools to assess students and create assessments in the LMS as the curriculum was not updated yet. As early implementors, they noted their campus administrators were unsure of how this new learning environment should look. They were learning along with teachers, specialists, and students.

Penny 3 shared that when she first received the laptop, she was told the only thing she needed to do was give quizzes in the LMS and upload her lesson plans. She added it was not a mandate on her campus, and as such, many teachers did not assess students in the LMS. As a

result, students did not always bring their laptops to school, which made transitioning to blended learning difficult. However, new implementors like Pam 1, Patrice 1, and Phoebe 1 felt the support provided during their first semester in the district was not very useful. Patrice 1 said:

> I was excited about coming to a 1:1 district because of all the possibilities. However, when I arrived at my campus, I was handed a laptop and told to watch some videos on how to access the LMS. There was a support coach from the district, but he supported my campus perhaps twice a week and had to support all teachers, not just ELA teachers. Although I had an ELA instructional coach, as I was a new teacher, her focus was more on my mastery of content and pedagogy and not necessarily exploring all the tools available through the initiative. So, I was pretty much left on my own to figure things out or to ask my colleagues who were more familiar with the initiative.

Howard 2's experiences were different from the other participants. Howard 2 stated that his leader wanted the campus to implement the initiative with fidelity. Campus leadership attended professional development on learning with technology and encouraged teachers to do the same. He also noted that his department is small—one teacher per grade level, and so each teacher received plenty of support from their district specialist, making technology integration easy. I then asked a follow-up question about what support looked like after implementation, and all participants noted that support was based on campus performance and need. Howard 2 noted that because his campus was small and high performing, they did not receive a permanent district coach to assist with technology integration. However, his principal did train a teacher leader to serve as a campus instructional technology coach.

All the other participants noted their campuses received district support because they were considered low performing; however, those technology coaches would sometimes visit

campuses once a week or biweekly. Parker 1 stated that she grew frustrated because she could only receive support from their district coach during department meetings when the coach presented a miniprofessional development session on a new tool or feature in the LMS. She added:

> I was looking for training on how to facilitate blended learning. The district gave us lessons and technology and said integrate, but I never received the why or how. I never learned how to change my practice or pedagogy to integrate technology effectively. I had to learn lots of things through my research or with the help of a tech-savvy colleague. Our campus did have a campus-based technology specialist, but his role was geared towards hardware distribution and repair.

The next series of questions focused on the technology and instructional resources provided and how they were used in the classroom. Participants were asked about the technology and instructional resources used during instruction and what type of district curriculum and instructional services were provided. They were also asked to discuss how they used these district resources during instruction. All participants used the district's online curriculum, referred to as the Master Courses, including the blended learning lessons on the LMS. However, they all noted the lessons were viewed as a "one shoe fits all" type of curriculum, so they had to make modifications to meet their students' needs and fulfill campus directives. All participants used instructional programs and educational technology applications purchased through the district. Some participants noted they were required to use certain programs during instruction as the district monitored their usage because of their campus's academic performance on state and district assessments. Pam 1 and Patrice 1 said they were mandated to use the reading program Achieve 3000 with their students twice a week for the last two years. Pedro 1, Phoebe 1, and

Parker 1 noted similar experiences with Achieve 3000. They were also told to use vocabulary.com as warmups during their invention periods. Phoebe 1 said the mandatory integration was frustrating as students become very familiar with the routine use of those programs resulting in a lack of engagement and seriousness in completing assignments.

Patrice 1 stated that outside of the mandated programs, she saw an increase in depending reading via MackinVia. The district purchased thousands of audio and e-book licenses with MackinVia in creating an extensive online library resource. Howard 2 and Frank 1 said that MackinVia helped them follow the writer's and reader's workshop model, the district's high school ELA curriculum framework. Pedro 1 noted the audiobooks on MackinVia also came with Spanish versions that helped the Language Learners in his traditional ELA classes. This helped him modify instruction, so all students were included in tasks and classroom discussions. Fran 3 said that MackinVia had played an essential role in her virtual instruction. She shared that most of her students received laptops and hotspots during the quarantine. However, many students indicated they could visit the campus to collect physical learning materials. She shared she decided to move away from textbook instruction and truly implement the workshop model for the first time. Fran 3 said:

> When the district launched the new curriculum, which followed the workshop model, my campus directives were to stick to the traditional model. But now, due to COVID and teaching 100% virtual, I decided to experiment with the workshop model. Per the model, I model using on text, and students apply new learning using a text of their choice. There is time for a lot of true independent reading. Because of MackinVia, students gave a wide variety of books to choose from for independent reading and student application. I do not have to worry about uploading copies of various texts or requesting students to visit

campus to collect books. To make things more manageable, I control the choice for student application and have them create book groups or literature circles. This helps me know what is in the books to help facilitate discussions and assess their understanding. I wish I had moved to this model of instructional much learner during implementation.

Penny 3 noted during the first two years of implementation, administrators directed teachers to use technology for quick checks for understanding and assessments. They wanted students doing work on paper-based products as students would be taking paper-based assessments. She went on to add that after a change in administration, the new principal wanted teachers to use the district's curriculum in the LMS as designed. Penny 3 also noted that due to COVID, the district revamped the curriculum to fit synchronous and asynchronous learning. She said this is extremely helpful as she has never taught in either situation before. Pam 1 and Patrice 1 were amazed at the movement away from the mandated use of programs now they were teaching virtually. Pam 1 said she was relieved that COVID has shifted the administration's focus on test preparation. She said although there were new directives almost every week, the one constant was using the district's exemplar lessons. She hoped this mindset remains post-COVID.

I asked participants to discuss the pedagogical framework used to integrate technology in the classroom. Half of the participants noted some change in pedagogy and made references to technological pedagogical frameworks. Fran 3 and Frank 1 noted a brief introduction to the Technology Integration Matrix (TIM) during the first year of implementation; however, they did not continue using the matrix when planning and providing instruction as the district did not use the matrix as a part of the curriculum design and provide further professional development on how to understanding and utilize the matrix. Parker 1 and Pedro 1 shared they continued using the TIM as a part of their instructional planning and practice without district support as they

experienced instructional successes and saw some changes in student achievement because of the matrix.

Penny 3 remembered being introduced to the TIM during the first phase of implementation. However, she too noticed the district did not continue using the matrix during professional development or curriculum design. Penny 3 said when the matrix was first introduced, campus leadership considered using the teacher observation tool based on the matrix. However, the district did not purchase those tools for campuses, and as a result, leadership decided not to pursue further using the matrix or request observation tool licenses. Penny 3 said she learned about the SAMR model (Substitution, Augmentation, Modification, and Redefinition) at a Region 4 technology conference. She said she continued to do some informal research and noticed some similarities between the SAMR model and the TIM but found the SAMR model easier to understand and apply. She said without district support using that model, it was hard for her to adapt her instruction based on the model. Penny 3 went on to add:

> At the conference, the presenter encouraged participants to view the model as a ladder with each phase or step building on each other. As I tried to figure out how to merge the reader's and writer's workshop model with the SAMR model, I found myself stuck on the first step-substitution. Depending on the unit or lesson set, I felt that I moved up to augmentation but quickly back to substitution again, never quite developing a steady climb up to modification or redefinition. But all of this was prior to COVID.

Penny 3 noted she is developing a stronger understanding of the SAMR model due to virtual teaching and how it can be merged with the workshop model. She said:

> Virtual teaching has forced me to move beyond substitution and augmentation. I noticed that if I stayed in those stages, I would lose my students, and our class time would

> become another mundane routine. After the first month, I figured out that some lessons would operate from the first two steps, and others would be at the top of the ladder. The most successful lessons were at the transformation levels or the top of the ladder. For example, taking students to take a virtual field trip at a museum in France to set the context for a text study proved way more engaging and memorable than traditional PowerPoint within important information about a period before reading a text. As I navigate these waters on my own, I really wish I had district support with adapting a new pedagogical approach, especially now that I am teaching during a pandemic.

