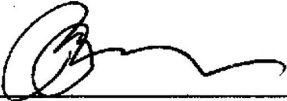# ACCEPTANCE

This dissertation, PERCEPTIONS OF K-12 EDUCATORS' PREPARATION FOR ONLINE INSTRUCTION BEFORE AND DURING A GLOBAL PANDEMIC, was prepared under the direction of the candidate's Dissertation Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree of Doctor of Education in Leadership in the School of Education, Concordia University Irvine.

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PERCEPTIONS OF K-12 EDUCATORS' PREPARATION FOR ONLINE INSTRUCTION
BEFORE AND DURING A GLOBAL PANDEMIC

by

Kay E. Rosendahl

A Dissertation

Presented in Partial Fulfillment of
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ABSTRACT

This qualitative case study looked at teacher technology readiness before the 2020 pandemic. The researcher used snowballing to gather participants in an online survey involving teachers and administrators who experienced the move to online instruction in March 2020. The survey asked respondents about their technology training, online experiences, and collaborative efforts while instructing online during the COVID-19 pandemic. The key findings were that the participant teachers identified having little or no technology training during their teacher training, and most were not prepared for the move to online instruction. They included comments that lack of training on online pedagogy, apps, software, and hardware hindered their instruction. Additionally, the study found that most participants did not use collaborative efforts.

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CHAPTER 1: INTRODUCTION

The Coronavirus pandemic in 2020 caused a significant upheaval in how students were taught around the world. The pandemic pushed teachers to new teaching practices that many teachers may not have been prepared for the change. Educators from PK-12 and higher education had to change curriculum and pedagogy from in-person to online in March 2020. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO) (2020), 1.5 billion learners were not in classrooms in 195 countries in mid-April 2020, with 128 countries having no plans for reopening. UNESCO (2021) global monitoring of school closures data as of December 29, 2021, reflected that out of 210 reporting countries on full or partial school closings, four countries reported no closures, 50 reported one to 20 weeks, 72 stated 21 to 40 weeks, and 85 said 41 to 83 weeks. UNESCO (2020) noted that the pandemic placed a new emphasis on teacher training to include teaching with technology. The need for online components in teacher preparation programs became urgently apparent when 1.5 billion students were shut out of the traditional school buildings.

The pandemic forced changes in education and highlighted the need for adding to what teachers learn for educational technology. Teachers' technology education requires hands-on practice using the apps, software, and hardware in connection to content areas. Archambault et al. (2016) noted that few teacher preparation programs included an online teaching component in the United States. They stressed that student teachers would benefit from field experience teaching and familiarity with online platforms before their first online instructor position (Archambault et al., 2016).

Moreover, Darling-Hammond and Hyler (2020) noted that the pandemic raised the bar for educator preparation. In comparison, Darling-Hammond et al. (2020) believed teachers

needed training with formative assessments, social-emotional learning, engagement in trauma-informed, healing-informed practices, technology, and collaboration skills for the reopening of schools after the pandemic. The training would help teachers improve online course content and formative assessments. In conclusion, the training educators received was insufficient for the overnight change to online teaching, and changes in course instruction are needed. The background of this study provides a review of traditional training preservice teachers receive.

Background of the Study

Teacher training involves many topics besides content. However, improving teacher training has been a topic of discussion for over 60 decades. Scanlon (1957) stated that the problem with training teachers "can be resolved by bold, imaginative action and a willingness to critically re-examine traditional ways of doing things" (p. 14). Meske and Duerksen (1985) noted that the only way to improve teaching was through improving teacher education. Building on Scanlon (1957) and Meske and Duerksen, Meske and Duerksen explained what was needed to enhance public school practices: Identify long-range goals, define the required knowledge and skills, designate the appropriate learning experiences, and note how the knowledge and skills will be acquired. Enhancing teacher training requires careful thought on the requirements when students start their first jobs in the classroom.

Schneider (2018) summed up the problem as a quest for better teacher preparation that had occurred since the 1800s. He categorized teacher education issues as problems with the contexts and dilemmas that cause them. The contexts included public funding, scale, equity, and the importance of education. The first of Schneider's dilemmas were length versus volume, how much to fit into a program, and the length of time to acquire a degree. Second, specificity versus generality, how specific should the program be for the area the student would teach or a general

course that may or may not be the best training for a student-teacher. Last, flexibility versus security, should the program be flexible to changes or stay the same. For over 200 years, issues' discovery generated solutions, with positive results occurring through effort (Schneider, 2018). However, some of the issues repeated themselves years later, leading to new solutions and other issues that Schneider identified as dilemmas where progress is impossible. Improving teacher preparation programs was a recurring cycle of solving problems and managing difficulties. Students need knowledge in numerous areas to be ready to teach. Particularly with laws that affect what and how things are taught.

Laws

Federal policies and standards rapidly changed during the 1980s and 1990s and changed education in the United States. New regulations were placed on teaching that required new skills for working with students. The education laws are rooted in the 1965 Elementary and Secondary Education Act (ESEA) and Higher Education Act (HEA). ESEA tied federal funds for education to results, and HEA authorized an advisory council to review teacher training programs. The laws made it mandatory for students with disabilities to be part of the general education classrooms. Teachers needed training on how to help students with learning disabilities. New teaching standards implemented covered subject areas, assessment construction, and standards that led to accountability (Cochran-Smith et al., 2018).

In 2001, No Child Left Behind (NCLB) increased accountability in teacher education, which focused on research-backed instructional programs and is the starting point for future shifts in education policies. Race to the Top (RTTT) grants in 2009 required new standards and assessments to prepare students to succeed, data systems to measure growth and success that inform instruction, and guidelines for teachers' recruitment, development, rewarding, and

retention. Race to the Top was part of the American Recovery and Reinvestment Act of 2009. Other educational laws include the Individuals with Disabilities Act (IDEA) of 1975 and the Every Student Succeeds Act (ESSA) of 2015. IDEA, NCLB, and ESSA require students with learning disabilities to be taught in the general education classroom. Gottfried et al. (2019) observed that IDEA, NCLB, and ESSA placed student academic progress on teachers. Hara (2017) claimed that teacher preparation programs needed more policies-related coursework. She stated that students in law coursework developed a working knowledge of what drives teaching practices (Hara, 2017). When teachers understand the laws dealing with learning disabilities and accountability that drive education, they understand why some teaching methods are required.

In 2016, in response to educators in the United States who felt that they were not ready for classroom experience, the federal government issued new regulations (U.S. Department of Education, 2016). The new rules focused on the effectiveness of teacher preparation programs, making them more transparent, providing ongoing feedback, and continuous improvement. They included more robust teacher preparation programs outcomes for traditional, alternative routes to certification and distance education yet allowed states flexibility to measure program performance. However, no details were provided on specific training that teachers should receive. The rules brought changes for accountability, but they did not incorporate the use of specific technology.

Preparation Programs

Building on robust teacher education, Bittman et al. (2017) cited teacher training programs as having too much discrepancy across the United States and affecting recruitment, retention, and student understanding. The discrepancy in teacher preparation programs included differences in inquiry-based approaches and too little content knowledge. At the same time,

Crocco and Marino (2017) studied preservice teachers' understanding of inquiry-oriented

approaches in teaching social studies. Their two-year research also showed that most social

studies teachers lacked the knowledge of the inquiry-based approach (Crocco & Marino, 2017).

The inquiry-based approach is important for teacher understanding because it allows students to

discover information by answering subject questions by investigating while the teacher acts as a

guide.

In 2018, the National Council on Teacher Quality (NCTQ) also reported inadequate

teacher preparation programs before teachers received licensure in the United States. They found

that 15 % of post-baccalaureate elementary programs had minimal expectations for academic

backgrounds in history, literature, science, and 1 % in mathematics (National Council on Teacher

Quality, 2018). The NCTQ (2018) reported that three-quarters of college programs did not teach

preservice teachers in the context of reading and classroom management strategies. The NCTQ

(2018) continued in the report with unsatisfactory practice teaching experiences, failure to

observe student teachers, and no constructive criticism. In addition, the study reflected that the

majority of programs failed to provide enough content knowledge for potential teachers to pass

state certification tests (NCTQ, 2018). Specifically, inadequate knowledge was provided in

science and social studies to prepare future teachers (NCTQ, 2018). The NCTQ (2018) report

noted numerous areas for teacher training programs to improve courses for training teachers.

Darling-Hammond, Holtzman, Gatlin, and Vasquez Heilig (2005) stated that the quality of

teachers' preparation led to teacher effectiveness. The NCTQ (2018) suggestions for improving

teacher preparation programs included higher academic expectations, reading strategies,

classroom management, and more content knowledge.

The training needs of teachers, as noted above, indicated that teachers needed more

knowledge in their content area and pedagogy. However, technology and collaboration were not found as priorities. Towards the end of the 20th Century, Frick (1991) believed that technology could transform education if teachers took the lead. He stressed that education systems were universals, were not time and place restricted, and teachers' needed to be present. Barbour and Harrison (2016) noted that K-12 online learning had grown, yet student teachers were not prepared to teach in the environment. There are numerous suggestions on what knowledge teachers need to learn to succeed. Nevertheless, technology training needs to change due to the pandemic and the prevalent need for students to develop 21st century technology skills. Historically, improving teaching has been difficult because teaching is a complex cultural system with many interacting factors impacting learning (Stigler & Givvin, 2017).

Meske and Duerksen (1985) commented that the only way to improve teaching was through improving teacher education. Traditional teaching methods failed during the pandemic, and many teachers struggled with the technology required to teach online. Teacher education can improve by examining the pandemic event and adding meaningful changes to teacher preparation programs.

Goldhaber and Ronfeldt's (2020) brief, *Sustaining Teacher Training in a Shifting Environment*, mentioned a challenge that teacher preparation programs face during the pandemic, the lack of student teaching opportunities. Their problem was insufficient student teaching placements from a lack of local options in states that use student teaching placements. Chambless et al. (2022) commented that the shift to online classes during the pandemic highlighted the need for online pedagogy in teacher preparation programs. Reich (2021) added that due to extreme weather and future disease events, education needed to look to the future and place technology as a high priority.

There is limited literature on what teachers needed during the pandemic from the teachers who experienced the change to online teaching. More information on what challenges K-12 teachers met going into the pandemic when schools went from in-person to online to prepare teachers would be beneficial. The information will assist in identifying the training that educators need for teaching online. The data from teachers that experienced the traditional classroom and the switch to online is valuable for developing professional learning and training programs to build capacity.

Statement of the Problem

The research problem was whether teachers had the technological and pedagogical skills to teach in a remote online environment. When the coronavirus pandemic started, teachers went from in-person to online classes within a few weeks. Technology and collaboration became necessary for continued class learning. Based on Facebook posts, some teachers had difficulties going to an online environment during the pandemic with their prior knowledge of technology and pedagogical practices for all student learning, including the students with learning disabilities. The research in this study will provide meaningful data on the struggles faced by teachers and the technology used during the pandemic. The data would help teacher preparation programs understand what training students need to be prepared for K-12 classroom teaching.

Studies on the challenges that teachers encountered during the transition can contribute to the span of the available literature and assist in identifying long-range goals, the knowledge and skills required, and how to transfer the knowledge and skills to teachers and future teachers. Meske and Duerksen (1985) determined that what was needed to enhance public school practices was to identify the long-range goals, define required knowledge and skills, and designate the appropriate learning experiences and how the knowledge and skills will be acquired. This study

will identify the technology and teacher online teaching needs for the future.

Purpose of the Study

This study aimed to examine the relationship between teacher training and teacher readiness for online classrooms in connection to technological and pedagogical experiences in the 2020 pandemic. Teacher technical, pedagogical, and collaborative training are essential for today's teachers as they need to consider all students' learning abilities in their classes, especially for SLDs. The U. S. Congress Office of Technology Assessment (OTA) (1995) recommended expanding technology in teacher education. Today, technology acquaintance is even more critical. Reich (2021) contended that the better-prepared schools for the pandemic had invested in technology. While Talyn et al. (2021) furnished that pre-existing faculty learning communities helped teachers move to online classes. The study will provide information from educators about the technology and pedagogy needs in teacher training.

Research Questions

The research uses the following questions:

1. What do teachers need to know about online pedagogy for K-12 instruction?

2. What changes do teacher preparation programs need to help prepare tomorrow's teachers?

3. What do administrators need to know to lead pedagogical shifts in technology for sustaining teacher instructional needs?

The questions will provide information from educators on their perceptions of technology during the pandemic. Their experiences can contribute to information for teacher preparation programs on what technology training is needed. The questions will also provide data from administrator leaders on school requirements to identify educator training needs.

Conceptual Framework

Different adult learning theories provide information on how people learn and create practical learning experiences. A conceptual framework explains a phenomenon from the researcher's incorporation of literature and uses a theory for qualitative research that influences and guides the study. Kolb and Kolb's (2017) experiential theory is based on experienced facts to form associations to learn. It helps adults identify the reality of a situation to understand its meaning. It uses concrete experience with reflective observation to tie abstract conceptualization to active experimentation. Smart and Csapo (2007) related experiential learning to active learning; learning is optimized when learners have an active role through their actions. They also contended that the theory was ideal for teaching as it engages, allows for deeper understanding, and more problem resolution (Smart & Csapo, 2007). Learning with this theory is a continuous process linked to experiences and requires conflict resolution (Kolb & Kolb, 2017). It uses a holistic methodology to adapt to transactions between a person and an environment to adapt to the world. Guthrie and Jones (2012) pointed out that the theory involved developmental opportunities that encourage growth in understanding. Using the experiential learning theory as the lens for the study will provide insights into how the pandemic influenced teacher knowledge.

There are five principles for the philosophy of experiential education. First, learning happens through the process of experience. Second, the learning process is grounded in experience, where ideas change and develop. Third, learning involves resolving conflicts where individuals require involvement, reflective observation, abstract conceptualization, and active experimentation to adapt knowledge to present situations. Learning with this theory is a continuous process linked to experiences and requires conflict resolution (Kolb & Kolb, 2017). Fourth, understanding is holistic by adapting to the world by bridging experiences through a

lifelong process. Fifth is the persons' transactions with social and personal information. Sixth, the

process of producing knowledge varies by context. As shown in Figure 1.1, the approach has

four stages that the learner can enter at any time to acquire new knowledge.

Figure 1. 1

The Experiential Learning Cycle
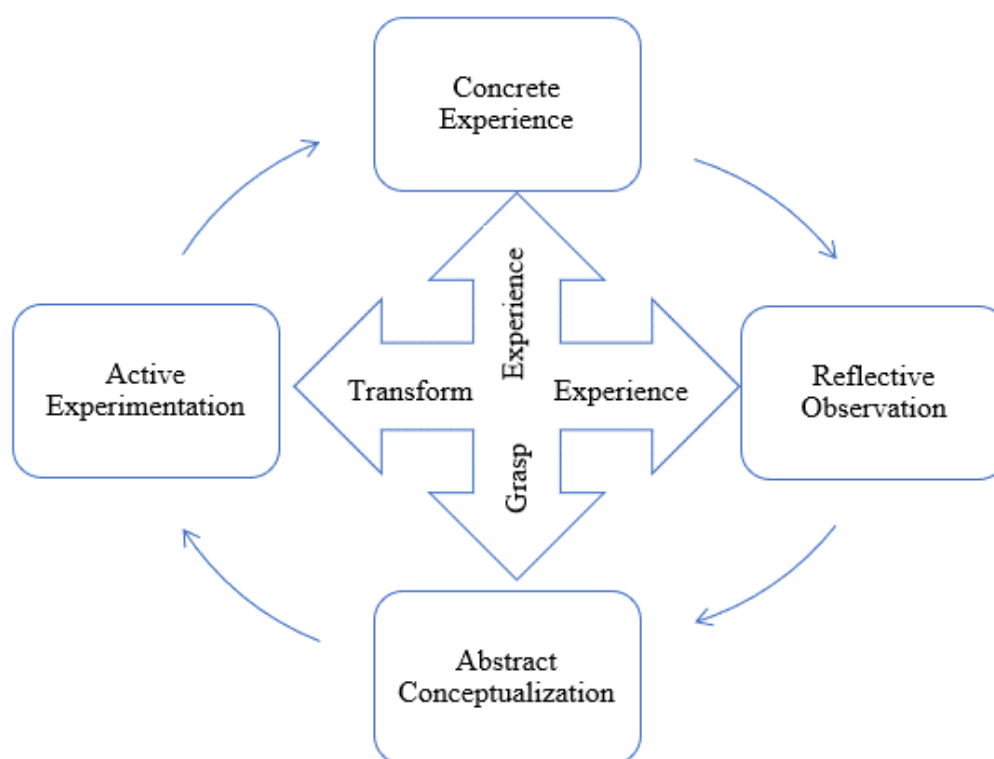
Note. The Experiential Learning Cycle from "The Experiential Educator: Principles and Practices of

Experiential Learning," by A. Y. Kolb & D. A. Kolb, 2017, *The experiential educator: principles and*

practices of experiential learning. EBLS Press, p. 32.

Per Kolb and Kolb (2017), learning in a four-stage cycle transforms experiences into

knowledge. Experience is knowledge from either new situations or the learner's past. The

cognitive function is to acquire new knowledge. Second, the learner reviews the experience

through reflective observation to learn by asking and discussing with others. In this phase,

individuals demonstrate ability and apply it to new situations or abstract concepts. Third, the

learner makes sense of the experience through abstract conceptualization by drawing on prior knowledge or discussing theories with peers. In the fourth step of the cycle, active experimentation, the learner tests conclusions in new experiences. Learning through the experiential cycle involves experience, observation, conceptualization, and experimentation.

The experiential theory ties reality to experience with reflective observation to connect abstract conceptualization to active experimentation to create meaning. The advantage of this theory is that the stages work together, but learners may spend less time on abstract and active steps or prefer one component over the others (Kolb & Kolb, 2017). Hayden and Osborn (2020) noted that the experiential model is ideal for career development. The model shows that experience is the basis of learning. When new experiences occur, new information is added for new knowledge to occur. The new knowledge adds to the old information, and experimentation helps connect how the old and new are related. They observed that experiential theory helped adapt new information that was also useful in the future (Hayden & Osborn, 2020). The pandemic caused an overnight change in education strategies and pedagogy, and the experiential approach can explain how teachers created new knowledge. The experiential theory will guide research by using administrator and teacher experiences to form meaning for what teachers need to teach when changing from an in-person to an online environment.

The literature synthesis in Chapter 2 identifies the additional knowledge teachers presently need to succeed in the classroom. The pandemic became a reality, and teachers had to prepare lessons at the last minute when schools were closed around the nation and education moved to online experiences. However, research is necessary for what teachers needed during the coronavirus outbreak when classrooms went from in-person to online learning. The literature summary for this study was the basis for studying what training teachers required in 2020 when

their classrooms went online. The study explores teachers' technology and collaboration skills and what they need to help readers understand the developing skills needs of teachers. The study includes what training teachers needed, what technology they used, the change of pedagogy for classes, and examines leadership and collaboration.

Significance of the Study

In 2020, there was limited data on the coronavirus pandemic's effect on schools in the United States (Barnes et al., 2020). However, the pandemic did change how teachers and students interact (Choate et al., 2021). The pandemic highlighted that teachers needed to understand various learning formats for future education and the need for student teaching in schools (Choate et al., 2021). Quezada et al. (2020) encouraged creating an "instructional digital technology toolbox" with equitable and inclusive resources for teaching that would be valuable to the future of education. Additionally, Hilli (2020) noted that teacher collaboration helped classroom instruction in virtual environments. The pandemic changed how teaching and learning occurred, emphasized collaboration, and identified the need for changes in teacher training education. Teachers need more training in technology for their content areas and how to collaborate.

This study explored teachers' perceptions of their classroom needs when switching from in-person to online in an emergency. Information acquired in this study will contribute to identifying content for future teacher training courses. The pandemic was still causing problems for education in early 2022, and information from teachers that experienced the issues in 2020 will help readers understand future educational needs.

Definition of Terms

The following terms relate to the needs in teacher training:

Blended Learning. The combination of face-to-face in-person learning with technology enhances teaching and student learning.

Distance Learning. A method of learning that takes place online without students attending a physical school location. Also known as distance education.

Educational Technology. The ethical use and management of technological processes and resources in teaching to facilitate learning and improve performance.

Equitable. A quality essential in teaching ensures fair and impartial treatment to all students, with and without disabilities.

Flipped Classrooms. A blended learning model which uses technology for students to learn content at home and work with it at school.

Inclusive. Teachers need to consider and facilitate the learning styles of all students, with and without disabilities, in the classroom environment (Salvia, Ysseldyke, & Witmer, 2017).

Instructional digital technology toolbox. A go-to list of technology resources assists teachers with equitable and inclusive lessons for all students in an educational setting (Quezada, Talbot, & Quezada-Parker, 2020).

Instructional Plan of Action (IPAs). A document detailing how students will learn during emergencies such as a pandemic.

Instructional Response Plan (IRPs). The document lists instructional supports for emergencies, such as a pandemic.

Mindfulness-Based Practices. A self-practice where the individual consciously looks at a situation with a nonjudgmental purpose in the present moment.

Online Learning. Education takes place over the internet through web browser access, also known as distance learning or e-learning.

Pedagogy. The practice and method of teaching are founded on a subject or theoretical concept.

Practice-Based Learning. Activities where the student acquires knowledge and skills through hands-on or action-based activities.

Social-Emotional Learning. A practice of knowledge, attitude, and skills to understand and manage emotions to achieve positive reactions and show empathy for others.