Pam 1, Patrice 1, and Phoebe 1 entered the district after the initial stages of implementation and did not know the TIM or any similar frameworks. They asked for clarification on this question as not only are they new to the district, but they are also relatively new to the profession. Phoebe 1 stated she was not aware there were "special pedagogical frameworks" for teaching with technology. She stated she was focused on mastering the writer's and reader's workshop model as that was the district's lessons' design. She noted she was focused on building her content knowledge and never considered how technology would change her pedagogical approach. Patrice 1 asked to review the TIM, and I shared the diagram with her. She noted she was not aware of these models to help with technology integration into pedagogy. Patrice 1 went on to say that having an understanding of the matrix would have improved her instruction and overall attitude towards the initiative. Pam 1 also asked to review the TIM and had a similar reaction to Patrice 1. Pam 1 said:

> Having a common framework provides everyone with a common language and goal when developing curriculum and delivering instruction. I wonder if the district had officially adapted the TIM, how different would instruction be? I know that I would

probably have more concrete instructional goals in terms of becoming more innovative with my use of technology instead of using it at a substitution level. I think this tool is something we needed pre-COVID and now during virtual teaching.

I then asked participants about the strategies used to select tools and how they combined technology and ELA instructional practices. All responses were centered on students. Participants noted they selected tools based on ease of use for all students and how it would make content more accessible. Howard 2 said although most of his students were very familiar with technology, he practiced using the application or task before execution to ensure it would be quick and efficient for all students. He also checked to ensure the task could best be done using technology and it was not a simple substitution. Howard 2 stated he liked using tools with multiple uses for various tasks versus a one-time occurrence. Phoebe 1 shared she had Language Learners in her traditional ELA classes instead of in ESL classes due to scheduling conflicts. Phoebe 1 used tools that always have a text to speech option and translation abilities. She selected tools that would offer immediate feedback and allow for peer to peer and student to teacher collaboration.

Fran 3 shared that within the recent school year and now that she is teaching virtually, she has moved to a flipped classroom with her Pre-AP 10th-grade students because most of their units centered on studying a specific text. She shared she used MackinVia because it was paid for by the district, and students could access the program via their laptops and on their cellphones. Fran 3 added that MackinVia has translations and audiobooks, so when students read outside of class, they have those accommodations. She used Padlet and Flip Grid tools to assess at home reading by posing questions and asking students to post quick video responses. She also stated those tools were simple to use and encouraged a lot of peer collaboration. Fran 3 said

those tools allowed for out of district collaboration. She shared she would partner with college professors and authors to sign in and leave students questions and connections to their video responses. She said the district's LMS did not allow for out of district collaboration.

Although participants felt they had an effective method for selecting technology tools, they all felt they could benefit from adopting a better pedagogical framework to guide how they combine technology and ELA instructional practices. Participants noticed the district has not yet made the change to their understanding of pedagogical frameworks that would impact the initiative's success. Participants raised concerns about the district's focus on only the use and acquisition of tools and programs versus ensuring teachers have the knowledge and the abilities to differentiate tools and effectively use them to enhance and transform ELA instruction.

RQ4. What are the concerns of teachers in a Texas public school district related to the 1:1 initiative and technology integration in 10th grade ELA classrooms? For this question, participants were encouraged to think back to their CBAM SoCQ responses. Participants had access to their profiles. When asked how the district sought teacher input before implementation, all participants stated they were not included in any stage of adopting the implementation process. Participants felt the initiative was more a directive than a team effort. Parker 1 said:

> It honestly felt like at some point during the fall during year 1, there was a faculty meeting, and a district leader and the campus administration told us that this is something the district will be doing. They had already made all the decisions. So, when January came around, it was more like, here is your laptop and a list of tech tools, now go be powered up.

Frank 1 and Penny 3 both shared similar sentiments to Parker 1. Frank 1 said the department chairs, who are viewed as members of campus leadership, were not involved in

determining how technology would be integrated into classrooms and how to change the campus culture to becoming more accepting of educational technology. Penny 3 stated that when teachers at her campus received technology, they voiced concerns about instruction changes and student reactions to having personal devices. She went on to say the administration did not have clear responses, nor did they seem to have a plan in place to help teachers and students change their mindset. Penny 3 said:

> Teachers were concerned about the technology being a distraction and students not being as tech-savvy as many have led on to believe. Teachers, especially older ones, who were not frequent technology users, were concerned about learning so many different things all at once along with students. Some teachers created informal groups and tried to learn together and develop plans to help students adapt to the technology. Others banded together to resist technology integration. Unfortunately, those attitudes rubbed off on their students. There was great tension between teachers and students.

I then asked how the district sought feedback from students and teachers after initial implementation. Participants noted the only time the district sought teacher feedback came directly from the curriculum department about the online lessons and curriculum's quality and effectiveness. Participants also noted there are surveys directed towards students about access to the internet and hardware. Fran 3 shared:

> It feels like the district, especially the "powers that be," who fight to keep this initiative going, do not necessarily want to know how it's going. Our campus instructional specialist sends out surveys that only address the working condition of hardware such as laptops and other technology, or he will forward a survey from the district to determine how many students have internet access at home. That was it. There is no official avenue

> for us as implementors to voice concerns or share ways to improve elements of the initiative or actual implementation. Sure, I verbally share my concerns with my Teacher Development Specialist or department chair, but who knows how much power they have or can pass on my suggestions and concerns.

All participants noted an increase in communication now that most of the district was currently functioning virtually. Finn 3 shared that his campus leaders sent out surveys to know how curriculum and educational technology tools worked, know if student access to the internet, and gauge student engagement. He shared they also send surveys to students about their access issues and ways to improve their learning experience. Finn 3 did note that only the campus surveys address overall implementation and technology integration compared to the district's surveys about hardware, student attendance, and student access to hotspots and internet at home.

Penny 3 and Pam 1 shared they have sent feedback to curriculum leaders and initiative decisions makers but have not received clear explanations about ongoing implementation expectations or have seen their suggestions implemented in revised curriculum or professional development offerings. Pedro 1 said that due to the pandemic and the move to virtual learning, the district was very responsive in ensuring all students had a laptop and access to the internet at home. However, not much has been done to address other issues in preparing teachers and students for going 100% virtual. Participants felt that when the district seemed to ignore teacher input, they did not have positive attitudes towards technology integration and any district initiative.

RQ5. What changes can be made to improve initiative implementation in 10th grade English Language Arts classrooms? Throughout implementation, the district has not made changes to the initiative's structure or revised the goals of the initiative. District leaders continue

to invest in hardware upgrades and instructional programs, and technology tools. Based on reports to the school board, district leaders believe that initiative is working effectively. For this series of interview questions, participants were again directed to refer to their CBAM SoCQ as necessary. I asked participants to discuss the successful and unsuccessful components of the initiative, responses were very similar and added to the six themes that emerged from the survey and previously answered interview questions.

All participants found that putting technology in students' hands was powerful because they were better prepared for the global setting. Participants stated this initiative had provided them with a wealth of resources to help differentiate instruction and promote reading in the classrooms. They also believed the initiative could be more effective if the district had communicated more with key stakeholders such as teachers, students, and parents in the planning stages. Patrice 1 said:

> Had the district spoken to teachers and students, they would know exactly how prepared students were for learning with technology and what skills teachers possessed to shift from a traditional setting to the preferred blended learning environment. They assumed that all students are tech-savvy or digital natives, and many students are not. Just because students have cellphones and can text does not mean they know the basics of operating laptops or completing basic skills such as typing or saving a word document. I spend much time modeling those practices to ensure they can do something as simple as taking notes or create a PowerPoint presentation. That is frustrating and often makes me revert to paper-based instruction.

Other participants had shared similar concerns and noted the district did not ensure middle schoolers were prepared to enter 1:1 learning settings in high school. Frank 1 noted that

according to state regulations, courses such as keyboarding or generic technology courses are not mandatory and many schools, particularly middle schools, no longer offer them. Frank 1 said:

> Once the state did this, our district, knowing that it was moving to a 1:1 setting, did not do enough to ensure that those courses can still be electives in schools. What started happening was elementary and middle schools that feed into my school or lower-performing schools, focused on using electives for test prep instead of preparing students for 1:1 high school classrooms. The pandemic has now truly highlighted the gap between the skills students actually possessed and what the district assumed.

Howard 2 shared that at his campus, because his students come from high-performing elementary and middle schools, they have taken introductory technology courses, and as such, he does not have to build that capacity in students. He also noted some of his students attended middle schools that offered advanced courses such as graphic design. He said because it is not a district expectation, it seems that high performing middle schools invest in a variety of electives compared to schools that focus on improving scores on high stakes tests. Like Frank 1, Howard 2 suggested the district require all middle schools to offer introductory technology courses to better prepare students for high school.

Participants noted although the district made revised the curriculum by producing the Master Courses, there was no quality professional development to ensure teachers were ready to implement the new curriculum or have the capacity to execute model lessons. Fran 3 noted she is grateful for the Master Courses as they provide a model for blended learning lessons; however, the curriculum department provides professional development on strategies featured in the lessons and not learning opportunities to explore the design process or pedagogy. Participants

also noted that high teacher and principal turnover has negatively impacted implementation and the initiative's overall effectiveness. Patrice 1 said:

> As a new teacher coming into the profession and the district, I feel like I am drowning, especially teaching during a pandemic. Before COVID, most of my district support came from the district Teacher Development Specialist (TDS). She is great and does a good job helping me understand the lessons and finding supplemental texts and engaging activities for the students. However, when it comes to professional development, quality opportunities are lacking. Many of the technology professional development sessions are either about updates to the LMS or featuring some new tool. I can Google how to use a tool or watch a YouTube video. What I need is to understand the methodology. I want to design effective lessons on my own without relying on my TDS or the district's online exemplar lessons.

Howard 2, Pedro 1, and Penny 3 stated the professional development offered was low quality due to high central office turnover and the lack of technical expertise in the roles that provide the learning and support. Pedro 1 said that during his third year of implementation, the district technology coach did not know how to navigate some of the programs and educational technology tools suggested in the curriculum. Pedro 1 said that sometimes the central office leaders use the mantra "we are building this plane while we are flying it," and it shows. Pedro 1 found that mindset alarming as it negatively impacts the effectiveness of the initiative.

Penny 3 said since the first phase of district implementation, her campus had three different principals, and with every new principal, the attitude towards the initiative changed. Changes in leadership impacts not only teacher attitude but student attitudes and the overall effectiveness of implementation. Penny 3 said the district needs to move away from the

decentralized approach to initiatives and establish mandatory or a centralized set of policies and procedures for implementation so that turnover should not drastically impact the goal of technology integration on campus. Penny 3 went on to add:

> The district should have really been strategic with the phasing of technology in handing out laptops and how teachers and students were prepared to receive the technology. Before laptop deployment, we attended professional development facilitated by teachers and leaders from the Mooresville Graded School District. They were fully 1:1 and very successful. Our leaders consulted with them but clearly went a different route. We should have trained teachers on learning models such as blended and flipped classrooms before introducing the laptops and the LMS. In middle schools, teachers should have at least had class sets of laptops and teach students basic computer skills. This would have helped with their transition and, of course, teacher attitudes. I do not think it is too later to revise and relaunch the initiative. I mean, we have so much teacher and principal turnover, it would be quite helpful.

After analyzing interview transcripts, I noticed the interview responses aligned very closely to participants' CBAM SoCQ responses. All participants were concerned about their abilities to integrate technology effectively, ultimately to positively impact student success. Due to COVID-19, there were concerns about logistics and the changes to instructional practices as the current teaching environment was very dynamic. Students were no longer required to learn virtually; they now can return to school for face-to-face instruction, which now required teachers to move to a hybrid or synchronous approach. In addition to personal concerns, new implementors such as Pam 1, Patrice 1, Finn 3, and Phoebe 1 noted concerns about the administration. In their CBAM SoCQ responses and interviews, they noted the administration

did not effectively communicate the initiative's goals and expectations or campus-based implementation. They also noted that campus administration did not provide professional development for new teachers to understand how to integrate technology in the classrooms. Most of their administrators assigned them to mentor teachers more so to understand classroom management and campus selected instructional strategies. Questionnaire and interview data seemed to point to common themes, explored in the next section.

Emerging Themes

Themes help illustrate the relationship between the participants' perceptions and experiences with each other and connections to the research questions. In analyzing interview data, five themes emerged:

- Lack of quality professional development
- Teacher efficacy
- Leadership attitudes toward the initiative
- Misconception about student attitudes and technology skillset
- Lack of communication between district administration and campus stakeholders

Lack of Quality Professional Development. Professional development refers to learning opportunities for educators to develop and improve their content and pedagogical skills to meet their students' needs better. Early implementors, Phrase 1 teachers, noted that professional development focused on how to use the LMS during the first three phases of implementation. Teachers said that one of the things done well postlaunch was the differentiation of sessions. During preservice district training, teachers could attend leveled sessions—beginner, intermediate, and advanced. Participants noted that after the initial launch of the initiative, professional development sessions turned away from the initial usage of the LMS but towards

using programs and tools embedded in the Master Course lessons, the district's exemplar lessons. These sessions were very strategy-focused, and there was no clear emphasis on pedagogy and understanding how to create various learning environments such as blended learning and flipped learning, which were promoted during the initial phase-ins and the Master Courses.

Participants also noticed the instructional technologists were not always experts in educational technology and did not always have answers or a clear understanding of integrating technology in various content areas effectively. Pedro 1 noted that district specialists would attend conferences and then take that information and create professional development for the district. However, the sessions were based on the use of tools and not so much on pedagogy. Pedro 1 noted that during Phase 1 implementation, district specialists introduced the TIM and encouraged teachers to use it as a guide to integrating technology in the classroom effectively. Pedro 1 and Parker 1 found it extremely useful; however, there was no follow up to help teachers move beyond using technology as a means of substitution.

Participants also noted that most of the district's professional development was not always timely or well-structured. Penny 3 noted that in the previous years, there was little time for actual planning and practicing. She said teachers have time to plan and practice strategies; however, during these planning times, teachers are encouraged to practice scripted lessons from the Master Courses or insert strategies and technology tools into their lessons. There is little focus on research or understanding theory as to why these strategies or tools are effective or where and how to effectively insert them into lessons. Penny 3 noted that as an experienced teacher, she did not want to see a list of tools or strategies modeled; she wanted to be more innovative with the curriculum.

Pedro 1, Frank 1, and Parker 1 noted they work with their campuses to attend workshops sponsored by organizations and educational technology experts. They noted they were more exposed to pedagogical frameworks at these trainings and gained a deeper understanding of technology-based learning environments. Frank 1 said he wished the district had maintained a partnership with the Mooresville Graded School District as they continued to have great success with implementing their 1:1 initiative. He said that only having the partnership during Phase 1 implementation was a result of short-term thinking. Participants noted that without quality professional development, teachers would not develop the necessary skills and command of offering instruction in a 1:1 environment.

Teacher Efficacy. Teacher efficacy is a teacher's level of confidence in or judgment of their capabilities to facilitate an effective learning environment and guide students to success. When teachers do not exhibit confidence in their abilities to guide students through the content and related tasks, this attitude influences students' attitudes towards learning and impacts their overall academic success. Participants' level of efficacy varied based on experience with implementation and campus type. COVID also impacted the participants' confidence in their ability to integrate technology in their ELA classrooms.