Summary

Teaching involves a complex process that requires careful consideration of how teachers are prepared to teach in K-12 classrooms. The pandemic in 2020 resulted in a K-12 and higher education upheaval. The pandemic changed how teachers and students interacted (Choate et al., 2021). Overnight, schools changed from in-person classroom settings to online as the only recourse. The teachers and students needed the technology tools for distance learning, and teachers required the pedagogy knowledge for instructing in an online setting. However, limited data existed on the coronavirus pandemic effect on K-12 schools in the United States (Barnes et al., 2020). More research is necessary to understand what supports rural K-12 school districts and teachers required for successful practice-based and equitable teaching.

Chapter 2 reviews the literature for successful teacher preparation programs in technology and collaboration skills. Chapter 3 describes the research methodology, design, population, instrumentation, data collection, analysis procedures, limitations, delimitations, and expected findings. In Chapter 4, the data collection, results, and themes process are explained for the research questions. Last, Chapter 5 summarizes the research and discusses the literature and implications for future practice and research.

CHAPTER 2: REVIEW OF LITERATURE

The coronavirus demonstrated that technology, pedagogy, and collaboration were necessary for teacher education. The pandemic forced schools to close in-person classroom settings and move online. Teachers needed to be prepared for the online environment's technology, pedagogy, and collaborative challenges. In March 2021, the National Council on Teacher Quality (Putnam & Walsh, 2021) released the current Teacher Preparation Policy report. The report focused on what states could consider in reforming the quality of the teacher workforce. It mentioned raising admissions standards for teacher preparation programs, improving the knowledge of effective reading methods, and suggesting diversifying the teacher workforce to improve Black and Hispanic student enrollments (Putnam & Walsh, 2021) Nevertheless, the report did not mention technology or collaboration skills for teacher preparation programs nor data from the pandemic in 2020.

The pandemic brought technology to the forefront in education. However, K-12 education has not fully embraced technology even though it was recommended in 1988 by the U.S. Congress Office of Technology Assessment (OTA). Frick (1991) stressed that education systems were universals, were not time and place restricted, and the presence of teachers was essential. Barbour and Harrison (2016) noted that K-12 online learning had grown, yet student teachers were not prepared to teach in the environment. Adding to the discussion, Frick (2020) commented that education facilities shut doors due to the pandemic forcing students and teachers to stay home. Frick (2020) explained that the education system had expanded since 1990, and the classroom was not the only place where education occurred in 2020; it also happened through online apps and games.

The pandemic disrupted all levels of education, including teacher preparation programs

and teaching in elementary, middle, and high schools. Vincent-Lancrin et al. (2022) noted that technology was highlighted during the pandemic and that digitalization in education needed a collaborative plan for the future. The multimodal infrastructures used in education during the pandemic demonstrated that digital learning was possible, but there were needs to be overcome (Vincent-Lancrin et al., 2022). Vincent-Lancrin et al. reported that digitalization during the pandemic showed the world that education could occur anywhere, anytime when systems worked together. The issues highlighted in the move to online education included inequity, planning time, identifying educational resources, student engagement issues, technology capacity, and poor technological skills (Vincent-Lancrin et al., 2022). However, collaborative efforts were needed to fix inequities (Vincent-Lancrin et al., 2022).

Building on the authors above, the Organisation for Economic Co-operation and Development (OECD) (2014) placed United States educators on a world-ranked list in the top part for instructional hours and at the bottom for planning and collaboration time. Furthermore, the OECD (2014) stated that collaborative opportunities allowed teachers to share materials, observe others, and develop new teaching practices, which improved education. The OECD (2019) analyzed that more collaboration in teaching and innovative practices led to job satisfaction and self-efficacy.

The review of available literature revealed where research was taking place to identify the positive changes that teacher preparation programs could use to develop successful teachers. Such as incorporating technology in all courses, as Brenner and Brill (2016) mentioned. Archambault et al. (2016) noted that student teachers needed field experience and familiarity with online platforms because it was the fastest-growing sector in education. However, it is also beneficial for flipped classrooms. Additionally, the literature indicated that collaboration was

essential to all educators. The following section covers technology which was a significant factor during the pandemic.

Educational Technology

Using technology in education has been a concern in the United States since computers became useable for anyone in business or home. The OTA (1988) reported that teachers needed exposure to ongoing training to implement technology in the classroom. Research by the OTA indicated that teacher training influenced the use of technology in schools and that teacher training was vital. Woodrow (1991) noted that computer acceptance influenced attitude and ideas that technology was a professional tool for teaching, learning, and use. The OTA (1995) report, *Teachers and Technology: Making the Connection*, expanded on using technology in teacher education. However, the OTA (1995) found that most K-12 teacher training programs did not include technological skills even though they had first recommended technology training in 1988.

In 2010, the U.S. Department of Education (2020) critiqued educator training because educators, policymakers, and administrators in schools, districts, states, and higher education did not understand the importance of using technology even though it was part of professional daily life. University faculty has a unique role in teacher education. Sad and Göktas (2014) stated that the faculty was training future teachers. They had to acknowledge their professional role and model usage to students (Sad & Göktas, 2014). Bakir (2016) noted that teacher training programs needed to focus on what happened in K-12 schools, focus on student needs, and provide student teachers with the knowledge and training to incorporate technology in instruction. Srisawasdi et al. (2018) built on Bakir's `argument that technology integration in teacher preparation programs was complex because digital technology constantly changed. Meanwhile, Brenner and Brill

(2016) suggested that teacher education faculties center on technology integration in all teacher preparation program courses, add technology to practice teaching assignments to improve outcomes, and foster the desire to keep current with the dynamic instructional technologies.

Additionally, Foulger et al. (2017) concluded that educators should prepare future teachers and motivate them to implement classroom innovation. However, Zhao (2021) commented that education technology advocates and researchers had very little success in convincing teachers to use technology in the classroom before the pandemic adding, "…the pandemic ignited a one-of-a-kind—worldwide—universal learning experience spurred by technology" (p. 26).

Instructional Practices

Instructional practices support student learning which incorporates content area and intervention instruction. Instructional practices also involve the integration of technology for student learning. Bai (2019b) added that for mobile learning to be included in courses, teachers needed to understand how it could be used and the pedagogical application aligned with learning objectives. Jones and West (2009) assessed technology as improving the quality of education and life for children with severe difficulties. They stated that assistive technology would promote communication development and foster independence and literacy skills leading to social competence (Jones & West, 2009). However, Jones and West found that the barrier to assistive technology was the lack of teacher preparation programs providing training.

Nepo (2017) added that technology benefited Universal Design for Learning (UDL), but educators needed to be flexible and intuitive to meet all student needs. She added that knowledge of strategies, accommodations, and curriculum needed to be embedded in teacher training to promote classroom technology use, leading to accountability (Nepo, 2017). However, Vannatta

and Fordham (2004) warned that training alone did not create teachers that use technology effectively. They explained that research found that beliefs and dispositions played a role in technology integration. Vannatta and Fordham noted that time was the most significant factor in using technology; time in training, practicing with it, exploring the possibilities, and the time spent adapting it to lessons. Being willing to commit time and a take-risk attitude were needed with training (Vannatta & Fordham, 2004).

Furthermore, Kadijevich's (2006) research found that three factors indicated a teachers' willingness to incorporate technology in lessons. The factors were interest, support, and attitude. He found that teacher attitude led to interest and usage but was limited without well-qualified technological support. While Brenner and Brill's (2016) study looked at ways for integrating and identifying instructional technology strategies in teacher preparation programs that best provided the transfer of instructional knowledge and skills for early-career teachers.

Brenner and Brill (2016) noted that the respondents' technology integration barriers centered on school environments and knowledge, including the quantity of subject matter, limited time for lesson planning, and lack of software availability. Other barriers included lack of mentoring, knowledge of technology, and integration. In addition, respondents indicated that prohibitive educational practices had non-expert faculty guidance, limited practice opportunities, no cooperative teacher practices, noncollaboration practices during field experience, and a lack of time and resources (Brenner & Brill, 2016). Scanlon (1957) stated that the problem with training teachers "can be resolved by bold, imaginative action and a willingness to critically re-examine traditional ways of doing things" (p. 14). The pandemic emphasized the need for a bold and imaginative redesign of teacher preparation programs courses.

Muilenburg and Berge (2015) declared that the primary goal of teacher training programs

should be to develop teachers who are empowered to work with diverse learners in technology-enabled settings. They stressed that teacher preparation programs needed to add strategies to promote positive mindsets, build resources, and provide positive technology integration experiences (Muilenburg & Berge, 2015). Muilenburg and Berge explained that challenges existed in teacher training due to learning curves, technology transience, minimal preservice technology-enhanced instruction, and lack of technical support while learning how to incorporate technology in course work and practice. Other factors hampering technology integration included funding, technology access, lack of support systems, pedagogical approaches, and personal attitudes to teaching and learning processes (Muilenburg & Berge, 2015).

The authors noted that teacher training needed to include pedagogy associated with the technology for teachers to help all students, especially SLDs. Kadijevich (2006) added that interest, support, and attitude play a role in how teachers use technology. Numerous limiting factors for technology integration included funding, lack of support systems, personal attitudes, and other reasons. However, there was agreement that teacher preparation programs needed to implement technology in courses to assist future and current teachers in acquiring the necessary skills for online instruction.

Mobile (Online) Learning

Moore and Thompson (1990) stated that skillful management was needed for distance learning activities that required planning, communication, and management control. Landis and Wolfe (2003) added that successful distance education had four factors: planning, organization, leadership, and network control. Wickersham and McElhany (2010) explained that administrative support helped faculty focus on curriculum and quality instruction, not the mechanics.

Adding to the above authors, Al-Hunaiyyan et al. (2021) concluded that barriers and challenges needed to be considered when switching to an online learning platform. Al-Hunaiyyan et al. noted that instructors and students needed to increase education abilities and master skills required for online learning and depended on how educational institutions encouraged and aided integration in courses. They continued that the challenges included a lack of strategic plans, appropriate infrastructure, digital learning materials, and preparing users, which needed to be addressed before e-learning started (Al-Hunaiyyan et al., 2021).

Building on the research, Chapman and Henderson (2010) advised that e-learning required pedagogical assessments and strategies. Their study participants indicated that rich course content, collaboration, and user-friendliness were also important for online courses. They recommended that administrators monitor distance learning for benchmark requirements and regularly assess classes for meeting benchmarks. Benchmarks included rich content, student/teacher interaction, reliability, and user-friendliness.

In contrast, Moore-Adams et al. (2016) identified online teaching as having problems with high-quality instruction. Cook (2018) described online instruction as a risk for the teacher because they are not in a physical classroom and enter a digital, leading to negative feelings due to frustration and dissatisfaction. She advised that these feelings are necessary to foster innovation and transition to positive emotions that start with solid faculty and administrative support (Cook, 2018). The problem with online instruction was that teachers were not receiving enough training to create rigorous lessons, and schools often added online components without strategic planning, leadership, and management.

Crompton et al. (2019) added that their research showed that teachers were still creating lessons for lower levels of knowledge transition. They found three gaps in academic

understanding of technology: a lack of research on mobile technologies and pedagogical alignment, specific mobile devices functions for different levels of cognition, and the alignment to various curriculums (Crompton et al., 2019). Furthermore, König et al. (2020) noted that few teachers used online assessments, which limited diagnoses of student needs and the construction of quality lesson plans. In addition, the focus is often missing from the curriculum and quality instruction required for quality assessments, strategies, rich content, and collaboration. Last, due to poor planning, barriers and challenges create inequity issues and a lack of learning materials for online technology.

Rice and Dawley (2009) stated that teachers had to learn while doing online teaching using inadequate professional development or workshop opportunities, and they were not sufficient. While Wickersham and McElhany (2010) stated it was essential to build support for digital learning by training faculty and preparing students. Furthermore, Green et al. (2014) declared that teachers needed information for using available apps to successfully implement mobile devices and the pedagogical application alignment to learning objectives. Additionally, Moore-Adams et al. (2016) observed that teachers were often assigned online positions without adequate training. The authors noted that teachers needed to be trained for online teaching.

Guskey (2003) reminded us that professional development needed time, thoughtful structure, and purposeful direction. Additionally, Philipsen et al. (2019) noted a lack of research on professional development components for online and blended learning (OBL) strategies. They explained that OBL was complex and required time planning and implementation (Philipsen et al., 2019). In addition, Philipsen et al. added that professional development for OBL should address teacher and student roles, teacher identities, educational beliefs, time for reflection, focus on student learning, evaluation, dissemination of knowledge, skills, and attitudes, and how each

was interrelated. Furthermore, Moore-Adams et al. (2016) recommended using the technological pedagogical content knowledge (TPACK) framework for training teachers because it provided a common language, explored specialized tools, utilized field experience, and how the framework worked as a whole. By incorporating pedagogical alignment with online and blended learning strategies, professional development would be structured and have a purposeful direction.

In comparison, Li et al. (2019) added to teachers' use of technology. They noted that the use of technology related to pedagogical beliefs, self-efficacy, and professional development focused on student-centered learning (Li et al., 2019). Their findings included three themes. First, teachers who used student-centered instruction and were willing to experiment with the technology for student-centered learning (Li et al., 2019). Second, technology confidence was related to technology use in the classroom and the teachers' familiarity with the student-centered instructional approach (Li et al., 2019). Third, to effectively integrate technology into classrooms, technology and pedagogical support systems are needed to accommodate the skills (Li et al., 2019). Li et al. recommended that professional development address school culture, teacher mindset, time for modeling, experimentation, reflection, and follow-up support to integrate classroom technology.

Bai (2019b) noted the importance of teacher training programs for students' use of technology for education and cited Crompton's (2013) definition of mobile learning as "learning across multiple contexts, through social and content interactions, using personal electronic devices" (p. 4). Flipped classrooms use Crompton's definition. It is a blended learning model that uses technology for curriculum content. The student homework introduces the content, and they work with it while in the classroom.

Voithofer and Nelson's (2020) research centered on how teacher training instructors used

technology to prepare preservice teachers to use different types of technology. Their findings indicated a diversity of approaches used in teacher preparation programs. The types of technology most often used included SmartBoards, iPads, Google Docs, group chats, and blogs through BlackBoard (Voithofer & Nelson, 2020). Voithofer and Nelson found that two-thirds of the respondents integrated program-wide technology into the curriculum. However, survey questions identified that few educators mentioned International Society for Technology in Education (ISTE) standards for technology integration, limiting preservice teacher exposure needed in K-12 teaching (Voithofer & Nelson, 2020). Also, some institutions moved away from stand-alone technology courses due to a conflict between the Council for the Accreditation of Educator Preparation (CAEP) and other standards (Voithofer & Nelson, 2020). Voithofer and Nelson observed that many instructors in teacher preparation programs did not model technology scaffolding for new teachers to build competency. Last, they noted that instructors failed to cover social justice issues for disadvantaged students and often did not use the technology provided in local school districts (Voithofer & Nelson, 2020).

König, et al. (2020) added to the research that teachers trained in their teacher preparation program courses to search and select online materials were more prepared to support students in an online setting. They added that the pandemic emphasized fostering teacher competence in technology-related teaching and student learning in teacher preparation programs and professional development (König, et al., 2020).

Stigler and Givvin (2017) argued that traditionally improving teaching was a challenge for education researchers and reformers. They acknowledged that teaching had many variables that may impact another due to dependency on learning (Stigler & Givvin, 2017). However, Stigler and Givvin pointed out that education would always be complex and require changes. A

problem with past modifications was that they happened based on theories and less on student learning variables (Stigler & Givvin, 2017). Stigler and Givvin proposed that online learning would improve teaching by providing new experience levels. Also, online education had the advantage of collaboration with many others from different regions (Stigler & Givvin, 2017). By working with others, lesson planning becomes a collaborative design and allows students anytime-anywhere access (Stigler & Givvin, 2017).

In conclusion, adding online components to education requires strategic planning, communication, leadership, management, and training. Professional development can help teachers create rich course content by focusing on curriculum and quality instruction. Through careful thought for training, educators would create quality assessments and strategies, leading to collaboration with learning materials. Last, planning would identify barriers, challenges, and inequity issues.

Student-Centered Learning

Bai (2019a) observed that mobile technology supported anywhere, anytime learning that meets a learner's needs. Increasing the exposure to information helps information retention (Bai, 2019a). He declared that mobile learning enriched student learning as learning continued outside class and supported differentiated instruction (Bai, 2019a). Mobile learning uses electronic devices and interaction in dynamic learning content across contexts. Students can access information, communicate with instructors and peers, manage their assignments, and create and share artifacts (Bai, 2019a). Hsu and Ching (2013) noted that mobile devices support communication and collaboration skills, two essential skills listed in students' needs for the twenty-first century. Ciampa (2014) added that mobile technology increased student engagement while learning and improved motivation. However, Bai explained that learners needed to learn

self-direction and exploration to acquire new knowledge.

Bai's (2019b) research examined students' perceptions of mobile learning in teacher preparation elementary education programs and how they used it in instructional technology. Bai found that most survey respondents indicated technology had several benefits for promoting future elementary students; individualized active learning, faster, easier, anytime-anywhere access to information, and engaging them in their spare time. He mentioned that respondents felt that mobile devices would encourage students to become inquisitive, improve achievement, provide equal learning opportunities, enhance teacher-student communication and student-to-student interaction (Bai, 2019b). Adding to the research, Crompton et al. (2019) study revealed that students used mobile learning to consume knowledge, analyze, and create data for higher cognitive skills. Furthermore, Bai noted that other benefits included facilitating parent communication, immediate student feedback, and tracking student progress.

Crompton et al. (2019) research results indicated that allowing students to work with mobile devices moved them to higher levels of thinking. However, responses indicated that the technology could distract and interfere with concentration on lessons (Bai, 2019b). Bai noted that the main concerns of respondents comprised student distractions, data security, and effects on students with limited access to mobile technology. The amount of screen time use was another area of concern indicated in the study, leading to eye strain, stunting of social skills, and decreased physical movement (Bai, 2019b).

Online Pedagogy

In their recommendations, NCTQ (2018) stipulated that programs needed to address classroom management, use student teaching and internships, provide constructive feedback using proven management techniques, and focus on teaching math and reading strategies for the

elementary level. They also suggested that all levels provide opportunities for candidates to practice teaching for six weeks or longer with the guidance of an effective teacher. However, no guidelines were provided on pedagogy for subject matter in an online environment (National Council on Teacher Quality, 2018).

Bai (2019a) emphasized that pedagogy and subject area content needed to be in line with the technology for mobile learning; it was not about the mobile device. Suki et al. (2021) added that teachers needed to stimulate positive pedagogical practices to transform a classroom into an active learning community that would lead to more creativity, critical thinking skills, and involved 21st-century learning skills. Teachers had to assume and prioritize responsibility to be ready for critical thinking (Suki et al., 2021). Mishra and Koehler (2006) contended that preservice teachers needed guidance from their teacher preparation programs to develop the skills in Technological Pedagogical Content Knowledge (TPACK). TPACK is grounded in content, pedagogy, and technology through instructional strategies. Mouza et al. (2017) added that stand-alone technology courses helped with greater exposure and hands-on experiences. However, Buss et al. (2015) emphasized that the technology-infused methods courses gave students the interactions of technology, content, and pedagogy knowledge. In comparison, Kale and Akcaoglu (2018) found that preservice teachers' opportunities to reflect on the technology's value while making connections to future teaching increased interest in its use.

Cook (2018) recommended placing pedagogy ahead of technology, using technology that feels comfortable, looking at the class as a work in progress, starting with essential tech components, allowing mistakes, and finding others to brainstorm on content development. However, Cook advised that allowing sufficient time for course planning minimized stress but may take months to prepare. But, planning time decreased after the pedagogy was understood

(Cook, 2018). Additionally, Harvard University's (2022) Teach Remotely web page offered information on the pedagogy skills teachers should incorporate for online learning. The page provided strategies for increasing learner engagement through video, simulation, polls, cold calling, buzz groups, role-play, and collaboration through web-based tools.

The writers stressed first that the teaching basis does not change (Harvard University, 2022). They noted that the emphasis should be on content, pedagogy, and assessment; only the form changed for successful online teaching (Harvard University, 2022). The quality of the technology tools, apps, and hardware were factors in how a course was taught online and student accessibility (Harvard University, 2022). Moreover, the web page assessed that interaction opportunities and collaboration through Breakout Rooms, Whiteboards, Zoom, Slack, and other tools were needed.

By incorporating online pedagogy with methods courses, teacher preparation programs would enhance teacher training by providing student teachers with the knowledge they need for online technology. The training would, in turn, provide schools with teachers that can take the lead with online courses. However, collaboration skills also need to be included to help other teachers learn new skills and create meaningful content.

Leadership

Darling-Hammond et al. (2020) envisioned leadership and collaborative communities as factors for successful teachers. Fullan (2011) claimed that effective leadership required everyone to be involved. By including teachers in leadership positions, administrators demonstrate teacher value and provide teachers with opportunities to grow in their careers. NCTQ (2019) reported that 35 states had a formal state policy that supported teacher leadership positions. The guidelines provided districts with opportunities to implement teacher leadership roles that

provide teachers opportunities for growth and new skill acquisition (NCTQ, 2019). However, NCTQ (2019) stated that district administrators needed to delegate responsibilities for the policy to be effective. Additionally, Darling-Hammond et al. (2020) envisioned leadership and collaborative communities as factors for successful teachers.