Early implementors, Pedro 1, Frank 1, and Parker 1, noted that pre-COVID, they were satisfied with their understanding of how to use the LMS and integrate the tools and the programs the district purchased via the initiative. They also felt they were experts at implementing lessons from the district's exemplar lessons and making modifications based on their students' needs. They went on to add they started feeling a more robust command of their capabilities around the third or fourth year of implementation. However, during the move to quarantine teaching, their confidence has lowered in their understanding of creating an effective

virtual learning environment. Parker 1 noted she had a strong command of content and using the Master Course lessons; however, she feels uncertain about effectively finding a robust framework for virtual or synchronous learning.

Howard 2 feels that COVID has not dramatically impacted his confidence in his skills to integrate technology. Howard 2 felt that pre-COVID, he had a strong command of technology integration as his campus administration provided adequate support through modeling how to effectively implement the initiative and opportunities for professional development around content and educational technology. He also added the shift to virtual learning did not lower his confidence in effectively delivering instruction because of prominent technology use in the classroom before COVID.

For new implementors, they believed their teacher efficacy was low pre-COVID and felt it had gotten lower once they moved to virtual teaching. Patrice 1 noted she is entering her third year of teaching and is building on her content knowledge. She went on to add that every time the district or campus administration makes changes to the district curriculum or introduces a new campus-wide strategy or initiative, she feels like she is starting all over again. Like Patrice 1, Finn 3 feels every time he feels more confident in his capabilities to deliver ELA content and integrate technology, something changes, negatively impacting his efficacy level.

Finn 3 noted the Master Course lessons helped him develop a strong foundation in understanding and using research-based strategies in conjunction with technology tools and instructional programs. He said right before COVID, the curriculum department revised the curriculum making it more scripted, which helped him even more. However, once schools went virtual, the Master Course lessons' revisions did not clearly help teachers understand transitioning from face to face to all virtual. Finn 3 said he felt his lessons were very disjointed.

He added that he opted to use instructional programs such as Achieve 3000 and Edgenuity to provide instruction, and he acted as a facilitator for students who needed extra assistance.

Similarly, Pam 1 felt her confidence levels decreased because the campus administration did not clearly understand how synchronous and virtual learning should work. Pam 1 said although she has a teacher development specialist in providing content coaching, she did not feel like the coaching sessions helped her develop confidence in her capabilities but instead were compliance checks. Early adopters had a higher sense of teacher efficacy than new adopters; however, the COVID pandemic negatively impacted their judgment of capabilities in ensuring student success.

Leadership Attitudes Toward the Initiative. Campus leaders set the set tone for how a school is run and the overall attitude towards learning. All participants except for Howard 2 noted that leadership attitude towards technology set the tone for both teacher and student attitudes towards the initiative. Pam 1 stated since she has been at her campus, she has had three different principals, all of whom did not see the value in blended learning. Those principals wanted the technology to be used for test preparation, learning programs such as Achieve 3000 and Edgenuity used for intervention lessons, and meeting mandated usage requirements set by the district. At her campus, intervention lessons were twice a week, and she noticed students only brought their laptops on intervention days. This made it challenging to implement blended learning lessons on the other instructional days.

Like Pam. 1, Fran 3's campus leadership wanted technology only to be used for intervention and assessment purposes. However, Fran 3's administration had a policy that required students to bring their technology to school every day. If students do not bring their laptops every day, there were weekly consequences that range from in-school detention to parent

conferences. Sometimes students can reserve a laptop for daily use. Finn 3 noted that on his campus, he served under two different principals. The first principal did not have any policies in place for students or faculty to use technology daily. Finn 3 noted that teacher leaders were the ones who led the charge the how various content areas would incorporate technology into their lessons, as noted in the district's exemplar lessons. He went on to add that most of the administrative team did not use technology during faculty meetings. This sent the message to students and teachers the implementation of the initiative was not a priority.

Frank 1 noted when the initiative was first phased in, the current principal wanted to follow district expectations because, at the time, the campus was considered a priority campus. However, once the campus was no longer a priority campus, there was a shift in attitude. Although there was a requirement for students to bring laptops to school every day, teachers had no real mandate to use technology in their lessons every day. Such inconsistencies in expectations sent mixed messages to students, and so many students opted to leave their technology at home. Frank 1 noted that many ELA teachers did not use technology beyond giving assessments during instruction. He stated it was futile to voice concerns about the department's lack of implementation considering campus leadership did not have any clear stance on what implementation should look like. Frank 1 went on to add there has been a change in leadership in the last three years and a change in campus attitude towards technology. He noted this new leadership encourages using the district's exemplar lessons, and as such, teachers must use technology daily. He also shared the new principal uses technology during faculty meetings and showcases use tools and strategies he learned from attending ed-tech professional development.

Phoebe 1 and Parker 1 noted their leadership does not express an interest in educational technology. Parker 1 noted that as a mentor teacher on her campus, she helped teachers continue with implementation and technology integration despite leadership's attitude. She went on to add the principal often sees the technology as a distraction unless it was for assessment purposes or used to access intervention and credit recovery programs. Parker 1 noted the principal's dislike of technology has increased due to the pandemic. Some teacher leaders wanted to create face to face cohorts and virtual cohorts when the district offered students the option to remain virtual or return to school. The principal did not pursue that option and wanted all teachers to teach synchronously. Phoebe 1 stated that teachers who tested negative for COVID, but had to remain quarantined were not permitted to teach virtually even though technically the district said they could. Phoebe 1 added the principal said she did not want to encourage virtual teaching because she is concerned that face to face teaching will become less popular.

Participants noted when their leaders did not openly use technology or promote the proper implementation of the initiative, staff were less likely to integrate technology, which impacted students' attitudes towards technology. Participants also noted that sometimes leadership attitudes do not always influence teachers' attitudes, but it does make it difficult for teachers to influence other teachers to integrate technology and implement the district 1:1 initiative.

Misconception About Student Attitudes and Technology Skillset. There is the notion that because students live in a digital age, they can quickly adapt to learning with technology. The original purpose of the initiative was to ensure all schools would be 1:1. Since its initial launch, only high schools have received technology to transition to 1:1 learning environments. Later, middle schools received laptop carts that teachers shared on a rotating schedule. Some 6-

12 campuses received laptops to transition into a 1:1 setting. As a result of this delay in ensuring all district students have access to personal devices, many students entering high schools were not used to learning with technology or learning in a blended learning environment. In addition to all secondary students not having access to technology, there was a change in the offering of basic computer and technology courses in middle schools and high schools. The middle schools that were considered low performing or priority campuses did not offer a wide variety of electives than schools that perform as expected or identified as high performing. Lower performing middle schools focused more on remedial courses and test preparation. Many of those students were placed in remedial reading courses or scheduled in two ELA classes. However, higher-performing schools offer electives such as graphic design, typing, and other computer or technology options. Those schools also had computer labs in addition to laptop carts, and as a result, their students were more familiar with learning with technology.

Most of the participants noted that campus administration did not want to offer introductory computer skills courses as an elective. At Frank 1's campus, during the first two years of implementation, career and technology education (CATE) teachers made a departmental decision to teach basic computer skills to all students even though it was not explicitly included in their curriculum. Frank 1 noted ELA class times were always interrupted for students to complete digital citizenship lessons, and so the department decided to include minilessons that focused on basic computer and technology skills. Frank 1 noted it made basic tasks easier to complete. He went on to say the administration stepped in and directed CATE and ELA teachers to focus on the required curriculum, and students will "catch on." He said once the CATE teachers stopped providing those introductory skills lessons, it made specific tasks more difficult in the ELA classrooms. He noted that because of this, he had to modify the use of specific

technology tools. He said the administration assumed students understand essential functions such as creating and saving documents or accessing email accounts. Frank 1 said not once did the district or the campus survey students to gain an awareness of students' technology skills or level of comfort with technology.