When teachers gain experience, they may be offered a team lead position or asked to move into an administrative role. Mack et al. (2019) noted that job involvement, support, and control were related to teacher retention. Providing teachers with leadership roles was added to Iowa state policy to increase teacher retention (Allen, 2018). The TLC helped new teachers through leadership positions for experienced teachers. The roles included mentor teachers, model teachers, instructional coaches, and lead teachers who planned and provided professional development (Allen, 2018). The program aimed to have teacher education programs cultivate a growth mindset to advance preservice teacher agency and identity (Allen, 2018).

The pandemic required leaders to develop new techniques to deal with the needed changes and emotional and physical stress caused by a crisis. The changes leaders can make to deal with changes and stakeholders' stresses include coherence, Habits of Mind, distributed and compassionate leadership, and adaptive leadership. The following paragraphs discuss the ideas from the literature research to help leaders deal with a crisis.

Coherence

Fullan and Quinn (2016) observed that leaders need to listen and usually use the "wrong drivers" to implement change. They noted that the "wrong drivers" are accountability, the quality of individual teachers and leaders, technology, and fragmented strategies (Fullan & Quinn, 2016). Fullan and Quinn recommended coherence for building system-wide changes.

Coherence is an interactive framework that helps focus direction for a collective purpose

and fosters collaboration, fostering innovation, and building internal accountability (Fullan & Quinn, 2016). It involves everyone forming a shared understanding of the purpose and nature of the work (Fullan & Quinn, 2016). The four components of coherence are building focus and coordination, cultivating trusting relationships, changing collective behavior, and developing equitable thinking and working (Fullan & Quinn, 2016). However, Fullan and Quinn stressed that coherence requires leaders to be transparent and non-judgmental. Through the coherence framework, a leader can develop shared accountability in change.

Habits of Mind

Costa and Kallick (2008) developed Habits of Mind from research on how successful people respond to conflicts, problem situations, and uncertainties with intelligence and empathy. Costa et al. (2021) expanded on Habits of Mind to help schools create environments where all stakeholders in the community share a culture of belonging and lead to shared problem solving and innovative thinking. People see differences as strengths and are dedicated to everyone's well-being (Costa et al., 2021).

Habits of Mind involve 16 thinking dispositions for social, emotional, and cognitive behaviors (see Figure 2.1). The dispositions help build cultures of efficacy that lead to change through shared vocabulary, practices, social norms, growth indicators, parents and community partnerships, shared visions of graduates, and leadership (Costa et al., 2021). Additionally, Costa et al. stressed that the leaders' superpower influences their school's narrative. At the same time, Tabor (2019) added that the culture's success draws from collaboration and the stakeholders' strength in believing in and fostering the habits.

Figure 2. 1

The Habits of Mind

Persisting: Stick to it! Persevering on a task through to completion; remaining focused; looking for ways to reach your goal when stuck; not giving up.	**Managing impulsivity:** *Take your time!* Thinking before acting; remaining calm, thoughtful, and deliberate.	**Listening with understanding and empathy:** *Understand others!* Devoting mental energy to another person's thoughts and ideas; making an effort to perceive another's point of view and emotions.	**Thinking flexibly:** *Look at it another way!* Being able to change perspectives, generate alternatives, consider options.
Thinking about thinking (metacognition): *Know your knowing!* Being aware of your own thoughts, strategies, feelings, and actions and their effects on others.	**Striving for accuracy:** *Check it again!* Always doing your best; setting high standards; checking and finding ways to improve constantly; searching for truth.	**Questioning and posing problems:** *How do you know?* Having a questioning attitude; knowing what data are needed and developing questioning strategies to produce those data; finding problems to solve.	**Applying past knowledge to new situations:** *Use what you learn!* Accessing prior knowledge; transferring knowledge beyond the situation in which it was learned.
Thinking and communicating with clarity and precision: *Be clear!* Striving for accurate communication in both written and oral form; avoiding overgeneralizations, distortions, deletions, and exaggerations.	**Gathering data through all senses:** *Use your natural pathways!* Paying attention to the world around you; gathering data through all the senses: tasting, touching, smelling, hearing, and seeing.	**Creating, imagining, and innovating:** *Try a different way!* Generating new and novel ideas, fluency, originality.	**Responding with wonderment and awe:** *Have fun figuring it out!* Finding the world awesome and mysterious; being intrigued with phenomena and beauty.
Taking responsible risks: *Venture out!* Being adventuresome; living on the edge of your competence; trying new things constantly.	**Finding humor:** *Laugh a little!* Finding the whimsical, incongruous, and unexpected; being able to laugh at yourself.	**Thinking interdependently:** *Work together!* Being able to work with and learn from others in reciprocal situations; engaging in teamwork.	**Remaining open to continuous learning.** *There is so much more to learn!* Having humility and pride when admitting you don't know; resisting complacency.

Note. The Habits of Mind from "Building a culture of efficacy with habits of mind," by Costa, A. L., `Kallick, B., & Zmuda, A. G. (2021). *Educational Leadership*, *79*(3), p. 58.

Distributed and Compassionate Leadership

Kwatubana and Molaodi (2021) wrote that good leadership enabled responsiveness to change and was crucial during and after COVID-19. Because of the pandemic, leaders cultivated competencies for the crisis to support teacher well-being and influenced others to maximize benefits (Kwatubana & Molaodi, 2021). Kwatubana and Molaodi noted that the transition to remote learning depended on the preparedness of learners and teachers, the infrastructure, support, and technology tools. Moreover, the transition increased teacher workloads and changed

teaching practices (Kwatubana & Molaodi, 2021). More importantly, they stressed that leaders had to look beyond the crisis and plan for the future for an institution to be stable (Kwatubana & Molaodi, 2021).

Kwatubana and Molaodi (2021) determined that a leader needed distributing and compassionate leadership skills and required teamwork practice for future planning. They saw distributing leadership as the way to delegate authority to other leaders with expertise within the school and created an infrastructure where teachers were part of the leadership (Kwatubana & Molaodi, 2021). By delegating authority, teachers are supported, mental health is prioritized, it nurtures self-confidence, teamwork, and workload understanding (Kwatubana & Molaodi, 2021).

Kwatubana and Molaodi (2021) declared that compassionate leadership alleviated stress. Through compassionate leadership, leaders provide the emotional support staff need to carry out their duties. It requires that leaders contact all staff weekly, use active listening skills, require non-judgmental thoughts for understanding, and create pathways for healthy well-being (Kwatubana & Molaodi, 2021).

Adaptive Leadership

Adaptive leadership, as described by Heifetz (1994), involves engaging stakeholders by mobilizing, motivating, organizing, and orienting others while focusing on everyone. The adaptive leader uses their team to help solve problems and find answers to challenges (Heifetz, 1994). The adaptive leader principles are emotional intelligence, organizational justice, development, and character (Heifetz & Laurie, 1997).

Emotional intelligence involves being sensitive to others' feelings and using empathy to boost morale and trust (Heifetz & Laurie, 1997). Organizational justice is the practice of being open and honest even if the truth is upsetting (Heifetz & Laurie, 1997). Through honesty, the

adaptive leader helps their team accept and understand changes (Heifetz & Laurie, 1997).

Development is trying new strategies to improve and prepare for change (Heifetz & Laurie,

1997). The leader is open to trying innovations and experiments while encouraging and

empowering employees to reach their potential (Heifetz & Laurie, 1997). Last, the leader's

character earns the respect of employees (Heifetz & Laurie, 1997). It requires transparency,

admitting mistakes, and stopping a process if it does not work (Heifetz & Laurie, 1997).

Additionally, Heifetz and Laurie noted that the adaptive leader embraces diversity and looks for

ways for diversity to benefit the workplace.

Davenport (2022) explained the six leadership behavior roles developed by Northouse

(2019) and Heifetz and Laurie (1997) for developing a path for schools to move forward. First,

leaders need to pause to gain an objective perspective of problems (Davenport, 2022). Second,

leaders need to identify challenges that can be changed, such as values, beliefs, and attitudes

(Davenport, 2022). Third, adaptive leaders need to support employees to manage conflicts and

feel empowered for effective change (Davenport, 2022). Fourth, stay focused on the work by

continuing feedback and providing praise (Northouse, 2019). Fifth, empower employees to help

lead change by utilizing their skills (Northouse, 2019). Sixth, leaders need to prioritize engaging

marginalized groups (Northouse, 2019). Using the six behaviors, the adaptive leader can change

attitudes and beliefs by promoting change and demonstrating how it makes a difference

(Davenport, 2022).

Williams (2022) added that the adaptive leader must remember that the community needs

to help plan and execute changes. She added that technology provides excellent tools for

communication that had not been utilized in the past (Williams, 2022). Also, Williams remarked

that leaders needed to prioritize teacher support and model joyful resilience. She concluded that

leaders need to be realistic and adapt to the changes in education (Williams, 2022). Levenson (2022) added that leaders' approach to education needed to change by including students in discussions for change. Building on the discussion, Gill (2022) observed that leaders do not need to be face to face to communicate with teachers and families. Rather, they can use technology more effectively (Gill, 2022).

Rebora (2022) wrapped up adaptive leaders' four qualities. First, leaders need flexible structures that adapt to problems and change (Rebora, 2022). Second, communicate collective purpose (Rebora, 2022). Third, empower others by utilizing their creativity and knowledge (Rebora, 2022). Fourth, adaptive leaders need to be open to new ideas, make adjustments, move on if something is not working, and expand their comfort zones (Rebora, 2022).

The literature reflected that administrators need effective leadership skills. By incorporating leadership skills, teachers are better prepared for the administrative positions they may be asked to fill. School districts often fill the assistant principal positions by recruiting teachers from the district. However, those positions require skills that the administrator may not have experienced as a teacher. With prior knowledge, administrators are more prepared for leadership roles. Additionally, the review of technology and leadership indicated that collaboration was essential. Due to the importance of collaboration indicated in the literature, collaboration was added to the review.

Educator Collaboration

Collaboration also helps educators be successful, as the technology and leadership literature reviews indicated. Steinberg (2016) said that great leaders use teamwork as the key to success but require a fully integrated personality to foster real collaboration. Teachers use collaboration skills to work with students, student families, mentors, other teachers, and

community partnerships. Schools can use teamwork methodology to ensure grade-level courses use one lesson plan for student learning (Steinberg, 2016). The replicated lessons help students transfer to different class periods and teachers. Teachers also benefit from teamwork knowledge when they engage with their student families (Steinberg, 2016).

In addition, Bezzina and Bufalino (2022) insisted that collaboration should be at the center of teacher change. Teachers require a place to learn from other teachers, share what works and does not, and support ideas (Bezzina & Bufalino, 2022). They built on Datnow's (2011) claim that when teachers saw collaboration as useful, enjoyable, and contributed to shared ideas, they were more willing to share practices with colleagues.

Martin and Mulvihill (2017) spoke with Dr. Linda Darling-Hammond about teacher education; her research centered on education policy, teaching quality, and school reform. Dr. Darling-Hammond served on President Obama's education team and helped change the Stanford University teacher education program in 2015 (Martin & Mulvihill, 2017). The program changes included individual mentoring, becoming a collaborator, integrating clinical practice into course work, focusing on content for the programs they plan to teach, and how to help students with a range of needs (Martin & Mulvihill, 2017). Bezzina and Bufalino (2022) recommended giving teachers a voice to reimagine their educational paths to address pedagogy, and that collaboration was at the heart of the change. Furthermore, Dr. Darling-Hammond felt that preservice student teachers (PSTs) needed a full year of clinical practice with expert teachers and curriculum content guidance (Martin & Mulvihill, 2017). The goal is to drive informed policies and prepare PSTs to become collaborators (Martin & Mulvihill, 2017).

Preservice Instruction

Lipp and Helfrich (2016) concluded that PSTs showed enhanced best practices, abilities,

and efficacy through descriptions, assigned importance, and student learning from their field experiences. Weiss et al. (2017) studied collaboration practices in teacher preparation programs. Their research showed that teacher candidates and teachers needed to learn how to collaborate to help general education and special education students through co-teaching, co-planning, and co-instructional practices (Weiss et al., 2017). Weiss et al. noted that special education teachers received more instruction on collaboration than general education teachers. They mentioned the assumption that most programs made was that students already understood how to collaborate and disregarded the implicit instruction and coursework (Weiss et al., 2017).

Furthermore, Pellegrino and Weiss (2017) wrote about the importance of teacher collaboration for exceptional children. Their study looked at four special education PSTs' perceptions of teamwork, co-teaching, and weekly fieldwork skills practice through documents, interviews, and observations. The challenges that emerged from the survey reflected limited planning time, personality conflict adjustments, additional work if the co-teacher failed to complete a task, and difficulty agreeing on what to teach (Pellegrino & Weiss, 2017). Pellegrino and Weiss indicated that teacher training programs need to emphasize developing co-teaching, conflict resolution, and collaboration skills for PSTs, so they are ready to teach in classrooms that include exceptional children and help them engage student families.

Lipp and Helfrich (2016) noted that student teaching experiences were enhanced when they shared their experiences. The other authors added to the case for collaboration. They mentioned special education teachers as an example in teacher preparation programs incorporating collaboration instruction in all courses. The problem with courses was that implicit instruction in collaboration was ignored. By incorporating implicit collaboration skills in courses, the student teachers develop co-teaching and conflict resolution skills necessary for

meaningful teamwork. Mentoring was also identified as a tool to help student teachers learn classroom skills.

Anagnostopoulos et al. (2018) redesigned the teacher education program at the University of Connecticut. They organized new ways for university staff and K-12 partners to work together to create meaningful change by instituting an annual Redesign Summit and developing social practices that supported and sustained communication and collaboration (Anagnostopoulos et al., 2018). Anagnostopoulos et al. identified four social practices critical to the redesign process: multivoicedness, knotworking, braiding, and retextualization. Multivoicedness involved the collaboration of university faculty and K-12 partners. Knotworking was forming, dissolving, and creating new groups with different participants to redesign a task or problem-solve. The focus was on the continuity of a problem, not on people (Anagnostopoulos et al., 2018). Braiding involved creating single-role groups to focus on a redesign issue, with role groups meeting regularly to engage in joint work. Retextualization facilitated program coherence by linking tools and texts in the redesign process (Anagnostopoulos et al., 2018). Their work resulted in the knowledge that the university must work with its K-12 partners to form teacher education partners that meet today's K-12 education needs.

This section looked at collaboration training needed to help preserve and experienced teachers be more effective in their classrooms. The changes involved how teacher training programs could help teachers communicate with other educators, students, student families and work with the communities where they teach. The collaboration skills included mentorship and family and community engagement.

The 2020 Pandemic

The 2020 pandemic disrupted normal education routines. The pandemic forced K-12 and

post-secondary institutions to change their classrooms to online settings. Quezada, Talbot, and Quezada-Parker (2020) examined the impact of the Novel Coronavirus pandemic on a California university from March through June 2020 due to the institution's closure. Their findings indicated that teacher candidates had difficulties transitioning to online/remote learning and experienced fatigue with 3-hour Zoom courses (Quezada et al., 2020). Teacher candidates also experienced role uncertainties in student teaching placements as K-12 schools held classes in remote/online sessions (Quezada et al., 2020). The difficulties they found were the same in K-12 schools, with some students not having access to a computer or laptop, internet, or poor home internet connectivity. They suggested that teacher education programs at universities create a faculty Instructional Plan of Action (IPA) and Instructional Response Plan (IRP) supporting natural disasters or pandemics. Additionally, they recommended that teacher education faculty create an instructional digital technology toolbox with resources for equitably teaching inclusivity in all school settings.

At the same time, Barnes et al. (2020) researched how Western Governors University (WGU) dealt with its closure due to the coronavirus pandemic. The closing of schools affected two thousand in-field student teachers' clinical practicum involving 75 hours of classroom observation and hands-on learning/teaching (Barnes et al., 2020). According to Barnes et al. when K-12 schools closed, WGU student teachers transitioned to virtual learning with their sponsor teachers. The host institutions agreed to allow student-teachers and supervisors to participate and observe online through the school/s learning management system (Barnes et al., 2020). Barnes et al. explained that the student teachers learned how to use the implemented learning systems and virtualize a classroom environment alongside their sponsor teachers. WGU evaluated the virtualization process to meet accreditation requirements and students' needs before

making student-teacher adjustments (Barnes et al., 2020). Additionally, WGU developed a virtual student teaching model with online charter schools to assist in student teaching flexibility (Barnes et al. 2020). Barnes et al. noted that WGU's online setup better prepared student-teachers for the coronavirus disruption in higher education than other universities across the United States.

Additionally, Choate et al. (2021) examined changes in teacher education programs (TEPs) due to the Coronavirus pandemic in 2020. They cited the American Association of Colleges for Teacher Education (AACTE) survey of 188 member teacher education colleges across 47 states (Choate et al., 2021). All colleges responded that they transitioned to remote learning in the spring of 2020 and would continue offering virtual curricula (Choate et al., 2021). Choate et al. noted that the pandemic caused the most dramatic change in TEP clinical practice. However, the in-person and remote/virtual student teaching time was equivalent (Choate et al., 2021). Choate et al. cited that over 80% of the colleges either reduced or waived student-teacher service hour requirements. Also, 75% of TEPs reported adding modifications for supervisor feedback using only virtual settings, with some not offering individual feedback, only group (Choate et al., 2021). Choate et al. were concerned that those students who graduated or would be graduating would face problems when they were face-to-face with students and sat for the ed-TPA or other certification tests without the support of their college programs. Their study pointed to an ongoing need for student-teachers to interact with students in various formats (Choate et al., 2021).

Meanwhile, Hattie (2021) advised using the COVID experience to look for what worked to help schools change old practices and incorporate technology to help student learning. Hattie (2021) noted that students with higher self-regulation skills were more likely to succeed, whereas

those dependent on teachers would struggle. He indicated that teachers who taught students self-regulation in the regular classroom, engaged in the gradual release of responsibility, and focused on content had better student outcomes (Hattie, 2021). Hattie proposed that the teacher-centered lecture/questions needed to be replaced with the student-centered structure in every classroom for education to advance. The future goal was for students to be less teacher-dominated dependent (Hattie, 2021). Hattie asserted that teachers needed to listen to what students were thinking, see struggling as desirable, prioritize learning steps, support group interaction by creating opportunities for peer interaction, teach self-regulation, and stop being fact-engines. He encouraged educators to keep learning logs for what went well, use collaborative dialogues with classes, and create an evidence base of successful practices (Hattie, 2021). Furthermore, Talyn et al. (2021) documented that established faculty learning communities (FLCs) assisted teachers when classes moved online. The FLCs moved to an online platform which increased faculty participation and assisted teachers in changing pedagogy (Talyn et al., 2021).

The research adds to Darling-Hammond et al. (2020) recommendation for online teaching as a new normal. They believed that teachers and districts should share the strategies that empower learners with technology, equity, less seat time with more learning engagement, using assessments that measure learning and growth, and supporting safe practices (Darling-Hammond et al., 2020). However, they acknowledged that changes to K-12 education needed funding, and it needed to be adequate and equitable for schools to implement blended learning and professional development for teachers (Darling-Hammond et al., 2020). In their report, Darling-Hammond et al. offered ten priorities for reinventing schools. The list included: Closing the digital divide, strengthening distance and blended learning, assessing student needs, providing social and emotional learning supports, redesigning schools for stronger community

relationships, emphasizing responsive cultural education, and expanding learning time (Darling-Hammond et al., 2020). Darling-Hammond et al. also identified the need to develop community schools with wraparound supports, prepare educators for transitions, and leverage adequate and equitable school funding.

The pandemic provided teacher preparation programs with opportunities to change and enhance teacher education. The changes include strengthening online and blended learning, increasing technology and pedagogy knowledge, and using student teaching for increasing collaboration. The pandemic also provided K-12 schools with opportunities to enhance instruction with blended learning. However, it also identified the need for meaningful professional development for experienced teachers to use online instruction.

Summary

The literature review in this chapter covered technology, pedagogy, leadership, and collaboration. The sections explained the reasons for the skills acquisition for teachers to succeed. Technology is necessary for online learning platforms and student skill acquisition. Administrators need leadership qualities that can handle changes and assist teachers and the community to focus on school needs. Also, collaboration was shown as an essential quality to help everyone share knowledge and find answers to problems. Last, more recent literature displayed the demand for more knowledge acquisition for educators due to the effects of the coronavirus pandemic. Chapter 3 describes the research methodology, design, population, instrumentation, data collection, analysis procedures, limitations, delimitations, and expected findings for this study.

CHAPTER 3: METHODOLOGY

This qualitative case study focuses on teacher preparation using technology and technical and pedagogy skills leading to and during the coronavirus pandemic. Educators' teaching experiences were gathered from survey questions. The participant responses provide meaningful data for future teacher training and education technology.

Research Design and Rationale

The design and rationale for the study focused on the experiences of K-12 teachers during the 2020 pandemic. A research design is a strategy used to collect and analyze data in a study (Mills & Gay, 2016). This qualitative study looked for people's meanings based on the reality of events; quantity was not the focus (Roberts & Hyatt, 2019). Stake (1995) stated that case studies evaluate social experiences, which researchers use to gather in-depth analysis of an event. The case study design was ideal for examining the 2020 pandemic, a contemporary event (Yin, 2014). Yin added that the case study method might explain a phenomenological event in-depth. This study focused on the phenomenological event when teachers moved from in-person classroom settings to online at the beginning of the pandemic in 2020.