Pedro 1, Parker 1, and Phoebe 1 all taught at a campus with a very high international student body. They noted some of their students did not access to technology such as phones or television for reasons due to war, poverty, or religion. They went on to add that transitioning from a low-tech environment to a 1:1 high school is extremely difficult. Pedro 1 stated he felt like no one was genuinely considering there were still students who did not have access to technology, and this must be built into the curriculum, whether through minilessons in content classes or offering basic computer classes as electives. He noticed when students struggled to use technology, frustration became a blocker, and they could not internalize the content. Parker 1 noted that many of her students were familiar with cell phones and accessing information on the internet, but they did not see the benefit of using technology for more than just entertainment. They often saw bringing their laptops to school as a task. Parker 1 believed if students had an opportunity to take introductory courses in middle school or as a part of their first introduction to a 1:1 setting, then perhaps there can be an improvement in their attitude towards the initiative. Phoebe 1 noted the students who came from middle schools with more exposure to technology or took basic computer and technology courses had positive attitudes towards learning with technology than students who came from schools that did not offer those opportunities.

Lack of Communication Between District Administration and Campus Stakeholders. Stakeholders in student success include teachers, campus leaders, students, district leaders, and community members such as parents and guardians. According to

participants, district leaders did not invite teachers, students, or parents to engage in the initiative's planning process. Participants noted the initial launch felt like leaders disseminating information instead of a collective movement towards 1:1 learning. Community stakeholders were invited to campus led information sessions to understand financial obligations and laptop deployment logistics. Although the district updated the campus infrastructure and worked with local businesses to provide reduced or free internet and hotspots to families in need, parents felt unprepared for implementation. Some parents were concerned about their students being robbed on their way to school because the laptop cases were very prominent. Some parents were worried about the additional costs for the internet and possible laptop replacement or damages fees. Patrice 1, Pedro 1, and Penny 3 noted that some parents did not want their students to access the laptops as they did not understand the need for the district to move to a 1:1 model. Some parents felt it was one more thing the district was adding to their responsibilities.

Frank 1 and Parker 1 noted because many campus leaders and district specialists who work with core content teachers were not a part of the planning phase, everyone was learning about the implementation at the same time. According to Parker 1, no one had clear answers on how to get parent and student buy-in. She went on to say it was difficult for specialists to help with implementation as they were receiving information with the campuses and sometimes after campuses had received the information. Frank 1 noted it seemed no one in the district was on the same page. He hoped COVID would have helped everyone communicate more effectively and disseminate formation effectively. However, the district was still making decisions about the models of learning without listening to stakeholder input. Frank 1 thinks the district was more concerned about attendance and so went out of the way to ensure all students had access to the internet and a device.

Participants' responses and CBAM SoCQ data revealed that information and management were at high levels of concern. On the CBAM SoCQ, new implementers indicated they lack timely information about how the initiative should be implemented and how to maintain effective implementation. Although the information stage of concern was not as high for early implementors, logistically, changes due to COVID did increase access to information as a concern for them.

Conclusion

This chapter addressed the perceptions about the impact and implementation of the district's 1:1 technology initiative. The data collection process was thoroughly explained by summarizing and analyzing the CBAM SoCQ, archival performance data, and one-on-one interviews with participants. Emerging themes from the data collected were explored as connected to the research questions. Responses from participants were categorized to reflect the emerging themes and how that data provided answers to the research questions.

Summary of the Next Chapter

The final chapter will further discuss the results from this study, formulate conclusions, discuss limitations, and make future research recommendations. Conclusions that address the research questions will be included as well as specific outcomes from the data collected. Findings will then be related to the larger body of literature on this topic. Both confirming and contradicting data will be explored and the discussion of the larger significance of this study.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this exploratory case study was to investigate the implementation of a South Texas public school district's 1:1 technology initiative to determine whether the program is working or if there are improvements to be made to ensure the program is fulfilling the stated goal of improving student academic performance. Participants from seven different high schools agreed to participate in this study. All participants were 10th grade ELA teachers familiar with the 1:1 technology initiative. In this chapter, I will share the conclusions of this study, limitations, recommendations, the impact of the COVID pandemic, and my reflection on my experience as a researcher.

Discussion and Conclusions of Findings

For a little over two decades, many school districts viewed technology initiatives as the answer to their instructional problems. Many federal policies have encouraged school systems to design and implement technology initiatives to improve struggling schools, equip students with 21st-century skills, and compete globally (Frazier et al., 2019; Hull & Duch, 2016). In Chapter 2, the literature review highlighted themes and gaps in the current body of research exploring the impact of 1:1 initiatives on student achievement. This study revealed discoveries and confirmed common themes such as:

- Lack of quality professional development
- Teacher efficacy
- Leadership attitudes toward the initiative
- Misconception about student attitudes and technology skillset
- Lack of communication between district administration and campus stakeholders

In a 2016, Simmons and Martin's study of the Mooresville Graded School District revealed successful components of a 1:1 technology initiative. Simmons and Martin (2016) noted that critical components of successful implementation were revamped curriculum, quality professional development, and a change in pedagogical frameworks. This study noted although the district did revamp their secondary curriculum, participants did believe they were provided with quality, ongoing professional development opportunities or a change in pedagogical frameworks. Simmons and Martin (2016) discovered the Mooresville initiative positively impacted student achievement in core areas consistently over time because teachers received ongoing training and support with how to use blended learning curriculum, effectively integrating technology applications and instructional programs. My study shows the district created support systems for teachers through professional development opportunities and instructional coaching provided by content specialists and instructional technology specialists. However, the lack of quality professional support hinders teachers' ability to implement the newly created curriculum and effectively integrate technology. Participants noted that most of the professional development offered seemed to highlight the use of a new tool versus a change in pedagogy or understanding how to design and facilitate blended learning lessons.

Quality professional development is linked to effective technology integration and student success, but also teacher efficacy. Metcalf and LaFrance (2013) discovered when teachers do not have access to quality professional development on integrating technology or a new curriculum, their confidence levels decline. They feel that integrating technology is one more thing they must add to a long list of responsibilities. Hammond and Mantra (2009) suggested when leaders design and facilitate professional development sessions, they must consider teacher perceptions of technology and pedagogical beliefs to ensure that teachers are

planning with practical instructional approaches and can practice these strategies to develop confidence in content and skills. This study revealed new implementers had low teacher efficacy. These participants noted most of the instructional support focused more on teaching in a traditional learning environment. New implementors did not feel like the professional development sessions, and coaching provided helped them expand their understanding of the content, especially technology integration. They felt an added stress with the changes brought on by teaching during a pandemic.

Studies highlighted the importance of student motivation and attitudes towards technology (Hammon & Manfra, 2009; Holen et al., 2017). My study revealed participants believed one factor that negatively impacted implementation was a lack of student motivation and efficacy. Participants believed learning with technology becomes a blocker to success when students lack the necessary technology and computer skills. This lack of foundational skills causes frustration in students, which impacts their mastery of content and engagement. My study reveals how problematic assuming all students living in this digital era to be tech-savvy can be. My study also shows districts should do more than revamp curriculum to model technology integration but include courses or lessons that help students develop foundational technology and computer skills and moments to build efficacy.

In addition to teacher and student attitudes towards technology, a key component to successfully implement 1:1 initiatives is positive leadership attitudes towards technology. When district and campus leaders model how to engage in ongoing learning of technology integration and application in learning environments, teachers are more inclined to change their attitudes towards technology (Chang, 2012; Machado & Chung, 2015). Most participants in this study worked with leaders who did not understand how to use technology for transformational

purposes. Many leaders saw technology integration as a means of substituting paper-based tasks. For the few participants who worked with principals who actively wanted to enhance their technology skills and served as model implementors, teachers and students were more motivated to use technology effectively. This study revealed that sometimes, leadership attitudes towards technology do not always impact teacher motivation to use technology in their classrooms. Some of the early implementors who worked with leaders who viewed themselves as technology experts, or sought opportunities to learn about instructional technology, were still motivated to be effective implementors. Those participants attended professional learning opportunities outside of the district and conducted independent research to build their content and pedagogical skills to integrate technology in their ELA classrooms.

Studies revealed teachers and students are motivated to successfully implement 1:1 initiatives when their leaders create and share a clear technology vision and plan (Chang, 2012; Fenton, 2017; Heath, 2017). There was an evident lack of communication between district decision-makers and campus stakeholders. Many participants noted they were unaware of all the components of the initiative before the launch. They also noted there was no communication between district leaders and teachers, and students as implementation went on. Participants felt there were no opportunities to offer feedback after the initial launch or throughout implementation. Participants also indicated most of the communication was directives or inquiries about access to devices and the internet and not inquiries about curriculum and learning integration.

Other studies noted there are slight increases in ELA and math achievement; however, once the novelty of technology wears off, achievement either declined or plateaued (Fenton, 2017; Frazier et al., 2019; Harris et al., 2016). When I examined the district's archival student

data on the STAAR/EOC English 2 assessment throughout implementation, I noticed a slight increase in the scores during the initial stages, but then a slight decline as all phrases were launched. When I further examined the data for the seven campuses involved in the study, student performance was like that of the overall district. Most of the schools experienced a slight gain in student performance; however, scores plateaued at some schools, and others experienced a small decline in gains. Multiple factors not explored in this study could have impacted student performance on assessments, such as quality of instruction, teacher turnover, school culture, and teacher efficacy (Allen et al., 2009; Judson, 2010; Ntuli, 2017).

In the end, this study sought to answer whether this district's 1:1 initiative was working and fulfilling the goals of improving student achievement in ELA classrooms. I discovered the initiative is not being implemented successfully, and it is not working as intended. When the initiative was first introduced, the hope was with the introduction of technology in classrooms and resources that came with digital learning, low-performing schools would perform better, improving the district's academic stance with the state while improving student achievement in core content such as ELA. Based on archival STAAR/EOC data, there were small gains since the initial implementation of the initiative, but those gains have not been consistently maintained over the last seven years of implementation. The district stated that by integrating technology in ELA classrooms, students would develop essential 21st-century skills and improve engagement. Teacher interview data revealed this is an ongoing process; however, due to the pandemic, the students' ability to think, communicate, and collaborate critically has improved as students learn to become more independent in their learning due to the nature of virtual learning.

Nevertheless, participants worry that once the pandemic is over, attitudes towards teaching and learning with technology may return to the pre-COVID setting. The initiative was

also supposed to improve teacher engagement and collaboration with students and other teachers across the district. Participant responses on the CBAM SoCQ and in interviews revealed the pandemic has fast-tracked this goal in that platforms such as Microsoft Teams and Zoom have created open spaces for teachers to build online learning communities to collaborate and seek instructional support. This sense of community was nonexistent before COVID-19. Overall, this 1:1 technology initiative is not working. The district continues to invest thousands of dollars into the initiative without a thorough program evaluation and not listening to key stakeholders. It took a global pandemic for district-wide technology integration to occur and for teachers to implement the initiative entirely. The COVID-19 pandemic provided a boost in the right direction; however, the question is, will this type of technology integration and initiative implementation continue post-COVID, and to what extent will the initiative work? It is important to note my findings suggest the initiative must be reformed to fulfill the stated goals.

Limitations

This study's data were collected from seven high schools to determine its functionality and successes, instead of examining data from all high schools implementing the program. The sample size was small, given the size of the district. Most of the participants in this study were teachers at low performing or priority campuses. Only one participant was assigned to a high performing campus. Soliciting participants was restricted to social media. The only data used were the STAAR/EOC performance data to assess the initiative's impact on student performance. Students, district and campus specialists, and leaders were not included in this study. Teachers offered their perceptions of leadership attitudes towards the initiative and of student performance and attitudes. Other factors, such as campus culture, teacher attrition, and

classroom management, may impact student performance and technology integration not included in this study.

Recommendations

The findings confirm the results of other bodies of research such as the need for quality professional development, pedagogical frameworks that focus on technology integration, instructional support for teachers, school and district leaders as technology experts, and the need to build student and teacher technological self-efficacy.

Rethink Professional Development

District leaders should consider rethinking the focus and structure of professional development opportunities. Leaders should consider creating spaces for teachers and campus leaders to learn together and practice what integration and implementation would look like on their campus. Currently, leaders and teachers do not typically attend professional development together. This could change teacher perceptions of leaders as not having technological expertise. Professional development sessions should focus not only on the use of programs and technology applications but also on pedagogical frameworks for teaching with technology. Currently, district learning opportunities still heavily focus on showing tools or instructional best practices. However, the content piece and the technology pieces never come together, so teachers can understand that content and technology should not be treated as separate entities. When learning opportunities showcase technology in isolation, teachers, as well as leaders and specialists, fail to understand that technology is the tool in which content is delivered in the classroom. Learning opportunities that clarify technology integration by promoting research-based frameworks that foster the union of content and technology are crucial to successful technology integration in STPSD classrooms.

Renewing Partnerships With the Mooresville Graded School District

District leaders should also consider reestablishing their previous partnership with the Mooresville Graded School District to receive guidance on structuring professional development and evaluative pedagogical frameworks to adopt. Mooresville Graded School District's 1:1 technology initiative has been researched since its launch, and results have shown their initiative is working. Besides revisiting former partnerships, district leaders should consider reintroducing the Technology Integration Matrix (TIM). This framework was introduced during the first two years of implementation, but it was not formally adopted. The district needs to utilize programs and frameworks that have proven useful and ensure district specialists and teachers become familiar with them.

Investing and Expanding Instructional Support

In addition to rethinking professional development and pedagogical frameworks, district leaders should consider investing in district instructional specialists' expertise and expand the number of specialists employed. Teacher attitudes towards the quality of support will be more positive when they believe the people providing instructional support are well-versed in educational technology. The district leaders must also rethink the roles of educational technology specialists and content specialists as separate. District leaders should recruit more instructional technologists to assist with hardware to lead hardware deployment and maintenance, in addition to other components of learning with technology such as infrastructure needs and safeguarding online information. Teacher Development Specialists should be experts in content and educational technology. This reinforces what researchers discovered to be a key component of successful initiatives and needed to support using frameworks for learning in digital environments. Teachers should not have to wait to receive support on a biweekly basis or by

request only. Given the size of STPD, each campus should have funds to hire campus-based specialists for all contents. The district should also increase funding to hire more specialists to ensure all campuses have weekly support. District leaders should also consider having expertise in educational technology and design and facilitate learning opportunities for district and campus specialists to help build knowledge and advance district and campus specialists' technological skills. Investing in specialists who provide instructional support to teachers will help build teacher capacity and impact the quality of professional development these specialists design and facilitate.

Develop Student Efficacy

This study also highlighted the need to build student technological self-efficacy. To build efficacy, students need opportunities to learn about and practice using technology that is a part of the district's 1:1 initiative. Students must possess the necessary computer skills and expand their digital literacy skills to feel comfortable learning with technology. Students in the district do not have equal access to introductory computer courses that develop foundational skills such as typing and creating documents. Students are exposed to courses that explore computer skills and graphic design in schools that are higher performing or in affluent neighborhoods. Students in lower-performing schools do not have access to those courses for electives but are scheduled in courses that provide reading intervention. District leaders should consider requiring all schools to offer a foundational computer course via their Career and Technology Education (CATE) courses. They should also consider how to authentically integrate foundational skills in content courses if CATE course offerings cannot be required across the district. These courses should be offered at the secondary and elementary levels so there is a natural progression for students to develop higher efficacy levels.