The study examined K-12 administrators' and teachers' experiences from several communities during the COVID outbreak with technical and pedagogical knowledge preparedness for online classrooms. Maxwell (2013) observed that a qualitative design uses researcher connections between the components and their effects on each other for understanding. The data source in this study was the answers to the survey questions. The conclusions were drawn based on the narratives from the open-ended questions (Creswell & Poth, 2018). The setting and participants in the study are discussed in the next section.

Method

In this study, the research method used was a qualitative case study incorporating narratives from a survey. Qualitative research may use text and image data in social sciences studies to explain behavior and attitudes (Creswell & Creswell, 2018). The case study approach collects real-life context and setting data (Yin, 2009). This case study collected teacher and administrator participants' real-life contexts and data from a survey.

Survey

The researcher developed the survey design for this study. The online survey was cross-sectional, with data collected once in December 2021 through SurveyMonkey. The surveys were available through email, mobile, chat, web, or social media, and the program allowed review of survey results.

Through narratives, this qualitative study explored perceptions of experiences to responses and readiness to the disruptions to the typical school environment during the coronavirus pandemic. The questions asked teachers and administrators what would have prepared them for online classes and checked for their collaboration. Additionally, the study asked for the teachers' preservice training and school professional development when they moved to online courses. The survey was used to study teachers' perceptions due to less classroom disruption, timely responses, and data collection from a wider range of respondents than in one school district.

Setting and Participants

The setting of this study took place online to draw teacher and administrator participants from rural and urban settings in multiple school districts. The study did not occur in a single school district. The online setting provided easy access for educators to respond. The educator

inclusion criterion was that participants were full-time certified teachers or administrators at the change to online courses during the 2020 pandemic. Also, they needed to have been required to change teaching strategies to remote learning, teaching in their certification area, and may have varied years of teaching experience. The K-12 administrative criteria were working with faculty to enhance online classes. In this study, the participants worked at a school when the pandemic started and had the experience needed for providing perceptions about their experiences.

Sampling Procedures

The sample size uses a few individuals to collect data on experiences (Creswell & Poth, 2018). For this study, the type of sampling used was snowball or chain. The snowball sampling gathers individuals for the study from people who know others that could contribute rich information (Creswell & Poth, 2018). Emails were sent to teachers and administrators from a composite list of educators to recruit adult participants for the survey, explaining the project and that participation was optional and anonymous. Contacts were also asked to forward the information to others they knew that might be interested. Also, a Facebook post was made to collect more participants, and a post on Twitter. Using known contacts provided a starting point for identifying participants, and the forum posts provided a means for drawing more educators to the study.

Instrumentation and Measures

Instruments in research collect data (Mills & Gay, 2016). According to Creswell and Creswell (2018), the survey design collects data in response to the research questions. The instrument used in the study was a survey designed by the researcher to gather data. The survey included Likert and open-ended questions for administrators and teachers. The survey was open in December 2021, and all data collected were anonymous.

Measurement

Measurement is the scoring instrument process used after collecting data (Mills & Gay, 2016). Measurements analyze, interpret, and organize data. For this study, the responses to Likert questions were used as a measurement instrument to add levels of perceptions to the open-ended narrative responses. The Likert questions were used to identify the respondent answers as strongly disagree, disagree, slightly disagree, neither agree nor disagree, slightly agree, agree, and strongly agree. The questions were not used for scores.

Allen (2017) explained that open-ended questions do not have predetermined answers. Instead, open-ended questions allow participants to answer in their words, providing more diversity of data (Allen, 2017). The open-ended design gathered narrative data for the research results. The surveys gathered data on experiences from the beginning of the teachers' online classroom experiences through the latest changes from teachers and administrators. Measurements also cover reliability, validity, and pilot questions, as explained in the next sections.

Reliability

Reliability refers to the consistency with which data is measured (Mills & Gay, 2016). It ensures that the same analysis will occur again in the future. The process can disconfirm evidence or clarify researcher bias. Stake (1995) explained that the researchers' role is essential to establish from the beginning of the study. Yin (2014) added that using the appropriate protocol to reduce bias and errors and documenting every process ensures reliability.

The researcher in this study was the interpreter of experiences. The role played by the researcher contributed to the meanings developed from the collected data. During the research, case study guidelines were followed with detailed and accurate record-keeping for surveys,

emails, and notes. Reliability in this study was validated by providing replication under different contexts and participants.

Validity

Validity is the credibility of the research (Mills & Gay, 2016). It is a deliberate effort to categorize observed data to find true meaning based on the research questions. The researcher needs to be accurate and logical in interpreting meaning through data instruments that reduce misrepresentation and misunderstandings that can cause ethical issues (Stake, 1995).

In this study, data were categorized based on the research questions. The researcher in this study used the answers from the Likert and open-ended questions to interpret categorizations. The data was then analyzed to find the meanings to answer the research questions. Furthermore, research guidelines were followed to minimize ethical issues.

The coding from the surveys identified shared themes in this study. Various data sources allow for more understanding and validity of the results, and as an interpreter, the researcher needs to establish definitions in uncontestable descriptions (Patton, 2002). Creswell and Poth (2018) pointed out that the triangulation of data sources corroborated evidence. In this study, the research established definitions based on participant narratives to ensure validity.

Pilot Questions

Maxwell (2013) asserted that pilot studies test methods to understand ideas and theories. While Creswell and Creswell (2018) explained that pilot testing questions establish the instrument content, validity scores, evaluate the consistency, improve questions, format, and instructions. In a pilot study, non-participants are asked to answer the questions to test for reliability and validity. The pilot questions help focus research test methods by involving those not in the study.

This study used feedback from a pilot survey with five teachers from different schools in a large U.S. district. The pilot questions helped streamline queries and adjust to ensure that questions would be answered. The only suggested change in the pilot study was the order of two administrators' questions, corrected for the study and the data collection.

Data Collection

Data from administrator and teacher participants were collected from a survey instrument. Emails were sent to a composite list of educators to recruit adult participants for the survey. The emails explained the project, stressed that participation was optional and anonymous for this study, and included the link to the survey (see Appendix C). A copy of the survey questions and consent to participate is provided in the Appendices (see Appendices A, B, C & D).

Additionally, the survey link was posted in forums on Facebook (see Appendix D). The researcher was also notified that the survey link was added to Twitter. The researcher designed the survey to ensure data remained anonymous. However, participants were required to check the box on the survey indicating their permission to participate. Participants were asked to share honest answers and thoughts on their school's and teachers' readiness for the pandemic. The researcher assured respondents of confidentiality and that the data would be secure during the research.

This case study looked at how teacher technical education fared during the 2020 pandemic, including their collaboration. Surveys included both Likert and open-ended questions. The survey questions are found in Appendices A and B. The emails to contacts and the forum postings provided the means for participants to respond to the survey. After the survey collection was concluded, data analysis was used on all participant responses.

Data Analysis

Data analysis in qualitative studies organizes data by themes (Creswell & Poth, 2018). Coding allows researchers to organize, summarize, and synthesize data at the start of analysis (Center for Evaluation and Research, 2012). Roberts and Hyatt (2019) stressed that words reflect participant descriptions for open-ended questions.

This study used coding on Likert and open-ended question narratives. The Likert questions were used as a tool for levels of perceptions. The open-ended survey questions for teachers gathered data on education and technology. Administrative open-ended questions collected data on school procedures, technology, training, and education needs. Additionally, the survey asked how administrators responded to setting up online classes and training teachers for non-traditional classrooms for the duration of the pandemic.

Creswell and Porter (2018) noted that coding is a procedure that ensures reliability and that a common coding platform was necessary to develop a preliminary code list. This study categorized participants as administrators in one group and teachers in a second group. The groups were then separated into subgroups for school settings and years of experience. The data allowed the researcher to form an understanding based on responses. The coded data helped analyze perceptions and experiences.

Creswell and Poth (2018) called themes the interpretation. Themes are the patterns found during the coding process that identify relationships (Huberman & Miles, 1994). The survey's coding was analyzed to look for connections in this study. The themes were identified by studying participant responses then reviewing the themes to determine the major ones that answered the research questions used in the results section (McCracken, 1988).

Data triangulation identifies data for accuracy and alternative explanations (Stake, 1995).

The researcher used positive or negative perceptions and coding for data triangulation to identify themes in this study. The data triangulation searched for shared interpretations for the research results.

During all phases of the research, ethical issues were examined to ensure validity. The researcher formed conclusions based on the research questions and hypotheses. The results were then reported based on the research purpose for the comprehensive meaning using wide-ranging descriptions (Creswell & Creswell, 2018).

Ethical Issues

Maxwell (2013) insisted that attention to ethical concerns is vital to qualitative research. Ethical considerations are in all phases of research, including research question development through validity matters (Maxwell, 2013). Creswell and Poth (2018) stated that most issues are related to participant protection from harm and disclosure of findings.

Brinkmann and Kvale (2015) provided a model for ethical considerations. Give participants information to understand the purpose, risks of volunteering time, and study benefits using a letter of consent and verbal explanation (Brinkmann & Kvale, 2015). Brinkmann and Kvale also added to ensure result confidentiality is maintained and participant identification is not disclosed. Last, Brinkmann and advised ensuring the study is honest, objective, and fair, so results are not questioned.

In this study, the participants were provided the informed consent in the email and on the Facebook posting (see Appendix C). The participants could skip questions that they felt uncomfortable answering, and there were no foreseeable risks or benefits for participation other than expressing their perceptions. Furthermore, the researcher ensured confidentiality by not asking for names or contact information in the survey responses.

McGinn (2018) warned that conflicts of interest happen from financial factors, personal preference, or lack of objectivity. The researcher had no conflict of interest with any school district or teacher involved in the study. Participants were not provided with false or misinformation during the survey (McGinn, 2018). No financial considerations or benefits were present for the researcher or participants in this study.

The researcher in this study followed all guidelines to ensure honest, fair, and objective results. The researcher reviewed the research questions with other educators to check for ethical issues to ensure validity. Moreover, the researcher was open to the evidence discovered in the research without having a predisposed bias from the start. Last, all ethical issues were examined to ensure the validity of the research.

Summary

The literature in Chapter 2 supported that research on K-12 educators' preparedness for the pandemic was minimal when focusing on teacher experiences. The first goal was to understand perceptions of technological readiness for online instruction by considering administrator and teacher perceptions. The second goal was to understand educators' collaborative skills. This chapter explained the methodology used in this qualitative case study to study administrators' and teachers' perceptions of their technology readiness and collaboration before and during the pandemic. The data collected through individual interviews and open-ended surveys are discussed in Chapter 4.

CHAPTER 4: RESULTS

The data presented in this chapter examined the problems administrators and teachers had during the 2020 pandemic, explained in Chapter 1 with the findings from the qualitative study described in this chapter. The chapter is organized by the research questions provided in Chapter 1. However, participant demographics are covered first to provide the reader with information on the participants in the study.

Demographics

The study consisted of 38 teachers, 15 from rural and 23 from urban school settings (see Tables 4.1 & 4.2). The data reflects a mix of educator participants from various school settings. Tables 4.1 through 4.4 display the participant demographics. Tables 4.3 and 4.4 reflects that the rural and urban participants had varying years of experience in K-6, K-8, middle, and high school settings. Ethnicity data was also gathered from the surveys. However, no significant conclusions were found based on ethnicity because it was outside of the scope of this study.

Table 4. 1

Teacher Participant Genders

Gender	Rural	Urban
Female	9	20
Male	6	3
Total	15	23

Table 4. 2

Teacher Participant School Settings

Schools	Rural Teachers	Urban Teachers
K–6	3	5
K–8	–	2
Middle School	2	6
High School	10	9
Other	–	1
Total	15	23

Note: Zero's in the table are represented with an en dash.

Table 4. 3

Rural Teachers' Years of Teaching Experience

Years of Experience	School Setting		
	K-6	Middle	High
0–5	–	–	–
6–10	1	–	2
11–15	1	–	1
16–20	1	–	1
Over 20	0	1	6
Total	3	1	10

Note: Zero's in the table are represented with an en dash.

Table 4. 4

Urban Teachers' Years of Teaching Experience

Years of Experience	School Setting				
	K-6	K-8	Middle	High	Other
0–5	–	–	–	2	–
6–10	1	–	3	2	–
11–15	1	–	–	2	–
16–20	2	–	1	–	–
Over 20	1	2	2	3	1
Total	5	2	6	9	1

Note: Zero's in the table are represented with an en dash.

Seven administrators also took part in the study from rural and urban school settings. The administrators came from different school settings consisting of K-5 ESE (Exceptional Student Education), K-6, K-12, Middle, and High Schools. Four participating administrators were from rural schools and three from urban (see Tables 4. 5 & 4. 6). Their experience ranged from one to over 20 years, as shown in Tables 4. 7 and 4. 8. The administrators and teachers had a mix of genders, settings, and years of experience.

Table 4. 5

Administrator Participant Genders

Gender	Rural	Urban
Female	2	1
Male	2	2
Total	4	3

Table 4. 6

Administrator Participants Schools

Schools	Administrators	
	Rural	Urban
K–5 ESE	–	1
K–6	–	1
K–12	2	–
Middle School	1	–
High School	1	1
Total	4	3

Note: Zero's in the table are represented with an en dash.

Table 4. 7

Rural Administrator Participants Years of Experience

Years of Experience	School Setting		
	K–12	Middle	High
0–5	1	1	–
6–10	–	–	–
11–15	1	–	–
16–20	–	–	1
Over 20	–	–	–
Total	2	1	1

Note: Zero's in the table are represented with an en dash.

Table 4. 8

Urban Administrator Participants Years of Experience

Years of Experience	School Setting		
	K–5 ESE	K–6	High
0–5	1	–	–
6–10	–	–	–
11–15	–	1	1
16–20	–	–	–
Over 20	–	–	–
Total	1	1	1

Note: Zero's in the table are represented with an en dash.

Quantitative Data Analysis

The following figures and tables summarize the research results and identify the analysis themes related to the teachers' and administrators' perceptions of their experiences. The following research questions guided the results:

1. What do teachers need to know about online pedagogy for K-12 instruction?

2. What changes do teacher preparation programs need to help prepare tomorrow's teachers?

3. What do administrators need to know to lead pedagogical shifts in technology for sustaining teacher instructional needs?

The first section explains the pedagogy teachers need for K-12 online instruction. The second section relates what teacher preparation programs should add to prepare future teachers. The third section provides information on what administrators should know to be leaders of pedagogical shifts in technology to sustain future instructional needs. Last, an emerging theme is examined with collaboration data.

Findings of Qualitative Research

First, this case study researched teachers' and administrators' perceptions of technology preparedness in an emergency. Participants were asked to share their technology training from their teacher preparation programs in an open-ended question to provide background for analyzing their technology experience (see Table 4. 9). Twenty-seven teacher participants reported no technology classes, one with two classes, one with a lot, and nine basic or little. Three responded that they had one course, one reported it as very broad ideas, and one very rushed. Another teacher reported using a SmartBoard and document camera for the first time in their student teaching classroom; three reported designing PowerPoints, and two used Microsoft Office. A couple of others reported they were told to incorporate "this or that." Overall, the participants noted they received no specific information linking the technology to content areas and lessons.

Table 4. 9

Themes for Experienced Technology Training in TPPs

Research Question	Themes
During your training to become a teacher, what training did you receive for using technology in the classroom?	None
	Basic technology
	Basic skills: Microsoft Office
	Minimal
	Little
	Incorporate "this or that," no training
	Rushed
	Using a SmartBoard
	One
	Technology learned was not relevant in 2020

Note: TPPs in the title is the acronym for Teacher Preparation Programs

Research Question 1

The Likert questions used in the survey collected information on 38 K-12 participants'

perceptions of experiences during the pandemic. The data showed whether the teachers

perceived problems moving to an online platform. Fifteen were from rural settings with six to

over 20 years of teaching experience, and 23 were from urban in their first to over 20 years. The

first background question asked if the participants were prepared for their online classroom; four

rural and eight urban teachers responded negatively (see Figures 4. 1 & 4. 2). The perceptions

reflect that teachers in both settings may not have been comfortable moving to online classes.

Figure 4. 1

Rural Teachers' Perceptions of Online Preparedness
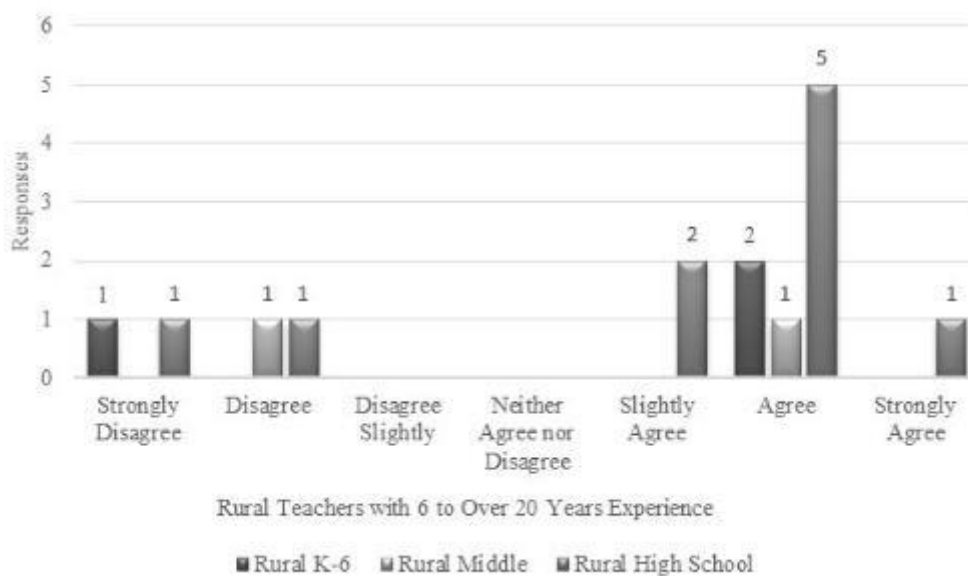
Figure 4. 2

Urban Teachers' Perceptions of Online Preparedness
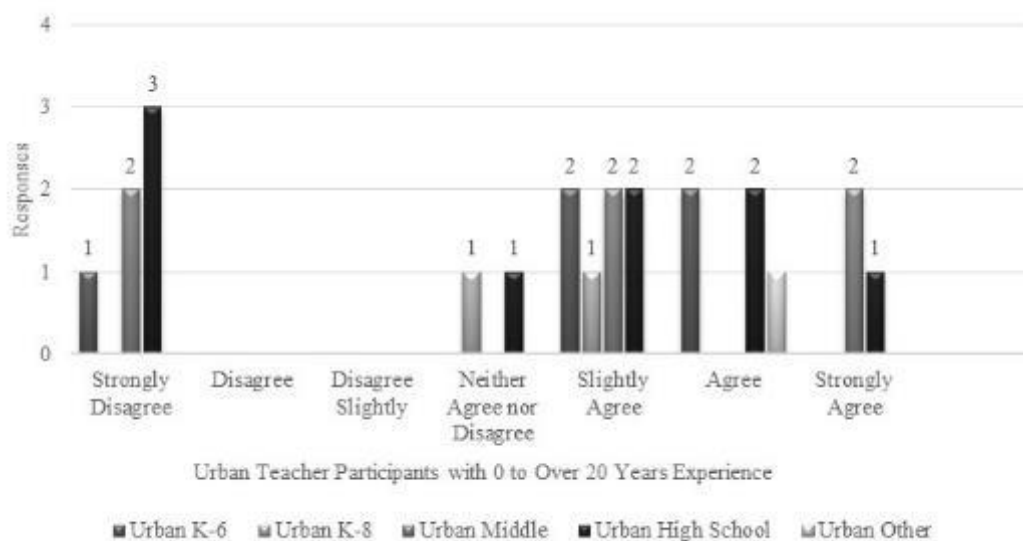
Participants were also asked if they liked the online classroom opportunities for students. The responses from rural and urban teachers were mixed, as shown in Figures 4.3 and 4.4. The perceptions reflected a shared attitude between rural and urban teachers' on student opportunities in an online class.