Open Communication Between District Leaders and Key Stakeholders

The CBAM SoCQ revealed participant concerns about logistics and a breakdown in communication between the district and campuses regarding implementation. District leaders should consider creating an open channel between the district and campus to receive feedback and support teachers in implementing the initiative. The district's communication should solely focus on access to the internet and conditions hardware but expand to teacher and student evaluations of instruction, learning environment, comfort with using technology and programs that are a part of the initiative. In addition to communicating more effectively and frequently with teachers and students, the district should consider creating more avenues to receive feedback from parents about the quality of their student learning through the 1:1 initiative and possible concerns or needs parents might have to successful partner with teachers to ensure their students' success. One limitation of this study was the exclusion of students and parents as participants. Most of the information about parent and student attitudes towards technology came from teacher perceptions. Although there are studies that explore student responses to 1:1 technology initiatives, there is no vast body of research that examines other stakeholders' attitudes, such as parents, and their perceptions of technology's impact on their students' achievement. Participants in this study could only offer insight about parents based on their campus interaction with the community during the initial implementation stages. Future studies could explore the student and parent perceptions of learning with technology and the district's implementation of the 1:1 initiative.

This study explored new circumstances that previous research has not explored, such as the impact of natural and health disasters on teaching and student achievement. This study revealed the pandemic helped improve technology integration in learning environments and how

teachers implemented the initiative. The pandemic created a move towards virtual learning, which made reluctant implementors more encouraged to learn how to teach using technology and become better implementors. District leaders should consider evaluating implementation during the pandemic to see what components of the initiative work well so those components can continue and be built upon when the pandemic is over. It would also be necessary for district leaders to consider how well the initiative facilitated the shift from traditional to virtual learning in the light of the pandemic for future possibilities. Although participants in this study were encouraged to respond to interviews providing a pre-COVID and a during-COVID scope, it would be powerful for researchers to conduct future research comparing overall teacher and student attitudes towards teaching and learning in a pre and post COVID learning environment. Such studies might provide school systems with important information about teaching with technology in particular situations or design initiatives with built-in considerations for such circumstances.

Personal Reflections

For seven years I worked for this district as a teacher development specialist and was tasked with helping campuses implement this 1:1 initiative. I was extremely excited when the district decided to move to a 1:1 district. When the initiative was first launched, I understood that technology would be introduced to high schools over a three-phase process and then moved to the middle schools. As time went on, I noticed that middle schools' implementation was delayed and kept changing, focusing on the high school level. In addition to serving on deployment teams and advising campus leadership teams during the initial years of implementation, I was also on the curriculum team responsible for creating the Master Courses. I grew excited about all the possibilities the initiative could have on student success and teacher success.

In the seven years I worked in this district, there was never a formal evaluation of how well the initiative was working or being implemented. This study was an opportunity to provide a snapshot of the effectiveness or ineffectiveness of the initiative and its impact on student success. Although I no longer work with the district, conducting this research was still very important to me because I care about the district's future, and I care about the role of technology in education. As I conducted the study and analyzed the collected data, I learned things I did not observe as an employee in the work of implementation and what I assumed I would discover.

As an employee, I felt the weight of implementation fell on district leaders to develop district specialists and campus leaders' educational technology expertise to support teachers and students. I was not surprised when teachers noted that campus leaders should view themselves as technology leaders to influence teacher and student attitudes towards technology positively. When I worked with campus leadership teams, some leaders welcomed the technology and actively sought ways to expand their understanding of how it can close learning gaps and transform learning. Those leaders were actively involved in practicing new tools and platforms during faculty meetings to model technology use for teachers. Those leaders attended professional learning both within and outside of the district. I also worked with leaders who only sought to be compliant and focused heavily on improving state assessment scores due to their campuses' academic ratings. Those leaders wanted teachers to use technology but did not create learning spaces for teachers to practice integrating technology or allow professional development time during faculty and department meetings.

I was surprised most of the participants felt students should also take some of that weight to ensure the initiative's success. Many participants from priority campuses felt students were not taking the initiative seriously. I was surprised by this response because participants noted the

current curriculum and course offerings did not help students build self-efficacy. If the curriculum and courses available to students at priority campuses did not provide students with foundational technological skills, then that responsibility cannot solely be on students. Teachers should create ways for students to learn and practice these skills within the context of learning content. I assumed that given the stressors of teaching with technology in an everyday setting would be amplified by virtual teaching due to COVID-19 and so I was not expecting to see positive impacts on student engagement and teacher-student collaboration. I always had the belief that students wanted to collaborate and communicate with teachers, but sometimes did not have a comfortable avenue and time to do so. Moving to a virtual setting has created an atmosphere that allowed students to email and direct message teachers to inquire about missed learning opportunities and misunderstood content at times and ways that were familiar to them and less threatening, in a sense, versus the traditional face to face setting that was not always convenient or easy for students.

This pandemic revealed some components that are working as the initiative continues to be implemented. The district exposed teachers to technology programs and tools that proved useful to virtual teaching. Teachers were familiar with and have access to a plethora of content-specific programs and assessment applications to provide instruction. Teachers also had access to a curriculum designed for blended learning and asynchronous learning, so they had options to choose from as they worked to create virtual lessons that would meet their students' needs. District specialists were charged with creating and facilitating professional development for teachers and parents on how to use the technology and platforms provided through the initiative as they engage in virtual learning. However, concerns that existed before the pandemic still exist. The district had to make additional purchases to ensure all elementary and secondary students

had access to a device and the internet. Now, there are elementary school and middle school teachers who are expected to shift from a face-to-face setting to a virtual setting. These teachers, especially the elementary teachers, have not been required to attend professional development focused on educational technology or teaching in blended learning settings. Now, they are learning virtually and trying to teach using newly acquired skills immediately. This type of learning is also new to their students as well. Middle school students have used technology in most schools for remediation and some testing, but not for direct instruction. Had the initiative been implemented as planned initially, then both teachers and students would have more familiarity with the initiative and learn with technology, as the high school population. This study highlighted areas of success and growth that I hope will influence how decision-makers continue to implement the initiative and other school systems leaders interested in launching their own 1:1 initiatives.

Conclusion

This study was conducted to assess a south Texas public school district's 1:1 technology initiative to determine whether the program is working or necessary improvements to ensure the program is fulfilling the stated goals. This study revealed common themes confirmed by previous research, such as the need for quality professional development, increased teacher technological self-efficacy, district and school leaders as technology leaders, and communication between designers, decision-makers, and implementors. This study also discovered uncharted territory in the modern era of education—teaching during a global pandemic. Although there were some limitations to this study, the findings added to the current research offering school systems important considerations to design and implement 1:1 technology initiatives during standard settings and unusual circumstances such as a global pandemic. District and school leaders should

consider technology not as an easy fix for deficits in learning but as a vehicle that transforms traditional learning and instruction into innovative instruction and learning practices.

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Appendix A: Social Media Solicitation

Dear Educator,

I am Lois Barker, a graduate student at Abilene Christian University. I am seeking 10th grade ELA teachers to participate in a case study exploring the impact of a 1:1 technology initiative on student achievement in 10th grade ELA classrooms.

This is a two-part study:

Secure online survey

Individual Zoom interview

The survey will not ask you to reveal personal information but to explore your concerns about technology integration. All questions are scaled questions and require 20-30 minutes to complete. Zoom interviews will be formatted to protect your identity and will not exceed 45 minutes.

To participate in this study, you must be a high school 10th grade English Language Arts teacher.

If you are interested in participating, please access your consent form here. Upon consent submission, you will the secure link to the online survey and a link to sign up for your individual Zoom interview.

If you have any questions or concerns, please contact me.

Thanks in advance,

Lois Barker,
Doctoral Candidate
ACU

Appendix B: Consent Agreement

Dear Educator,

Thank you for agreeing to participate in this study. I have signed the consent form, acknowledging your agreement. Please securely store for your recording keeping, or discard if necessary.