Figure 4. 3

Rural Teachers' Perception of Online Instruction Opportunities for Students
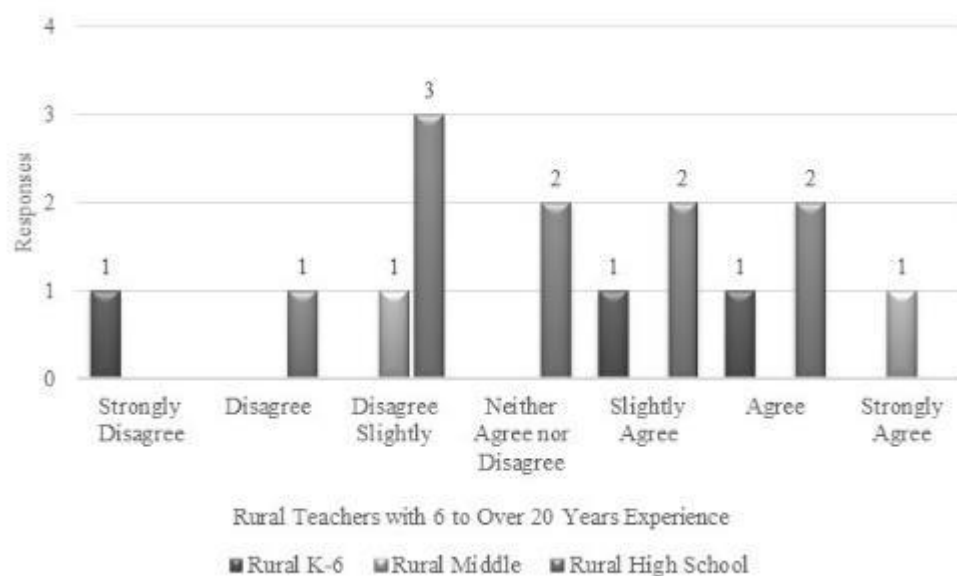
Figure 4. 4

Urban Teachers' Perception of Online Instruction Opportunities for Students
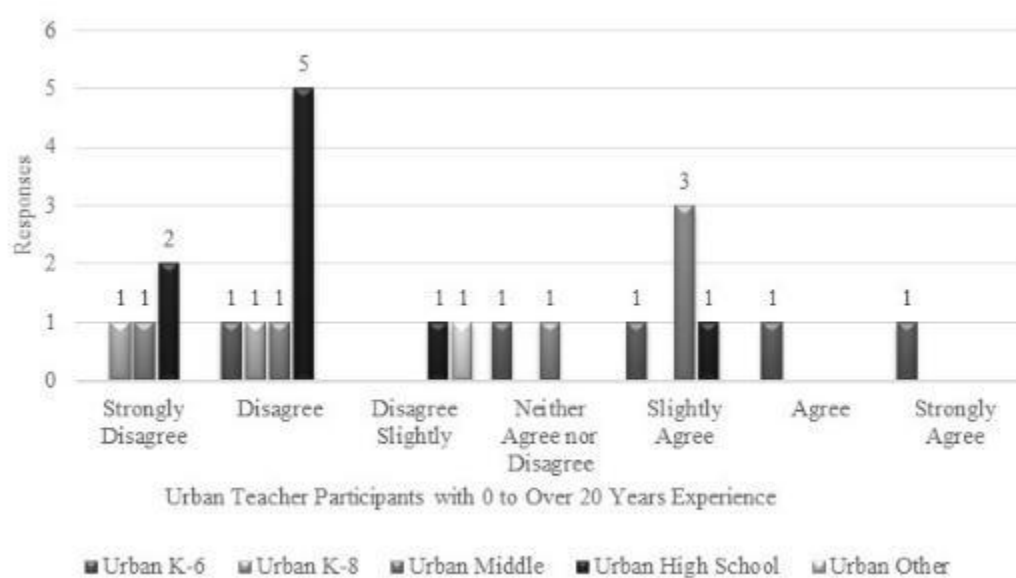
The administrators were asked about their perceptions of the online learning opportunities for students. There was a distinct difference between the rural and urban attitudes. The rural administrator participants agreed (see Figure 4. 5). In contrast, the urban administrator respondents had differing views (shown in Figure 4. 6). The charts reflect that the rural and urban administrators had differing perceptions of the benefits of online student learning (more information on the charts is provided in Chapter 5).

Figure 4. 5

Rural Administrators Perceptions for Online Student Learning
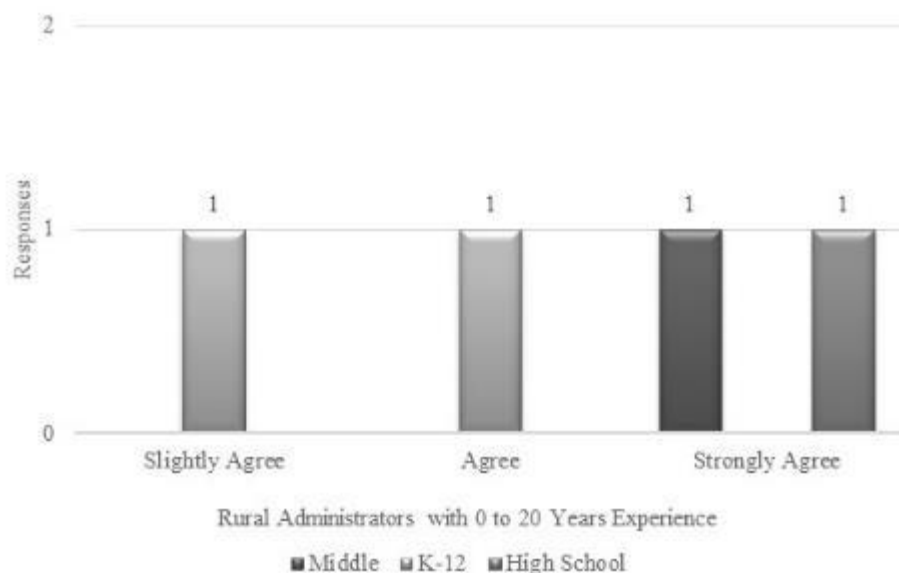
Figure 4. 6

Urban Administrators' Perceptions for Online Student Learning
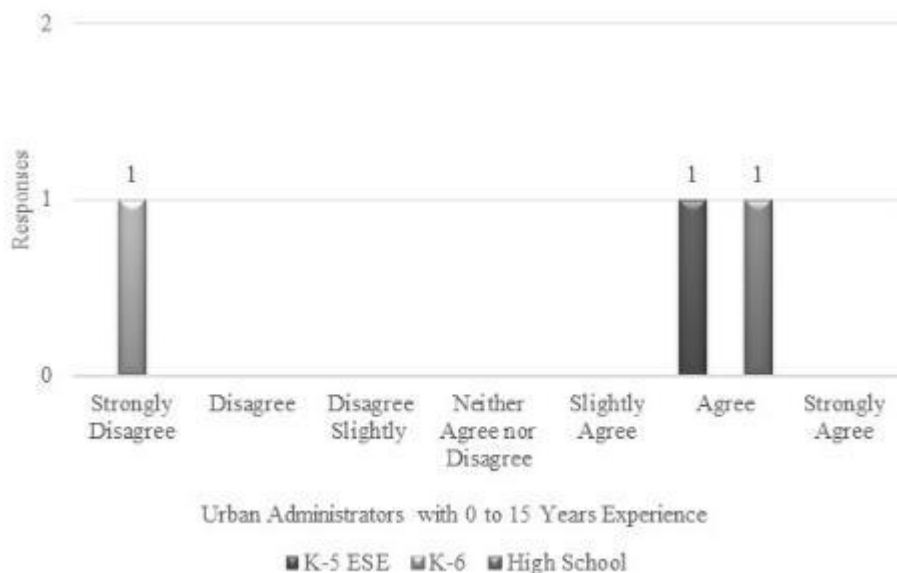
Next, teachers were asked if they connected more with students while online. The responses from the rural and urban teachers were twenty-five disagreed, three reported neither disagree nor agree, while ten agreed they connected more with individual students (see Figures 4. 6 & 4. 7). The charts reflected a shared perception by many teachers that they had fewer opportunities to connect with students while using online classes.

Figure 4. 7

Rural Teachers' Perception of Online Individual Student Connections
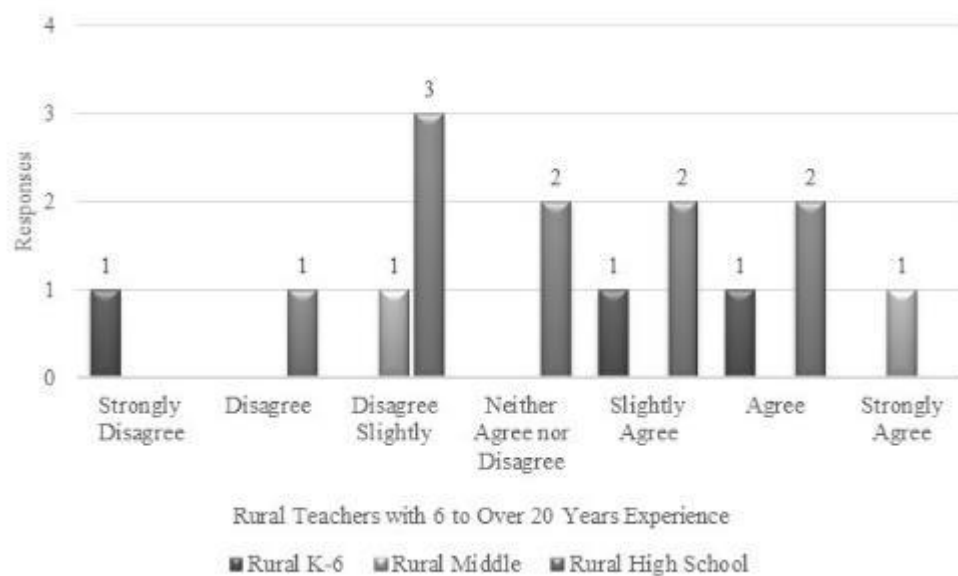
Figure 4. 8

Urban Teachers' Perception of Online Individual Student Connections
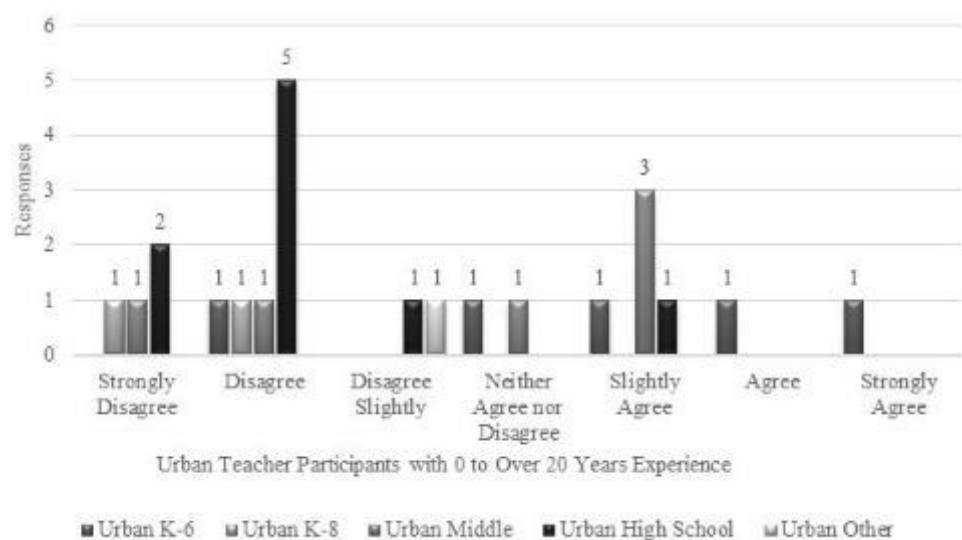
The next survey question asked about the teachers' resources with their classes during the pandemic and whether they felt the technology benefited their teaching and student learning. Five respondents disagreed, four responded neither agree nor disagree, and twenty-nine agreed that the technology benefited their teaching and student learning (see Figures 4. 8 & 4. 9). There was a shared perception that online offered benefits for teaching and learning.

Figure 4. 9

Rural Teachers' Perception of Beneficial Teaching and Learning
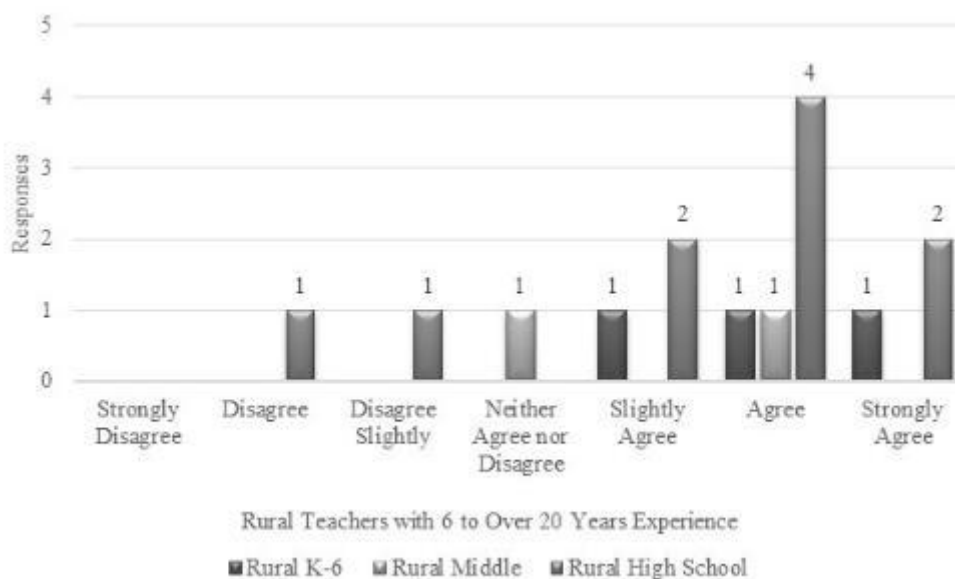
Figure 4. 10

Urban Teachers' Perception of Beneficial Teaching and Learning
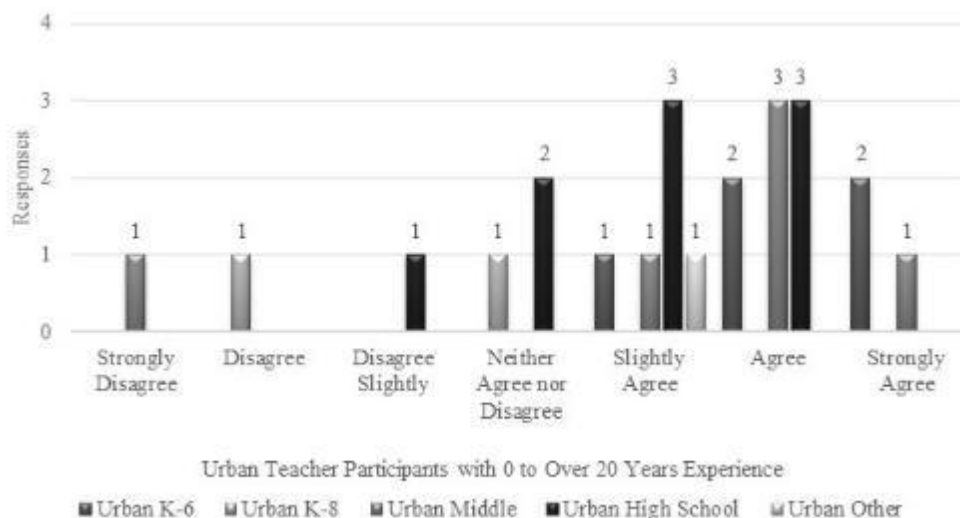
Teachers were asked about the technology training they received in their teacher preparation programs to understand their background knowledge heading into the pandemic. Ninety-five percent of the teacher participants identified little or no technology training during their training. Most noted that they received training at their schools or in non-work time.

The answer to what knowledge K-12 teachers need for online instruction was covered by open-ended and several Likert questions. The data revealed that most teachers were not comfortable moving to online classes. Also, the administrators were split on student learning opportunities; rural agreed while urban neither agreed nor disagreed. Additionally, most teachers were not convinced that the online classes provided students with opportunities. However, the teachers slightly agreed that online offered benefits for teaching and learning.

Communication with students is an essential part of teaching. The teacher participants' disagreed that online provided more connection opportunities to individual students. They felt they had fewer student connections in the online setting.

Research Question 2

Administrator and teacher participants were asked to share ideas on training needs. Teachers were asked what they felt would have been beneficial for them heading into the online classroom settings in an open-ended question. Meanwhile, administrators were asked to share ideas for teacher professional development. The themes found in respondents' answers are shown in Table 4. 10 (below).

The narrative themes mirrored those in the literature review and background study. Teacher participants shared online pedagogy, Learning Management Systems (LMS) time management, how to help students with disabilities, Social-Emotional Learning (SEL), Zoom, Microsoft Teams, apps for content areas, designing a remote lesson, and others. Two of the teacher participants added that their flipped classroom experience had helped them during the pandemic. They continued that flipped classroom knowledge would help future teachers. Administrators added their thoughts for online training, including online lesson design, technology troubleshooting, collaboration, assessments, and student task management.

Table 4. 10

Online Technology

Group	Research Question	Themes
Teachers	What training would have benefited you for going from in-person to online instruction?	Online Pedagogy
		Unsure
		Learning Management System (LMS): Canvas
		Time Management
		Google platform: forms, slides, hyperlinks
		Google Classroom, G-Suite, & Microsoft
		Helping students with disabilities with content.
		Universal Design (UD)
		Social-Emotional Learning (SEL)
		Hyper Docs
		Zoom & Microsoft Teams
		Specific Apps and tools for content area:
		Edpuzzle, Quizizz
		Collaboration with colleagues
		Available online tutorials and materials
		Document camera vs. webcam
		Screen capture
		Creating a virtual classroom
		What the district allows & does not allow
		Designing an interactive remote lesson
Administrators	What professional development do you feel that teachers need for K-12 online instruction?	Designing Online Lessons; Engagement, Excitement
		Teaching Students Task Management
		Technology Troubleshooting 101
		Strategies for Collaboration
		Formative Online Assessments
		Using Online Programs/Apps
		Continue use of Online Instruction.
		None: Online was Insufficient

Research Question 3

Answers for what administrators need to know to lead pedagogical shifts in technology to sustain teacher instructional needs were incorporated through Likert and open-ended questions. Administrators were first asked to share their perceptions of being prepared for online classes.

One rural participant replied negatively, and two responded neither agree nor disagree (see Figure 4. 11). Of the urban participants, one replied negatively (see Figure 4. 12). The other participants responded with varying degrees of positivity. The charts reflect a slight difference between the rural and urban settings for online preparedness at the start of the pandemic.

Figure 4. 11

Rural Administrators' Perception of Online Preparedness
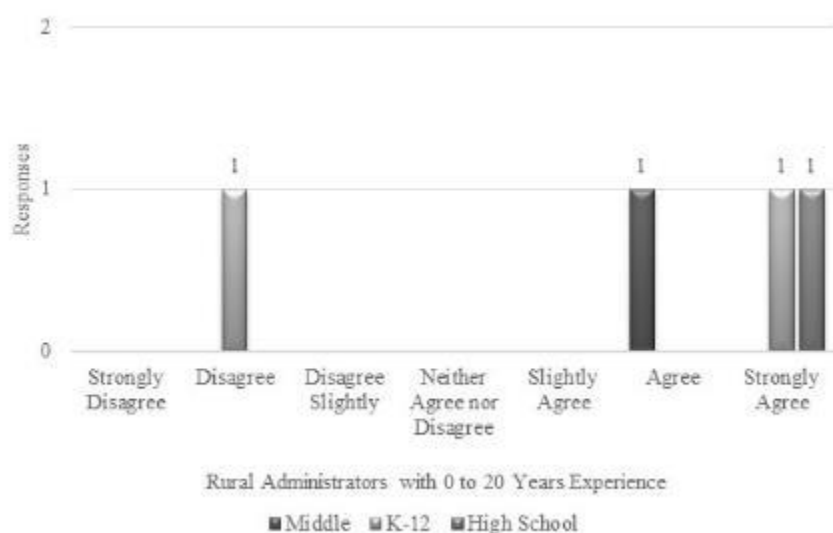
Figure 4. 12

Urban Administrators' Perception of Online Preparedness

The last Likert question the administrators answered concerned the technology resources they provided teachers and the benefit to student learning. Administrators from both settings agreed in varying degrees that the online technology benefited teachers and student learning. One neither agreed nor disagreed, one agreed, and two strongly agreed for the rural participants (shown in Figure 4. 13). The three urban participants agreed that the technology benefited student learning and teachers (Figure 4. 14).

Figure 4. 13

Rural Administrators' Perceptions of Technology Resources
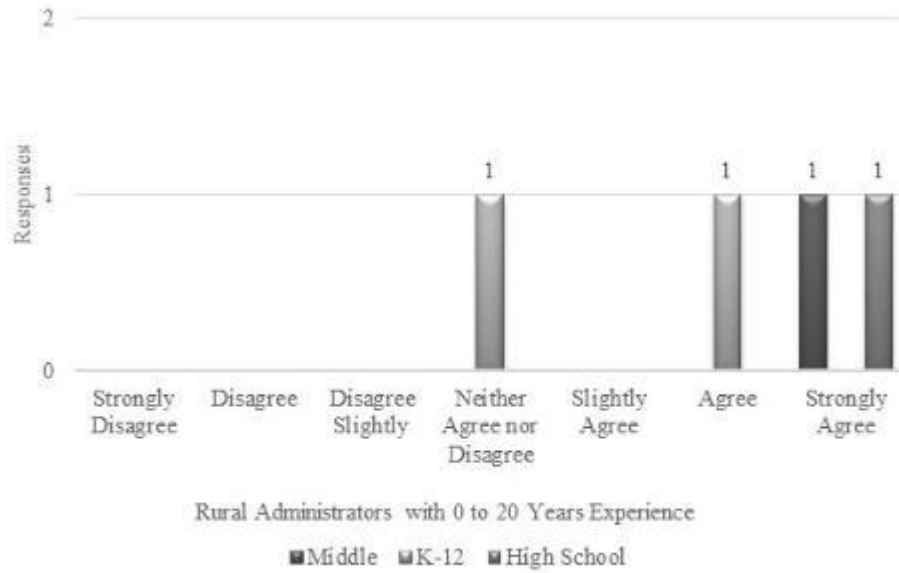
Figure 4. 14

Urban Administrators' Perceptions of Technology Resources
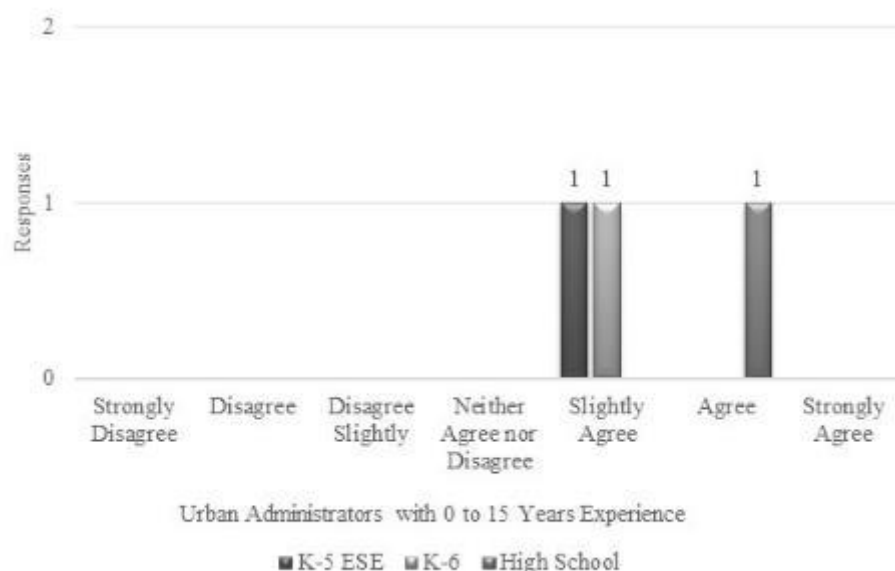
The administrator respondents were asked four open-ended questions to gather more information on how the pandemic affected their school settings. Table 4**.** 11 reflects the themes gathered from each question. Obstacles to student instruction themes included lack of laptops, technology problems, distractions, academic integrity issues, connectivity issues, teachers' lack of training, and at-risk students' adverse impacts. Administrators' support included ensuring students and teachers had Wi-Fi access, professional development, technology tools for teachers, identifying needs, helping other schools, and finding grace.

Answering the question of obstacles administrators faced, they responded with reasonable expectations, finding teacher support, teacher readiness, budgeting of software licenses, new technology acquisitions, and mental wellness of staff and students. Last, the participants were asked to identify what training they provided to teachers. The themes included online assistance, working with regional professional development staff, in-school professional

development, 1-to-1 lunch and learn, hiring curriculum consultants, and one noted none.

Table 4. 11

Themes for the Pandemic's Effect on Schools

Research Question	Themes
What obstacles did the pandemic present to student instruction?	Prevented relationship building.
	No Laptops
	Technology problems
	Home distractions
	Students lacked self-regulation
	Lack of logistical preparation
	Poor habits with no support
	Academic integrity
	Connectivity problems
	Teachers were surplused to online classes.
	Teachers lacked training for platforms.
	Student grades could not be impacted.
	At-risk students were adversely impacted.
What did you do to transition from an in-person to an online K-12 classroom setting?	Checking Wi-Fi access for all families
	Provided teacher professional development
	Learning Zoom
	Identify virtual teaching sites for independent work.
	Identify training needs
	Finding grace.
	Provided other schools with help for established flipped courses.
	Provided technology professional development.

What obstacles did you face as an administrator to transition to online instruction?	Teacher supports
	Guiding teachers and students to see the
	  value of technology.
	Creating reasonable expectations for parents,
	  students, and teachers.
	Staff and student mental wellness.
	Teacher readiness.
	Covid isolation interruptions.
	Acquisition of new technology: tablets,
	  mic-enabled headsets
	Budgeting for software licenses.
	Conflicts with district office for unrealistic
	  expectations: requiring teachers to teach
	  online and in person.

What training did you arrange for teachers to transition to a new online pedagogy?	Online assistance
	Video, handouts, resources
	None
	Worked with regional professional development
	  staff.
	In-school professional development
	Hiring curriculum consultants for content areas.
	1-to-1 lunch and learns
	Mindfulness sessions for balancing screen time
	  and personal wellness.
	Designing online learning, synchronous
	  discussions, support, guidance during transition.

Next, administrators were asked to reflect on what they would do if classes went online in the future and what they thought should be included in an instructional toolbox as a go-to for online instruction. When asked what they would do differently in the future, the participants noted they would hire staff to support online classes, clearly define student/family expectations, secure the budget for online platforms, and provide training and support for teachers and students. Administrators were also asked for suggestions for teachers' toolboxes for online

instruction. Their responses included YouTube, History Channel, Khan Academy, an academic

integrity form, alternative assessments, loaner laptops, and other suggestions. The two questions

and the resulting themes are shown in Table 4. 12.

Table 4. 12

Themes for Future Reflections

Research Questions	Themes
Reflecting on the online classroom settings, what would you do if classes were forced to be online in the future?	Continue with online instruction. No paper packets. Have Parents' and Teachers' contact information.
Would you do anything differently?	Hire staff that supports online or blended studies. Clearly define student/family expectations. Secure a budget for the best platforms. Provide training and support for teachers and students for managing online tasks. Advocate for separate online and in-person teachers. Ensure students and staff are online-ready. Continue flipped learning classrooms.
As a result of the pandemic, some research suggests that teachers have instructional toolboxes as a go-to for online instruction.	YouTube History Channel Khan Academy Academic integrity form A collection box for daily physical activities. Teaching staff collaboration Educational assistants for diverse learners.
What items would you add for a future global event that drives education online?	Budget for technology purchases. Loaner laptops inventory. Alternative assessments. Learning Management System (LMS). Not Applicable. Not thinking about this.

The responses to the third research question indicated that administrators in the rural setting were slightly more prepared for moving online than their urban colleagues. Also, the participants felt that the available technology resources benefited teachers and student learning. However, they responded that they had to overcome several problems moving to online classes. Issues with Wi-Fi connectivity, laptop availability, teacher training, and budgets were a few. Last, some noted that teacher collaboration was a problem during the pandemic that needed to be addressed before another instance of moving online.

Emerging Theme

The literature review highlighted collaboration as essential for technology and leadership. Collaboration questions were added to check whether participants incorporated teamwork to transition to the different teaching platforms. Participants were asked several Likert questions about collaboration to see if they had group support working from home. Teachers were asked to share how often they communicated with administrators and other teachers using Likert questions.

Ten rural teacher participants responded that they had no communication with administrators, five reported that they did communicate (see Figure 4 .15). For the urban participants, thirteen responded that they did not have contact with their administrators, two neither disagreed nor agreed, and eight reported having connected with their administrators (see Figure 4. 16). Both charts indicated an absence of collaboration.

Figure 4. 15

Rural Teachers' Communication with Administrators While Online
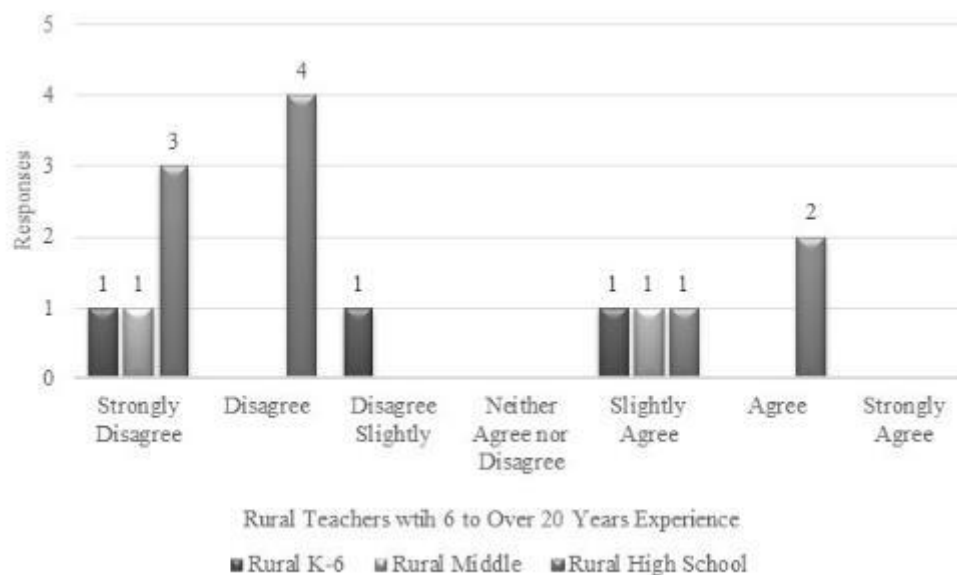
Figure 4. 16

Urban Teachers' Communication with Administrators While Online
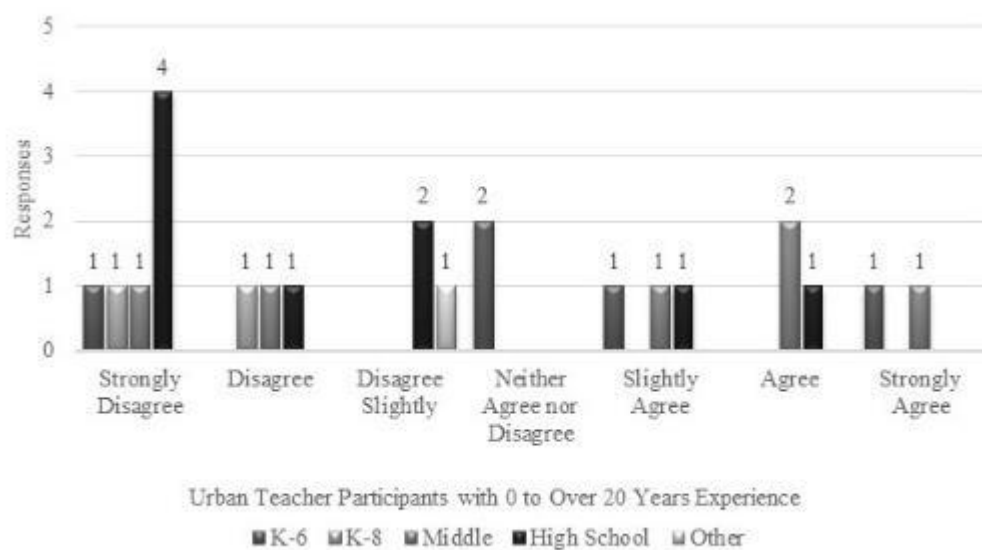
Teachers were also asked about their communications with other teachers during the pandemic. Seven rural teachers reported no communications, one neither agreed nor disagreed, and seven agreed that they did communicate with other teachers (see Figure 4. 17). For the urban teacher participants, seven reported not communicating, one neither agreed nor disagreed, and thirteen agreed they did connect with other teachers (see Figure 4. 18). The charts show that some teachers did reach out to other teachers. However, others did not.

Figure 4. 17

Rural Teachers' Communication with Other Teachers While Online

Rural Teachers with 6 to Over 20 Years Experience

■Rural K-6   ■Rural Middle   ■Rural High School
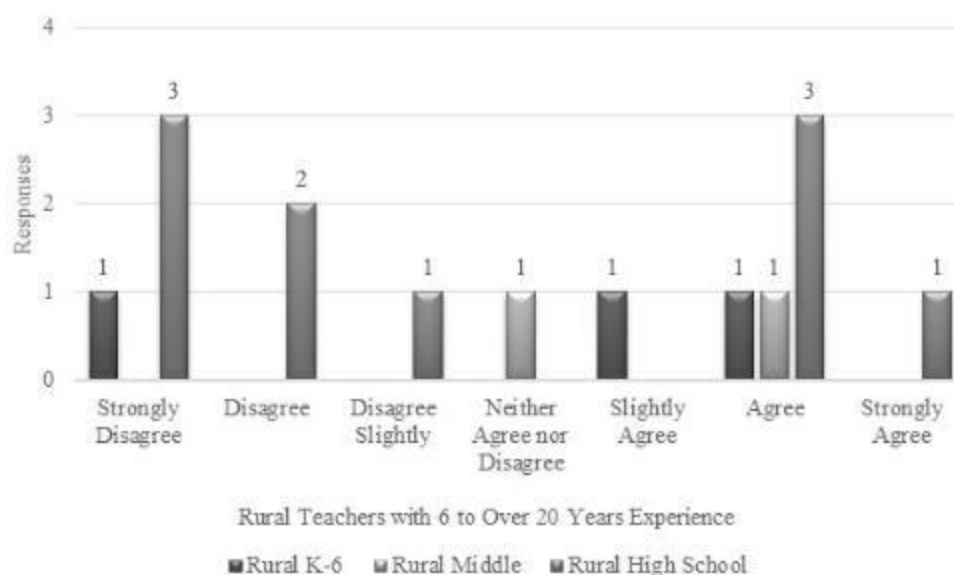
Figure 4. 18

Urban Teachers' Communication with Other Teachers While Online
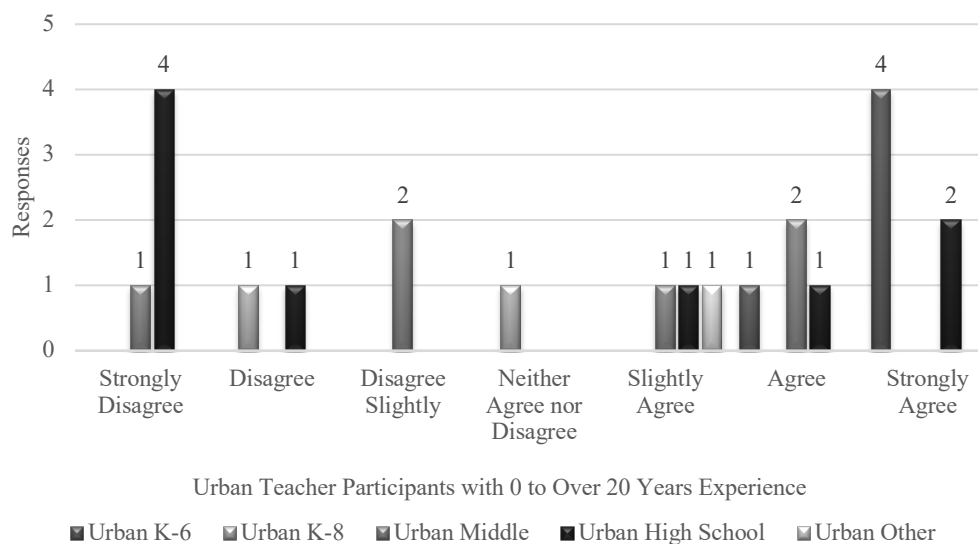
Administrators were asked Likert questions to understand how they responded during the pandemic and moving to online classroom settings. Two questions were asked: first, to identify if they connected more with teachers when classes moved online, and second when teachers were instructing students. The responses from rural participants included two neither agree nor disagree and two stating agreement for connecting more with the teachers when classes moved online (see Figure 4. 19). Urban respondents reported one disagreeing, one neither agreed nor disagreed, and one strongly agreed (see Figure 4. 20). The charts reflect that communication may have been problematic in both settings.

Figure 4. 19

Rural Administrators' Connections with Teachers Online
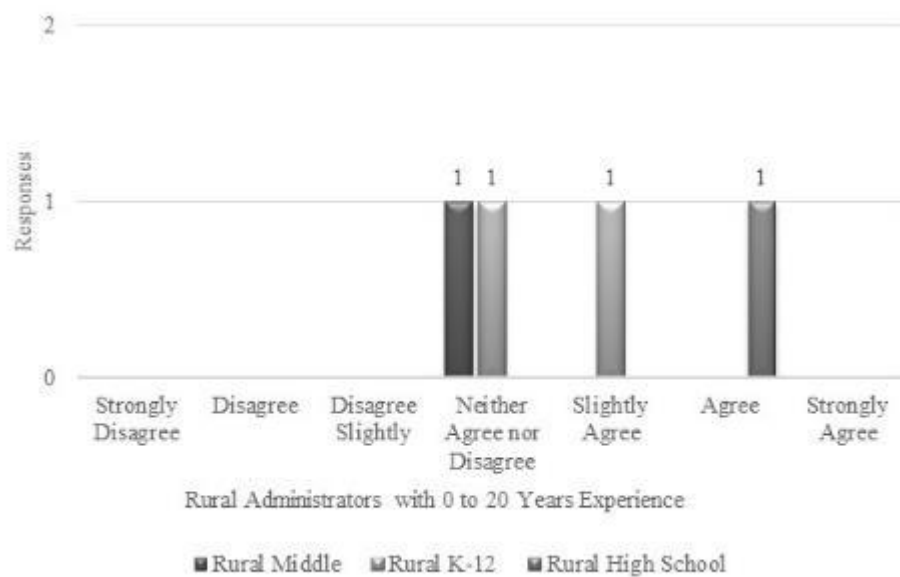
Figure 4. 20

Urban Administrators' Connections with Teachers Online
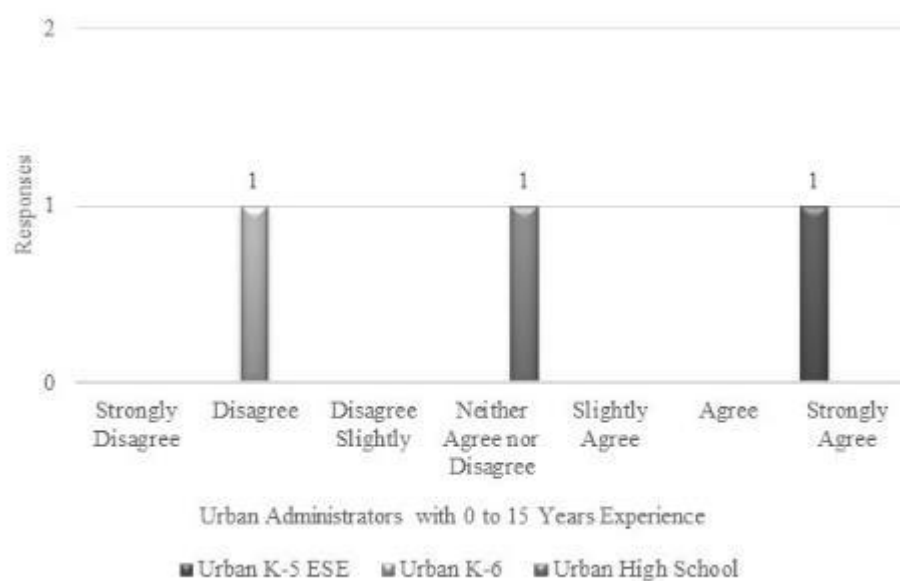
The administrators were asked an additional question about teacher communications to check for a difference in response. The answers to the question, "I connected with teachers while classes were online," resulted in a difference in their responses (see Figures 4. 21 & 4. 22). For this question, there were more positive responses.

Figure 4. 21

Rural Administrators' Communication with Teachers While Classes Were Online
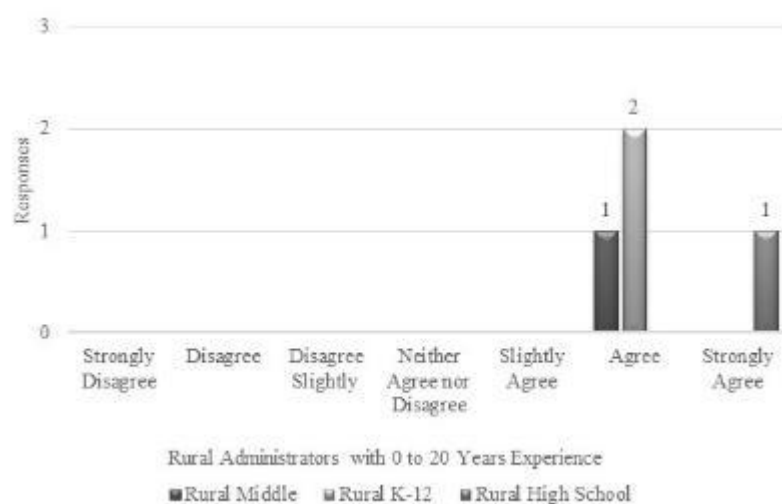
Figure 4. 22

Urban Administrators' Communication with Teachers While Classes Were Online

Urban Administrators with 0 to 15 Years Experience

■Urban K-5 ESE   ■Urban K-6   ■Urban High School
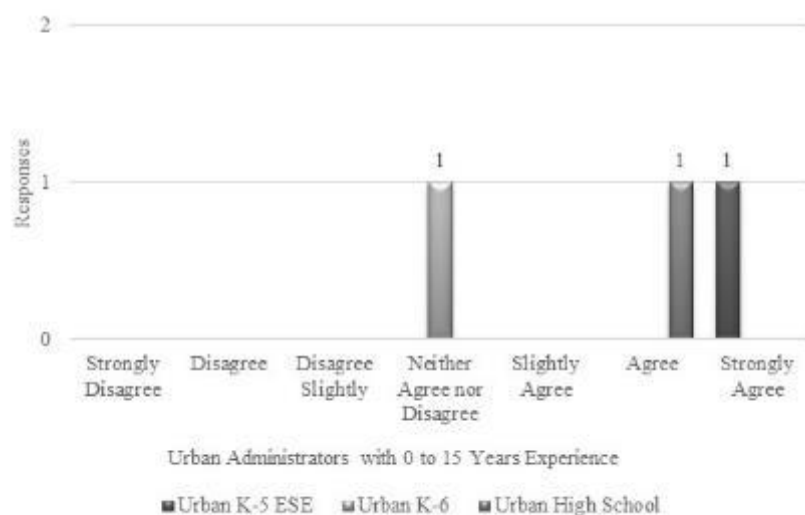
The survey also asked administrators if they had connected with other administrators during online classes. The four rural respondents agreed (shown in Figure 4. 23). In contrast, the three urban participants strongly disagreed (see Figure 4. 24). An additional question for the urban administrators would be useful in future research on why they did not reach out to other administrators.