Access the survey using this link: https://sedl.org/concerns/index.cgi?sc=ef3e9h
The password is: xxxxxxx

Schedule your Zoom interview using this signup:
https://www.signupgenius.com/go/10c0d4eaead2ba7facf8-zoom

If you have any questions, please let me know. Thanks again, and I look forward to working with you!

Sincerely,

Lois Barker,
Doctoral Candidate
ACU

Appendix C: CBAM Model and SoCQ Permissions

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American Institutes for Research. (2015). *CBAM: The concerns-based adoption model*. Washington, DC: Author. Retrieved from https://www.air.org/resource/concerns-based-adoption-model-cbam. CBAM graphic reprinted with permission from American Institutes for Research.

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Signature of License Applicant: L Barker **Date:** 09-10-2020

Printed Name of License Applicant: Lois Barker

Signature of AIR Representative: Kim O'Brien *Date:* September 10, 2020

Appendix D: CBAM SoCQ Sample

SoCQ 075

Stages of Concern Questionnaire

Name (optional): _____

The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the adoption process.

The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years' experience using them. Therefore, **many of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time.** For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

This statement is very true of me at this time.	0 1 2 3 4 5 6 (7)
This statement is somewhat true of me now.	0 1 2 3 (4) 5 6 7
This statement is not at all true of me at this time.	0 (1) 2 3 4 5 6 7
This statement seems irrelevant to me.	(0) 1 2 3 4 5 6 7

Please respond to the items in terms of **your present concerns,** or how you feel about your involvement with **this** innovation. We do not hold to any one definition of the innovation so please think of it in terms of your own perception of what it involves. Phrases such as "this approach" and "the new system" all refer to the same innovation. Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with the innovation.

Thank you for taking time to complete this task.

0	1 2	3 4 5	6 7
Irrelevant	Not true of me now	Somewhat true of me now	Very true of me now

Circle one number for each item.

1. I am concerned about students' attitudes toward the innovation.	0 1 2 3 4 5 6 7
2. I now know of some other approaches that might work better.	0 1 2 3 4 5 6 7
3. I am more concerned about another innovation.	0 1 2 3 4 5 6 7
4. I am concerned about not having enough time to organize myself each day.	0 1 2 3 4 5 6 7
5. I would like to help other faculty in their use of the innovation.	0 1 2 3 4 5 6 7
6. I have a very limited knowledge of the innovation.	0 1 2 3 4 5 6 7
7. I would like to know the effect of the innovation on my professional status.	0 1 2 3 4 5 6 7
8. I am concerned about conflict between my interests and my responsibilities.	0 1 2 3 4 5 6 7
9. I am concerned about revising my use of the innovation.	0 1 2 3 4 5 6 7
10. I would like to develop working relationships with both our faculty and outside faculty using this innovation.	0 1 2 3 4 5 6 7
11. I am concerned about how the innovation affects students.	0 1 2 3 4 5 6 7
12. I am not concerned about the innovation at this time.	0 1 2 3 4 5 6 7
13. I would like to know who will make the decisions in the new system.	0 1 2 3 4 5 6 7
14. I would like to discuss the possibility of using the innovation.	0 1 2 3 4 5 6 7
15. I would like to know what resources are available if we decide to adopt the innovation.	0 1 2 3 4 5 6 7
16. I am concerned about my inability to manage all that the innovation requires.	0 1 2 3 4 5 6 7
17. I would like to know how my teaching or administration is supposed to change.	0 1 2 3 4 5 6 7
18. I would like to familiarize other departments or persons with the progress of this new approach.	0 1 2 3 4 5 6 7

0	1 2	3 4 5	6 7
Irrelevant	Not true of me now	Somewhat true of me now	Very true of me now

Circle one number for each item.

19. I am concerned about evaluating my impact on students.	0 1 2 3 4 5 6 7
20. I would like to revise the innovation's approach.	0 1 2 3 4 5 6 7
21. I am preoccupied with things other than the innovation.	0 1 2 3 4 5 6 7
22. I would like to modify our use of the innovation based on the experiences of our students.	0 1 2 3 4 5 6 7
23. I spend little time thinking about the innovation.	0 1 2 3 4 5 6 7
24. I would like to excite my students about their part in this approach.	0 1 2 3 4 5 6 7
25. I am concerned about time spent working with nonacademic problems related to the innovation.	0 1 2 3 4 5 6 7
26. I would like to know what the use of the innovation will require in the immediate future.	0 1 2 3 4 5 6 7
27. I would like to coordinate my efforts with others to maximize the innovation's effects.	0 1 2 3 4 5 6 7
28. I would like to have more information on time and energy commitments required by the innovation.	0 1 2 3 4 5 6 7
29. I would like to know what other faculty are doing in this area.	0 1 2 3 4 5 6 7
30. Currently, other priorities prevent me from focusing my attention on the innovation.	0 1 2 3 4 5 6 7
31. I would like to determine how to supplement, enhance, or replace the innovation.	0 1 2 3 4 5 6 7
32. I would like to use feedback from students to change the program.	0 1 2 3 4 5 6 7
33. I would like to know how my role will change when I am using the innovation.	0 1 2 3 4 5 6 7
34. Coordination of tasks and people is taking too much of my time.	0 1 2 3 4 5 6 7
35. I would like to know how the innovation is better than what we have now.	0 1 2 3 4 5 6 7

Please complete the following:

1. How long have you been involved with the innovation, not counting this year?
   Never ___ 1 year ___ 2 years ___ 3 years ___ 4 years ___ 5 years or more ___

2. In your use of the innovation, do you consider yourself to be a:
   non-user ___ novice ___ intermediate ___ old hand ___ past user ___

3. Have you received formal training regarding the innovation (workshops, courses)?
   Yes ___ No ___

4. Are you currently in the first or second year of use of some major innovation or program other than this one?
   Yes ___ No ___

If yes, please describe briefly:

_____

_____

_____

Thank you for your help!

Stages of Concern Questionnaire (SoCQ 075) is available in the following AIR publications:

George, A. A., Hall, G. E., & Stiegelbauer, S. M. (2006). *Measuring implementation in schools: The stages of concern questionnaire* (Rev. ed.) (Appendix A, pp.79-82 and as a PDF document on an accompanying CD-ROM.) Austin, TX: Southwest Educational Development Laboratory.

George, A. A., Hall, G. E., & Stiegelbauer, S. M. (2006). *Stages of Concern Questionnaire (SoCQ) online*. Available from http://www.sedl.org/pubs/catalog/items/cbam21.html

Hord, S. M., Rutherford, W. L., Huling, L., & Hall, G. E. (2006). *Taking charge of change* (Rev. ed.) (pp. 48-49). Austin, TX: Southwest Educational Development Laboratory.

Appendix E: TIM Figure Permissions

Mon, Jun 15, 7:19 AM

Hello Lois,

Thanks for contacting us! The Florida Center for Instructional Technology (FCIT) at the University of South Florida is pleased to grant you non-exclusive permission to reproduce the Technology Integration Matrix (TIM) graphic from our web site (https://fcit.usf.edu/matrix/matrix/) for the purposes described in your email (copied below). Lois Barker agrees to credit "The Florida Center for Instructional Technology, fcit.usf.edu" in all forms of publication/production.

You may find a TIM graphic in this gallery that would suit your request. Please let us know if you have any questions or need assistance. You are also welcome to refer participants to the TIM website for more information and to our iTeach Professional Learning courses for in-depth TIM workshops.

Best regards,
Shelby Di Vencenzo

Appendix F: ACU IRB Approval

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 9, 2020

Lois Barker
Department of Graduate and Professional Studies
Abilene Christian University

Dear Lois,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "The Impact of a One to One Technology Initiative on Student Achievement in 10th English Language Arts Achievement: A Case Study of a Texas Public School District's 1:1 Technology Initiative",

(IRB# 20-135)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