Figure 4. 23

Rural Administrators' Communication with Other Administrators

Rual Administrators with 0 to 20 Years Experience
■Middle ■K-12 ■High School
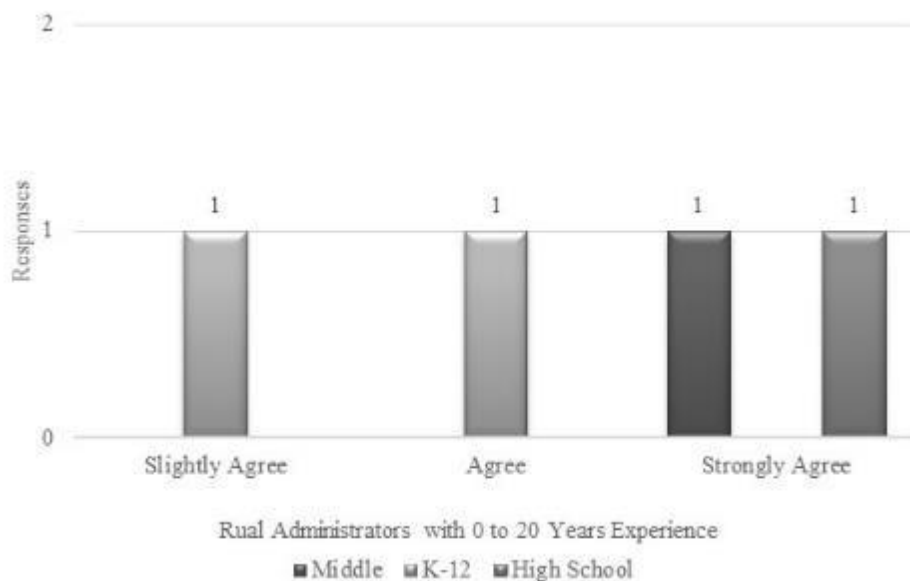
Figure 4. 24

Urban Administrators' Communication with Other Administrators

Urban Administrators with 0 to 15 Years Experience
■Urban K-5 ESE ■Urban K-6 ■Urban High School
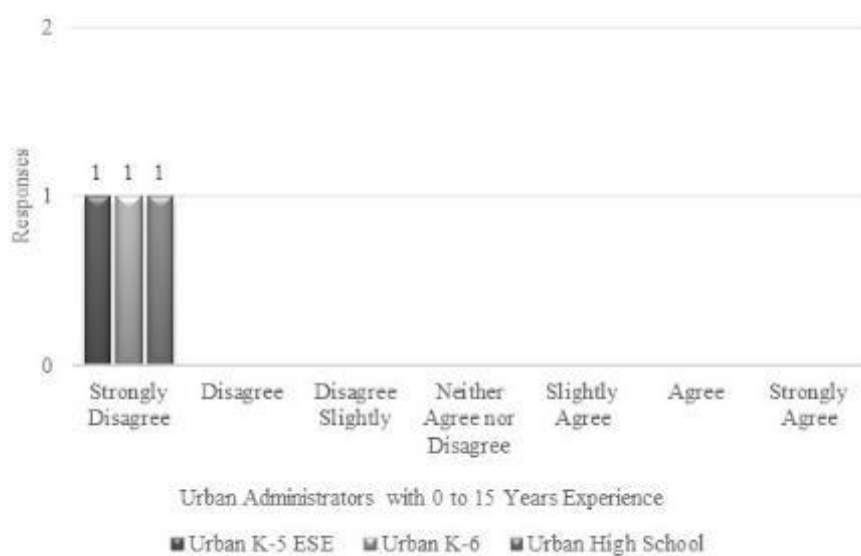
Questions about collaboration were included in the survey to understand if collaboration

aided participants and led to the emerging theme. The questions indicated that online classes may

have hindered collaboration. The perception of teacher connections to administrators was more negative. The overall perception of connecting with other teachers was balanced between agreed and disagreed.

For the first question on teacher communications, the rural administrators' charts were mixed. The second question for communicating with teachers was included to see if administrators assisted teachers during the pandemic and during class times. The charts of the administrators were more positive and indicated that administrators were communicating with teachers during the pandemic.

Due to some differences, the administrator perceptions were based on their rural and urban settings for the third communication question. The third question asked if the administrators communicated with other administrators during the pandemic. The rural response was positive, which indicated they communicated with other administrators when classes were online during the pandemic. The urban responses were all strongly disagreed. The charts reflected a large disparity between rural and urban administrators communicating with other administrators. Overall, the participant responses indicated problems with collaboration during the pandemic.

Data Summary

Summarizing the participant demographics, the participants' years of experience ranged from 0 to over 20, from K-12 rural and urban school settings. In answer to their training with technology, ninety-five percent responded that they had none or little technology infused in their teacher training programs. One responded that there was a lot of technology in her teacher training program in 1996, but the technology was no longer relevant. Some participants noted that their school district provided relevant technology professional development, while others

indicated they had to learn during their free time.

Moving into the pandemic, most teacher respondents had an abstract concept of what teaching online required. However, most of the participants indicated struggling with new technology, and all indicated a desire for more training. The respondents to the survey indicated that technology training was required for online settings, which coincides with Archambault et al.'s (2016) observation that online components needed to be incorporated in teacher preparation programs.

Administrators were asked about their schools' obstacles during the 2020 pandemic and the move to online learning. The responses included lack of finances for software and hardware purchases, Wi-Fi access issues, rushed training for teachers, academic integrity, student self-regulation, collaboration, and time management. Answers to administrators' questions about communicating identified an emerging theme. The data provided answers to the research questions regarding the knowledge K-12 teachers need for online teaching, training needs, and what administrators need to sustain school technology and teacher needs.

Additionally, the questions concerning connections for collaboration developed an emerging theme. Teachers indicated both negative and positive answers for connecting with other teachers and administrators. Those that answered negatively reflect that collaboration was not successful.

Summary

Chapter 4 provided the participants' responses to the survey questions. This study aimed to examine the relationship between teacher training and teacher readiness for the online classroom experience connected to technological and pedagogical preparedness, experiences in the 2020 pandemic, and how it applies to future training. The chapter answered the three

research questions from the data collected from participant survey questions. The findings aligned with the three research questions.

The participants in the study were selected through snowballing. The technique used personal contacts of the researcher and others, some contacts forwarded to others, and postings on Facebook group pages. The method drew a diverse group of 38 teachers and seven administrators. The participants were of mixed genders, from different school settings, with varying years of experience, and teaching different grade levels.

The data analysis for the first research question indicated that not all teachers were prepared for online instruction, and 95% had one, little, or no technology in their teacher training programs. While a few felt comfortable with moving online due to their flipped classroom experience. However, several said they needed more technology instruction than was available.

For research question two, the training suggestions from teachers for Teacher preparation programs included incorporating technology in every course. Other suggestions comprised online pedagogy, Learning Management Systems (LMS) time management, how to help students with disabilities, Social-Emotional Learning (SEL), Zoom, Microsoft Teams, apps for content areas, designing a remote lesson, et al. Administrators also shared their thoughts on teacher training. They responded that teachers needed more online lesson design, technology troubleshooting, collaboration, assessments, and student task management training.

Darling-Hammond et al. (2020) observed that educators needed preparation for online transitions. Additionally, they believed online teaching was the new normal (Darling-Hammond et al., 2020). The themes identified in the study are discussed by each research question in Chapter 5, along with suggestions for teacher preparation programs and further research.

CHAPTER 5: DISCUSSION

This qualitative study aimed to examine the technology and pedagogy required for teachers to succeed in an online environment. The literature review in Chapter 2 noted a previous history of the technology, leadership, and collaborative skills teachers required before the pandemic. Roberts and Hyatt (2019) stated, about qualitative case studies, that experiences shared in the research derive unique meaning from the researcher and the readers. This research survey ran in December 2021, and the results are posted in Chapter 4. The data collected in this study were from teachers and administrators on their 2020 pandemic experiences in a cross-sectional survey design.

A case study method was used to gather responses for an in-depth analysis of the 2020 pandemic event from educator experiences to answer the research questions. According to Yin (2014), the case study design was ideal for examining contemporary events through direct observation of the people involved. This survey collected participant knowledge on teaching during the 2020 pandemic, with Likert questions to capture participant attitude levels and open-ended questions capturing narratives (Mills & Gay, 2016; Creswell, 2012). The data were categorized by school settings, years of experience, and level of attitude. This study included the "neither agree nor disagree" option because participants were told their answers were not mandatory on every question.

The survey open-ended question data were analyzed using a thematic approach, allowing the researcher to analyze, interpret, and organize narratives for common perspectives (Creswell, 2012). The analysis procedure involved downloading the participant questions and answers to a spreadsheet. The open-ended question responses were analyzed by identifying themes. Then tables were used to collect the themes and present the data. Creswell contended that interpreting

data involved conclusions when answering the research questions. The themes for the open-ended questions in this study were recorded in the tables in Chapter 4. Chapter 5 discusses the findings, implications for practice, recommendations for future research, delimitations and limitations of the study, and conclusions.

Review of Procedures

In this qualitative case study, the snowball technique was used to gather participants for the study. First, a survey gathered data from participating teachers and administrators. Second, the data were evaluated for shared perceptions based on Likert and open-ended question responses. Three research questions guided the study analysis for shared themes. The questions comprised:

1. What do teachers need to know about online pedagogy for K-12 instruction?

2. What changes do teacher preparation programs need to help prepare tomorrow's teachers?

3. What do administrators need to know to lead pedagogical shifts in technology for sustaining teacher instructional needs?

Levels of perceptions were reported on the value of online lessons and teaching. The open-ended question narrative results were categorized by technology, pedagogy, and leadership. Then for each category, themes were identified. The themes are further discussed in the next sections under each research question.

Research Question 1: What do teachers need to know about online pedagogy for K-12 instruction?

The participant teachers in this study had experience spanning one to over 20 years.

When teacher respondents were asked about the training that would have benefited them going into online teaching for the first time, their answers were mixed (refer to Table 4. 13 below). The responses from the teachers indicated that 95 % had little or no technology training during their teacher training programs (TPPs). Some participants stressed that their training was too basic, and they did not understand how to incorporate technology in lesson plans to make them engaging for students.

Table 4. 13

Themes for Experienced Technology Training in TPPs

Research Question	Themes
During your training to become a teacher, what training did you receive for using technology in the classroom?	None
	Basic technology
	Basic skills: Microsoft Office
	Minimal
	Little
	Incorporate "this or that," no training
	Rushed
	Using a SmartBoard
	One
	Technology learned was not relevant in 2020

Note: TPPs in the title is the acronym for Teacher Preparation Programs

The participant narratives built on the literature relevance of the lack of technical training in teacher preparation programs. A few participants mentioned that they had flipped classrooms before the pandemic, making it easier for their classes to transition to the online platform. Other suggestions included the need for a list of district-recommended resources, a slower-paced hands-on training approach, and a list of approved apps. In comparison, several teachers with six to over twenty years of experience mentioned needing training with Google Slides, Forms, documents, and HyperDocs. The answers added to Brenner and Brill's (2016) report that all

teacher training courses needed to integrate technology to foster dynamic instruction.

Pedagogy for the online settings was another topic that a few respondents mentioned would have benefited them. The participants felt that the teaching method would be different online than in their classroom settings. Bai (2019b) summarized that teachers had to understand the technology and the pedagogical application alignment for mobile learning. Nepo (2017) also warned that teachers needed knowledge of the strategies to embed technology in lessons to be held accountable. Harvard University's (2022) web page, Teach Remotely, provided suggestions for increasing online learner engagement and noted that the teaching pedagogy did not change from the classroom. The participant teachers would have benefited from knowing that their basic teaching methods would not change; only how they presented the course content changed.

Part of teaching is connecting with students for teachers to understand if students are learning and feel valued. In Chapter 4, one of the teachers' questions concerned online connections to individual students. The answers showed that teachers were struggling with an unfamiliar platform or that their technology was insufficient for classroom needs. The rural and urban teachers disagreed with the question. They indicated that they had not made student connections during the pandemic.

When asked about the online instruction opportunities for students, both rural and urban participants were mixed in their perceptions (refer to Figures 4. 7 & 4. 8). Some agreed, while others disagreed. Participants who agreed saw online as another way for students to access lessons to continue learning. Figures 5. 1 and 5. 2 (see below) display teacher perceptions of beneficial teaching and learning during the pandemic. The majority of the participants had varying degrees of positive responses. In most of the responses, teachers had noted that they had some guidance when moving online. However, not all teachers received that instruction, as

indicated by the five negative responses and four that neither agreed nor disagreed. Administrators also provided data on their perceptions of online student learning (refer to Figures 4. 7 & 4. 8). Rural participants saw online as a positive experience. But urban participants were split. The administrator of the K-6 school strongly disagreed, but the K-5 ESE and high school agreed.

The responses indicated that teachers needed more assistance with the online move. Rice and Dawley (2009) had explained that insufficient professional developments and workshops forced teachers to learn while doing online teaching. In addition, Moore-Adams et al. (2016) had concurred that teachers often went into online positions without adequate training. Furthermore, Crompton et al. (2019) warned that the lack of training resulted in lower level knowledge transition lessons due to the lack of understanding of the academic technology, mobile technologies, and pedagogical alignment to the curriculum. The survey answers provided a reminder that technology training is a high-need area.

Figure 5. 1

Rural Teachers' Perception of Beneficial Teaching and Learning
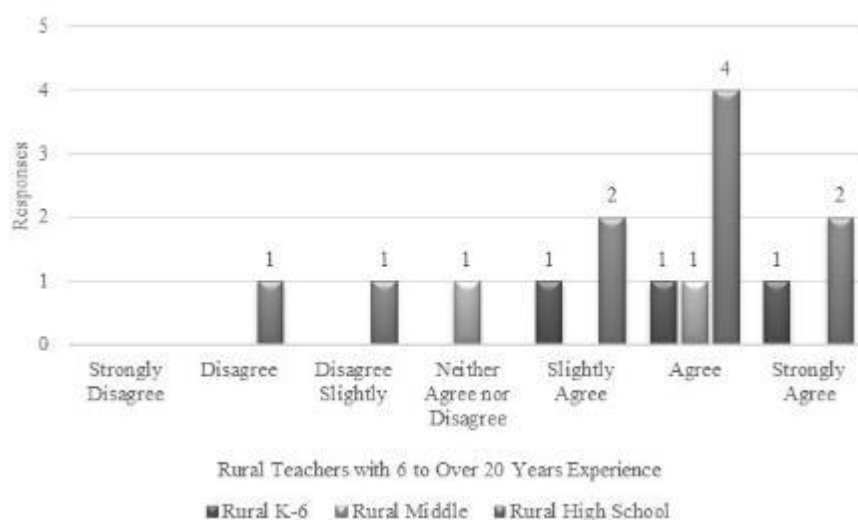
Figure 5. 2

Urban Teachers' Perception of Beneficial Teaching and Learning
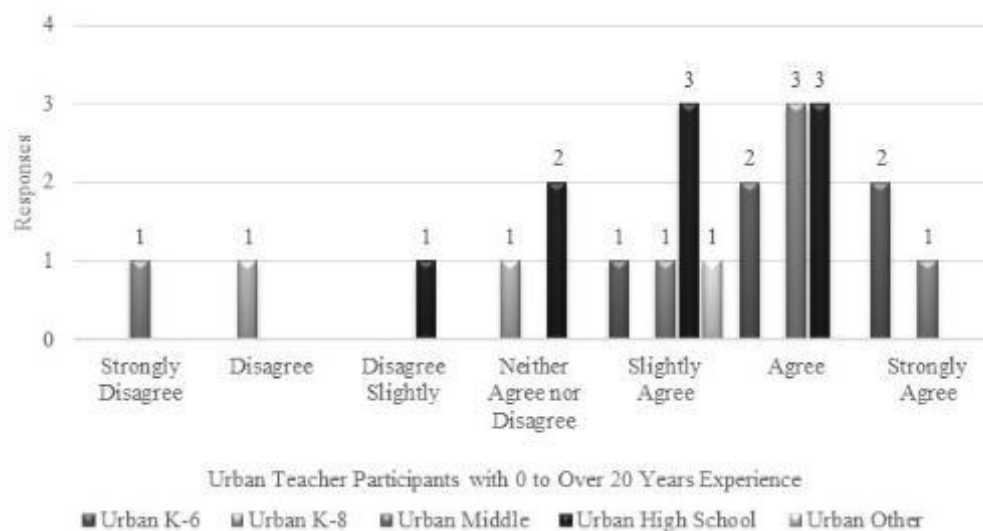
The participant responses reflected that teachers were not receiving enough technological training in teacher preparation courses or professional development for sustaining online classrooms. Several authors noted the importance of appropriate training. Cook (2018) recommended teaching pedagogy with technology until it felt comfortable. Li et al. (2019) added to Cook that teachers would be more willing to experiment with technology with practice. Li et al. also proposed that professional development should address school culture, teachers' knowledge of technology, allow time for modeling, experimentation, reflection, and follow-up support for classroom technology integration.

The participants persevered with online classes during the pandemic. However, they all agreed that they needed more training to sustain online learning. Adding to König et al. (2020) report, teachers who received training for searching and selecting online materials in their teacher training were more prepared to support students during the pandemic. The participants' responses added evidence to the literature that teachers require more technical and pedagogical

training.

Research Question 2: What changes do teacher preparation programs need to help prepare tomorrow's teachers?

The participant answers in the survey regarding what teacher training required mirrored the literature. Teacher and administrator participants' narratives for need training were provided in Table 4.10 in Chapter 4. They noted that training should incorporate exposure to policies, training in leadership, social-emotional learning, collaboration, subject area content, and time management; most important was technology for 21st-century classrooms. At the same time, teachers needed to be provided with hands-on learning experiences with apps and technology equipment. Participants claimed that how apps worked within a content area would have helped them plan lessons.

A few respondents noted they were told to do "this or that" in their teacher preparation programs. However, they were not provided with more information on using the technology related to their teaching certification area, and the training was not useful during the pandemic. Furthermore, some indicated that their technology training was insufficient for their needs when they moved online. The responses built on Brenner and Brill's (2016) emphasis that all teacher training courses needed technology integration.

One suggestion by a participant was to add flipped classroom training that included modeling how it works and incorporating elements in coursework. The suggestion echoed Sad and Goktas's (2014) statement, faculty in teacher preparation programs needed to model technology usage. Furthermore, it confirmed Muilenburg and Berge's (2015) recommendation that teacher preparation programs' primary goal should be to empower student teachers by adding strategies that promote positive mindsets, build resources, and produce positive

technology integration.

Another participant noted that their school continued using online tools in the 2021-22 school year. Archambault et al. (2016) warned that online platforms were the fastest-growing sector in education, but few teacher preparation programs provided online education for student teachers. The participant said it was amazing when two students could not attend school but could complete the work at home. Another participant stated that the district no longer had school days where students stayed home and missed classes. Rather, the class instruction moved online. The participant responses confirmed Darling-Hammond et al.'s (2020) prediction that online teaching would become a new normal.

Moreover, a few participants mentioned that taking online classes would help them if the classes format were similar to their schools. Another participant noted that in-person and online training supported by digital tools and resources would strengthen flexibility. Others noted they did not know how to design an interactive remote lesson. However, it would have been beneficial to their move online. The participant comments backed up Anagnostopoulos et al.'s (2018) research that universities needed to work with K-12 partners to train teachers that meet schools' needs.

Research Question 3: What do administrators need to know to lead pedagogical shifts in technology for sustaining teacher instructional needs?

Administrators confirmed that moving to online instruction had unique areas, such as ensuring that families and teachers have Wi-Fi access, which is part of the inequity issues. Also, limited budgets for software licenses and equipment. Another administrator noted that technology and home distractions were factors to overcome for student engagement. However, some noted that professional development, online assistance, and continuing with online

instruction would be beneficial. The responses built on Vincent-Lancrin et al. (2022) Organisation for Economic Co-operation and Development (OECD) report of several problems associated with multimodal infrastructures for digital learning. The issues include inequity, planning time, resource identification, student engagement, technology capacity, and skills.

The participants re-stated Al-Hunaiyyan et al.'s (2021) statement that problems for online education included the lack of strategic plans, appropriate infrastructures, digital materials, and not training users before moving online. In addition, one administrator mentioned not having accessible online contact information for parents and teachers. Others noted that knowing how to use apps like Zoom or Microsoft Teams would have saved time. Another participant noted that preservice education had not prepared teachers for online instruction. Furthermore, teachers had not experienced online classes as students, and now they did not have time for professional development, confirming the literature research. The problems with online classes were the lack of preparation and knowledge.

Administrator strategies for helping teachers included providing 1-to-1 lunch and learn sessions, hiring curriculum consultants for content areas, hiring Tech Liaisons, and providing technology troubleshooting 101 training. Other suggestions included creating strategies for teacher collaboration, practicing online instruction, training for effective lesson design, and helping students develop task management, time management, and self-motivation skills. The suggestions provided by the administrators echo Darling-Hammond et al.'s (2020) identifications for school redesign that educators needed preparation for online transitions with adequate and equitable school funding.

The literature review offered several suggestions to help school leaders through times of crisis. Their leadership style is most notably where most need to make changes. The adaptive

leader review indicated that it was most notably able to assist leaders in making changes (Heifetz & Laurie, 1997). Coherence can focus on the collective purposes to foster collaboration and innovation and build accountability (Fullan & Quinn, 2016). In conclusion, administrators need to assist teachers with professional development that provides them with the training for online instruction.

Conceptual Framework and the Study

Kolb and Kolb's (2017) Experiential Learning Cycle was used as the lens for this study. The theory involves a four-part cycle where experiences turn into knowledge. The first part of the theory cycle is about the experience. The teachers' experiences gave them knowledge about their classes before going online. They knew their students and the curriculum that the students were required to receive. The second part involves the teacher reviewing their experience through reflective observation to learn by asking and discussing to acquire new knowledge. Smart and Csap (2007) related the cycle to active learning. This step took place when teachers actively moved to an online teaching platform that they had not experienced in the past. The respondents used what they understood from their classroom experiences to ask questions about the online platforms and used the platforms with their students. The third part is where the learner makes sense of the experience. The participants used their knowledge to learn about new technologies that may or may not work with their classes. During this stage, the participants noted difficulties with the provided technology. The fourth step is experimentation. This step took place when teachers found workarounds when things did not work. The teachers experimented with the technology and developed conclusions based on their experiences. The respondents experienced what Guthrie and Jones (2012) called developmental growth. They had new understandings of their ideas for delivering instruction.

Emerging Theme

Collaboration involves working with others to create meaningful work. The literature review noted the importance of teamwork to technology and leadership. This study included teacher and administrator participants' questions to understand if they used collaboration to create lessons or solve problems. The answers resulted in collaboration becoming an emerging theme.

Ten rural teacher participants responded that they had no communication with administrators, five reported that they did communicate (refer to Figure 4. 17). For the urban participants, 13 responded that they did not have contact with their administrators, two neither disagreed nor agreed, and eight reported having connected with their administrators (refer to Figure 4.18). Also, the rural and urban teachers' responses to communication with other teachers were negative. The answers reflected that collaboration was a missed opportunity for both groups.

Pellegrino and Weiss (2017) noted the importance of teacher collaboration for exceptional children. While Bezzina and Bufalino (2022) viewed collaboration as essential to teacher changes. Through teamwork, teachers learn from others and share and support ideas (Bezzina & Bufalino, 2022). Collaboration would have provided the teachers with more ideas and shared knowledge.

Administrators were also asked questions about communication with teachers when classes moved online. The answers showed a mix of disagreeing to agreeing with communicating with teachers (refer to Figures 4. 21 & 4. 22). However, when asked if they communicated with teachers during online classes, the answers were more positive (refer to Figures 4. 23 & 4. 24). The group was also asked about their communications with other administrators. The question

provided a difference in responses between the rural and urban participants. The rural administrators agreed that they communicated with other administrators during the pandemic. In contrast, the urban group strongly disagreed (refer to Figures 4. 25 & 4. 26). Collaboration with other administrators in other schools may have provided the groups with information on what other schools were doing and possibly even a means for sharing resources.

In the review of leadership literature, collaboration held a strong presence. Teamwork was essential for leaders to involve others to solve problems and make changes. Heifetz (1994) described adaptive leadership as engaging stakeholders by mobilizing, motivating, organizing, and orienting others while focusing on everyone. Distributive leadership allows leaders to delegate authority and supports teachers and collaboration (Kwatubana & Molaodi, 2021). Costa et al. (2021) noted that Habits of Mind helped schools change because it involved sharing problem-solving through collaboration with the entire community.

In the literature review, Steinberg (2016) stated that great leaders used teamwork as the key to success. He continued that collaboration skills were necessary to work with student families and community partners (Steinberg, 2016). Others built on Steinberg's report that teacher change should focus on collaboration because it was useful and could be enjoyed through shared ideas. During the pandemic, collaboration would have provided all participants with a platform to connect with others to share ideas, answer questions, and develop engaging lessons for students.

Study Summary

The research problem in this qualitative case study was whether teachers had the technological and pedagogical skills to teach in a remote online environment. The study aimed to examine the relationship between teacher training and teacher readiness for online classrooms in

connection to technological and pedagogical experiences in the 2020 pandemic. The survey asked teachers questions to determine their online pedagogy knowledge for K-12 instruction and their recommendations for course content changes. In addition, administrators were surveyed to add their ideas for sustaining teacher instructional needs. Participants for the research survey were collected through the snowballing or chain technique, which gathered 38 teachers and seven administrators from different settings with varying years of experience.

The conclusions of this study, based on participant data, found that most teachers had little technology training in their teacher preparation programs. Also, the respondents did not have prior experience with online class platforms before the pandemic. However, the participants had responded that they needed further training for continued online instruction. Additionally, the administrator and teacher participants shared their thoughts on what training future teachers need. They shared online pedagogy, time management, social-emotional learning, collaboration, resources, online assessments, and technology. Administrators also responded to questions about what they need for leading pedagogical shifts in technology for teacher instructional needs. They noted that inequity issues were barriers they struggled to overcome. Additionally, other barriers included students' need for training in task management, technical training, academic integrity issues, and how to help students with poor habits and no support.

In the literature, Bezzina and Bugalino (2022) had emphasized that collaboration skills needed to be central to teacher education. The survey asked some questions about collaborative experiences to understand the role of communication during the pandemic. The finding was that many participants did not collaborate with other educators during the pandemic. Weiss et al. (2017) had recommended that teacher preparation programs add implicit instruction on collaboration and provide professional development that guides educators on effective

teamwork. Collaboration would have benefited both administrators and teachers by discussing experiences and sharing solutions in similar situations.

The participants shared their perceptions and narratives in this study. The responses included adding technology to all courses and asking teachers what they needed for training. Additionally, administrators shared their experiences during the pandemic and provided information for online classes. Furthermore, additional research would provide more data on the individual region and other countries' experiences with technology, budgets, and educator training needs.

Implications for Practice

This study did not occur in an individual district. Rather, participants were gathered from several locations and schools. The findings of this study added to existing research on the need for educators to gain more professional development and training in technological and pedagogical skills. The training requires time and continued support for experienced teachers to gain the confidence to work in online settings. Darling-Hammond and Hyler (2020) noted that it was critical for all educators, regardless of years of experience, to receive training on blended and hybrid learning models. The responses from educators noted they wanted a voice in the training they received. The study also reflected that schools need the resources to develop online experiences for teachers and students.

Furthermore, this study's participant responses indicated that collaboration was a problem. The OECD (2014) had recommended collaborative opportunities for teachers to share materials, observe others, and develop new practices. The OECD (2019) report expanded, adding that more collaboration would lead to more innovative practices and job satisfaction and self-efficacy. Even Darling-Hammond and Hyler (2020) reported that new teacher roles with online

classes needed mentoring support and extra time was necessary. This study provided more evidence for incorporating technology training in teacher preparation programs and professional development.

Recommendations for Further Research

Several studies would add to this research. The participants in this study came from rural and urban settings from different regions. However, the regions were not identified in the survey. Broadening the study to include specific regions will strengthen the results in this study by including a larger selection of educators by region. The inclusion of those educators will provide data on more specific populations and demographics. Studying the differences could identify disparities to determine needs by region. The data would provide insights on struggles with technology and provide data for future needs by district and region. In addition, the study would identify educator training needs data by region. Expanding the study to other countries would also expand the data on schools' and teachers' needs.

Another recommendation for research involves student learning gains during the pandemic. The research would identify the pandemic's effects on student learning. The data would benefit schools in identifying specific needs for students that may otherwise be left behind. It could also provide information to help students gain the skills they missed during their online class experiences in 2020. Also, information for any group that did not fall behind would be beneficial to moving forward in an online or flipped classroom.

Additionally, the social-emotional impacts on students and educators. The study would contribute data on how students coped and are still coping with the pandemic's impact on their education by adding the social-emotional impacts. Also, the data would be beneficial for the pandemic's effect on students with disabilities' social-emotional skills. Furthermore, teachers

were also impacted; the data may show why educators left education. The expansion of this study would benefit everyone involved in education.

Limitations

Limitations in this study included the research design. As a qualitative study, the research focused on perceptions and the environment where the participants worked. The respondents shared self-experiences, which others may not share in the same location or different. The participant perceptions may not generalize to all teachers from all regions. The number of participants was also limited as only 38 teachers and seven administrators responded to the survey. Replication would be difficult since teacher work locations were not disclosed. In addition, it is unknown if the sample used in this study was relative to the whole population. However, it should be noted that all research contains limitations, but they do not affect the quality of the study.

Delimitations

Delimitations are what the researcher controls. The researcher used the snowball technique to collect participants for this study. Emails containing consent and survey links were sent to known contacts. The survey link was also posted on a Facebook community page that allowed any teacher to respond. The emails and posting were both a delimitation and a limitation. The researcher did not have control over forwarded emails nor who would respond to the postings. The delimitations and limitations allowed this study to gather participants from various locations and school settings with different years of experience.

Conclusions

Teacher preservice training and professional development are linked to their effectiveness (Darling-Hammond et al., 2005). The findings in this study were consistent with the research on

teacher training needs for technology, pedagogy, and collaboration. Duerksen (1985) added that long-range goals, defining the knowledge and skills required, and identifying appropriate learning experiences were necessary to enhance educational practices. The participants in this study concurred that they would benefit from specific training for interactive online lesson planning. They noted that the lack of online pedagogy hindered their move to online classes at the start of the pandemic. The deficiencies in training led some teachers to struggle with lesson planning. Darling-Hammond et al. (2020) emphasized that teacher training needed to be strengthened to redesign K-12 schools that strengthen community relationships. The training involved closing the digital divide and strengthening distance and blended learning knowledge through professional development (Darling-Hammond et al., 2020).

Steinberg (2016) noted teamwork as the key to success. At the same time, Martin and Mulvihill (2017) added that informed policies and preparing teachers to be collaborators were necessary for success. Additionally, Vincent-Lancrin et al. (2022) recommended collaboration for digitalization in education. This study included collaboration to observe how collaboration practices may have affected perceptions. The analysis showed that several teachers and administrators did not utilize collaboration skills effectively. Collaboration with other educators with more experience in flipped classrooms may have helped the struggling teachers be more confident. Likewise, administrators would have benefited from collaboration with other administrators to gain best practices knowledge from other schools. Furthermore, collaboration would have assisted administrators working with teachers to identify professional development needs.

Summary

This study examined the relationship between teacher training and teacher readiness for the online classroom experience connecting technological and pedagogical preparedness during the 2020 pandemic. The researcher used a qualitative case study design to explore educators' perceptions and narratives of their experiences during the pandemic's move to online classes. The conclusions were drawn from the survey data collection and analysis. Based on the data, the researcher was able to identify the needs for technology, pedagogy, and collaboration in teacher training.

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APPENDICES

Appendix A: CITI Certificate, Dr. Collins

CITI PROGRAM

Completion Date 22-Aug-2020
Expiration Date 22-Aug-2023
Record ID 37824814

This is to certify that:

Deborah Collins

Has completed the following CITI Program course:

Social & Behavioral Research - Basic/Refresher (Curriculum Group)
Social & Behavioral Research (Course Learner Group)
1 - Basic Course (Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

Concordia University Irvine

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?we8b57766-8bf2-4cce-acaf-41b4c8448d9d-37824814

Appendix B: CITI Certificate, Kay Rosendahl

CITI PROGRAM

Completion Date 29-Feb-2020
Expiration Date 28-Feb-2023
Record ID 34748884

This is to certify that:

Kay Rosendahl

Has completed the following CITI Program course:

Social & Behavioral Research - Basic/Refresher (Curriculum Group)
Social & Behavioral Research - Basic/Refresher (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Concordia University Portland

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wb7dbde99-3f5f-449a-bbc9-25778df96509-34748884

Appendix C: Administrator Survey

PERCEPTIONS OF K-12 EDUCATORS' PREPARATION FOR ONLINE INSTRUCTION BEFORE AND DURING A GLOBAL PANDEMIC

By returning the survey, I agree to consent. Please check this box. ☐

Gender: ☐ Male

  ☐ Female

Ethnicity: ☐ African American

  ☐ Caucasian/White

  ☐ Native American

  ☐ Other

School Setting: ☐ Urban ☐ Rural

Grade Level: ☐ K-6 ☐ K-8 ☐ Middle ☐ High School
  ☐ Other: _____

Years of administrative experience: 0-5
  6-10
  11-15
  16-20
  over 20

The following is a research-derived assessment to measure education experiences during the pandemic. Higher scores from questions 1 through 5 indicate higher levels of thriving. Questions 6 through 10 are factual and attitudinal items.

Directions:

Using the scale below, please rate the following survey items, numbers 1 through 6, concerning your recent experience at work. Questions 6 through 10 ask for you to fill in the blanks. Once you complete the survey, close the survey window using the done button at the bottom of the window.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Disagree Slightly	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree

	Survey Item	Strongly Disagree ----------Strongly Agree						
1.	I was prepared when classrooms went online.	1	2	3	4	5	6	7
2.	I connected more with teachers when classes were online.	1	2	3	4	5	6	7
3.	I liked the opportunities that the online classroom provided for student learning.	1	2	3	4	5	6	7
4.	I connected with other administrators while classes were online.	1	2	3	4	5	6	7
5.	I connected with teachers while classes were online.	1	2	3	4	5	6	7
6.	I found that the technology resources I provided for online classrooms benefited student learning and teachers.	1	2	3	4	5	6	7

7.	What obstacles did the pandemic present to student instruction?	
8.	What did you do to transition from an in-person to an online K-12 classroom setting?	
9.	What obstacles did you face as an administrator to transition to online instruction?	
10.	What training did you arrange for teachers to transition to a new online pedagogy?	
11.	Reflecting on the online classroom settings, what would you do if classes were forced to be online in the future? Would you do anything differently?	
12.	As a result of the online classrooms, what have you recommended or arranged for additional teacher professional development?	

13.	As a result of the pandemic, some research suggests that teachers have instructional toolboxes as a go-to for online instruction. What items would you add for a future global event that drives education online?	
14.	What professional development do you feel that teachers need for K-12 online instruction?	

Appendix D: Teachers Survey

PERCEPTIONS OF K-12 EDUCATORS' PREPARATION FOR ONLINE INSTRUCTION BEFORE AND DURING A GLOBAL PANDEMIC

By returning the survey, I agree to consent. Please check this box. ☐

Gender: ☐ Male

☐ Female

Ethnicity: ☐ African American

☐ Caucasian/White

☐ Native American

☐ Other

School Setting: ☐ Urban ☐ Rural

Grade Level: ☐ K-6 ☐ K-8 ☐ Middle ☐ High School
☐ Other: _____

Years of teaching experience: ☐ 0-5
☐ 6-10
☐ 11-15
☐ 16-20
☐ over 20

The following is a research-derived assessment to measure education experiences during the pandemic. Higher scores from questions 1 through 5 indicate higher levels of thriving. Questions 6 through 10 are factual and attitudinal items.

Directions:

Using the scale below, please rate the following survey items, numbers 1 through 6, concerning your recent experience at work. Questions 6 through 10 ask for you to fill in the blanks. Once you complete the survey, close the survey window using the done button at the bottom of the window.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Disagree Slightly	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree

	Survey Item	Strongly Disagree ------------Strongly Agree						
1.	I was prepared when my classroom went online.	1	2	3	4	5	6	7
2.	I connected more with individual students when my classes were online.	1	2	3	4	5	6	7
3.	I liked the opportunities that the online classroom provided for student learning.	1	2	3	4	5	6	7
4.	I connected with other teachers while classes were online.	1	2	3	4	5	6	7
5.	I connected with administrators while classes were online.	1	2	3	4	5	6	7
6.	I found that the technology resources I used in my online classroom benefited student learning and my teaching.	1	2	3	4	5	6	7
7.	During your training to become a teacher, what training did you receive for using technology in the classroom?							
8.	What support did you receive from administrators during the COVID pandemic and classes going online? (Please explain)							
9.	What training would have benefited you for going from in-person to online instruction?							
10.	What recommendations would you suggest for preparing teachers for a future change to online instruction?							

Appendix E: Email

RE: 2020 Educational Technology Survey

We are running a survey on educational technology during the 2020 pandemic and would love your input. The survey is open until December 31st. Please read the Informed Consent carefully and then select the appropriate link that follows.

Also, if you know of anyone that worked during the pandemic and might be interested in participating, please forward the email to them.

Thank you for participating!
Kay Rosendahl

Appendix F: Informed Consent

INFORMED CONSENT for Teachers and Administrators

PERCEPTIONS OF K-12 EDUCATORS' PREPARATION FOR ONLINE INSTRUCTION BEFORE AND DURING A GLOBAL PANDEMIC

The study you are asked to participate in, *Perceptions of K-12 Educators Preparation for Online Instruction Before and During a Global Pandemic,* seeks to identify teacher technology training needs. Kay Rosendahl is conducting this study under the supervision of Deborah Collins, Adjunct Professor, Ed.D., K-12 Leadership in Urban Education, University of Southern California. The Institutional Review Board, Concordia University Irvine, in Irvine, CA, has approved this study.

Purpose: The purpose of the research is to assess the technology preparedness of teachers and what higher education needs to offer in their teacher preparation courses.

Description: Teachers are asked to complete a survey with questions relating to technology training (see below for the link). Administrators are invited to participate in another study on teachers' technology preparedness at the start of the pandemic in 2020 (the link is after the teachers).

Participation: Your participation is entirely voluntary, and you may discontinue participation at any time.

Anonymity: Your identity will remain completely anonymous. The completed surveys will be stored in a locked safe off the school sites. Once the data has been disseminated, the surveys and notes will be destroyed and shredded.

Duration: A survey link is attached for participants, which asks for a response within one-week questions will take approximately 10 to 15 minutes.

Risks: There are no foreseeable risks to your participation in the study.

Procedures: The item used in the study is an online survey for teachers and administrators. The results will be coded, and a data comparison will be used to look for similarities and differences.

Benefits: The study results will contribute to research for K-12 education during the coronavirus pandemic. The survey results may help the school districts identify future professional development opportunities and assist teacher training colleges and universities in identifying additional training opportunities for their courses.

Confidentiality: The researcher will review, store, and analyze your research records and keep them in a locked safe. The surveys and interviews obtained for the study will be labeled with a random number and stored for no more than one year. After the completion of the research, the survey and interview files will be shredded. Survey responses will be anonymous and labeled with a random number.

Contact: For questions about the research and research participants' rights, or in the event of a research-related inquiry injury, contact Dr. Deborah Collins, dissertation committee chair: (562) 370-6912; Deborah.Collins@cui.edu.

Results: The results of this study will be published in the researcher's doctoral dissertation at Concordia University Irvine.

The first question in the survey asks you to confirm your consent to participate in the study by checking the box.

Survey for Teachers:

https://www.surveymonkey.com/r/2MFC2ZF

Survey for Administrators:

https://www.surveymonkey.com/r/2B7NPVH

Appendix G: Facebook Posting

2020 Educational Technology Survey

If you are a teacher and worked during the 2020 pandemic online, we would love to hear about your experience!

We are running a survey on educational technology during the 2020 pandemic. The survey is open from December 1 through the 17th. Please read the Informed Consent carefully and select the appropriate link that follows.

Also, if you know of anyone that worked during the pandemic and might be interested in participating, please forward the email to them.

Thank you for participating!

Kay Rosendahl

INFORMED CONSENT for Teachers and Administrators

PERCEPTIONS OF K-12 EDUCATORS' PREPARATION FOR ONLINE INSTRUCTION BEFORE AND DURING A GLOBAL PANDEMIC

The study you are asked to participate in, Perceptions of K-12 Educators Preparation for Online Instruction Before and During a Global Pandemic, seeks to identify teacher technology training needs. Kay Rosendahl is conducting this study under the supervision of Deborah Collins, Adjunct Professor, Ed.D., K-12 Leadership in Urban Education, University of Southern California. The Institutional Review Board, Concordia University Irvine, in Irvine, CA, has approved this study.

Purpose: The purpose of the research is to assess the technology preparedness of teachers and what higher education needs to offer in their teacher preparation courses.

Description: Teachers are asked to complete a survey with questions relating to technology training (see below for the link). Administrators are invited to participate in another study on teachers' technology preparedness at the start of the pandemic in 2020 (the link is after the teachers).

Participation: Your participation is entirely voluntary, and you may discontinue participation at any time.

Anonymity: Your identity will remain completely anonymous. The completed surveys will be stored in a locked safe off the school sites. Once the data has been disseminated, the surveys and notes will be destroyed and shredded.

Duration: A survey link is attached for participants, which asks for a response within one-week questions will take approximately 10 to 15 minutes.

Risks: There are no foreseeable risks to your participation in the study.

Procedures: The item used in the study is an online survey for teachers and administrators. The

results will be coded, and a data comparison will be used to look for similarities and differences.

Benefits: The study results will contribute to research for K-12 education during the coronavirus pandemic. The survey results may help the school districts identify future professional development opportunities and assist teacher training colleges and universities in identifying additional training opportunities for their courses.

Confidentiality: The researcher will review, store, and analyze your research records and keep them in a locked safe. The surveys and interviews obtained for the study will be labeled with a random number and stored for no more than one year. After the completion of the research, the survey and interview files will be shredded. Survey responses will be anonymous and labeled with a random number.

Contact: For questions about the research and research participants' rights, or in the event of a research-related inquiry injury, contact Dr. Deborah Collins, dissertation committee chair: (562) 370-6912; Deborah.Collins@cui.edu.

Results: The results of this study will be published in the researcher's doctoral dissertation at Concordia University Irvine.

The first question in the survey asks you to confirm your consent to participate in the study by checking the box.

Survey for Teachers:

https://www.surveymonkey.com/r/2MFC2ZF

Survey for Administrators:

https://www.surveymonkey.com/r/2B7NPVH