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Teacher Perceptions of Student Learning Environments as a Result of Virtual Learning in Tennessee Rural High Schools

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TEACHERS' PERCEPTIONS OF STUDENT LEARNING ENVIRONMENTS AS A RESULT OF VIRTUAL LEARNING IN TENNESSEE RURAL HIGH SCHOOLS

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Kimberly M. McIntyre

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TEACHERS' PERCEPTIONS OF STUDENT LEARNING

ENVIRONMENTS AS A RESULT OF VIRTUAL LEARNING IN

TENNESSEE RURAL HIGH SCHOOLS

Dissertation

**Submitted in partial fulfillment
of the requirements for the degree of Doctor of Education
in the Carter and Moyers School of Education
at Lincoln Memorial University**

by

Kimberly M. McIntyre

January 2022

Dedication

I dedicate this dissertation to my son, family, and friends. Braxden, may you always know how much I love you and how proud I am of you. You can do anything you put your mind to. My family and friends, thank you for believing in me, pushing me to be the best I can be, and listening to me talk about this dissertation when you had no idea what I was really talking about.

Thank you to my sister Holley, who was always really bored when I talked to her about my research but pretended to be interested because she is a good sister. Thank you to my mom, who always thought I was crazy because I loved to learn and go to school. Thank you to my lunch buddies, Cindy and Jessica, who always kept me motivated and believed in me. Thank you to Dave, who was used to me shutting myself up for days at a time to work on my dissertation but never complained.

To my LMU sisters, who started out as the *Fabulous Five* but grew to a circle of seven, thank you for keeping me accountable and being my support. I appreciate your friendship and look forward to seeing you do great things in education.

To my grandma in heaven, who always wanted to further her education but had to drop out of high school to support her family, thank you for always pushing me to do my best and for believing in me. Lastly, I thank God for His blessings and for this wonderful journey of life He has given me.

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I have been fortunate to have the support, motivation, and wisdom of countless individuals throughout this dissertation journey. To my dissertation committee: thank you, Dr. Chris Stotts, for being such a positive light in my doctoral journey. Dr. Jarrod Pendergraft, you provided lots of great insight and mentorship to me. Finally, the biggest thank you goes to my dissertation chair, Dr. Cherie Gaines. You taught me so much and believed in me when I did not believe in myself. You are my role model of a strong, independent woman. I truly look up to you and wish you the best in your own education journey in law school. I will never forget you!

Abstract

After the COVID-19 pandemic came to the United States in March 2020, teachers

and educational leaders looked to virtual learning as a way for students to

overcome learning challenges and improve educational experiences for students.

Stakeholders were met with conflicting claims about virtual learning. Proponents

of virtual learning claimed virtual teaching and learning platforms strengthened

education because they provided additional tools when traditional classroom

settings were impossible. Opponents claimed virtual learning resulted in learning

loss, therefore failing to improve student learning. In this qualitative interpretive

study of a rural school system in Tennessee, using instrumental, semi-structured

interviews, I uncovered the perceptions teachers had about student learning

environments as a result of virtual learning. The purpose of this study was to

determine teachers' perceptions of virtual learning and students' emotional health,

students' motivation to learn, students' personalized instruction, students'

classroom performance, and students' learning loss in a virtual learning

environment. In 24 interviews, teachers in this rural district desired less

technology gaps, assistance with managing student engagement and attendance,

ways to improve missed instruction, and increased training, support, and

professional developments in virtual learning.

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Chapter I: Introduction

In March 2020, government officials issued the first COVID-19 stay-at-home order requiring the closures of public schools to help stop the spread of the COVID-19 virus (Storey & Slavin, 2020). COVID-19, the disease caused by the SARS-CoV-2 virus, became a global public health threat (Radha et al., 2020). Coronavirus was the virus that caused the novel COVID-19 outbreak (Hannum et al., 2008; Rahiem, 2020); the World Health Organization announced the official name for the virus on February 11, 2020 (Hodges et al., 2020; Rahiem, 2020; Storey & Slavin, 2020). Schools in the United States required virtual instruction (i.e., when a course was taught either solely online or an online portion mixed with a face-to-face instruction were taught online) in place of in-person instruction so learning could continue (Abuhammad, 2020; Kapasia et al., 2020; Quezada et al., 2020).

To help reduce learning loss during the COVID-19 pandemic, educational leaders and policymakers in the United States considered virtual learning as an alternative to traditional classroom settings (Rapanta et al., 2020). The claims of those in favor and those against virtual learning during the COVID-19 pandemic conflicted, and because of this, I decided my research should focus on learning environments during COVID-19. Proponents of virtual learning claimed virtual teaching and learning platforms (i.e., interactive learning environments) strengthened education because they provided additional tools when traditional classroom settings were impossible (Hassan et al., 2020; Javurek & Mendenhall, 2020; Nambiar, 2020; Radha et al., 2020). Opponents claimed virtual learning resulted in learning loss, therefore failing to improve student learning

opportunities (Huber & Helm, 2020; Kapasia et al., 2020; Lassoued et al., 2020; Rahiem, 2020; Yates et al., 2020).

Researchers suggested stakeholders' perceptions were essential to educational leaders and policymakers considering virtual learning for students (Dhawan, 2020; Javurek & Mendenhall, 2020; Nambiar, 2020). Extensive literature existed on altered learning environments as a result of COVID-19. I found arguments from proponents and opponents of virtual learning in online articles; however, I could not locate research on how stakeholders perceived learning loss due to virtual learning during COVID-19, specifically learning loss as a result of the constraints the pandemic placed on teachers and students (Thompson, 2021). In this study, I conducted qualitative, instrumental, semi-structured interviews at four rural high schools in East Tennessee within a county concerned with learning loss as a result of virtual learning at the four local high schools. The four rural high schools had to quickly transition to virtual learning during the initial onset of COVID-19 during the spring of 2020.

Statement of the Problem

Researchers found positive learning environments played a crucial role in student success in school (Wargadinata et al., 2020). Several factors affected learning ability, including seating in the classroom, interaction with other students, and noise level (Hassan et al., 2020). Students who learned in a consistently positive learning environment (e.g., comfortable, quiet, no distractions) were more motivated and engaged and had a higher overall learning ability (Hassan et al., 2020; Radha et al., 2020). On the other hand, students learning in negative environments (e.g., uncomfortable, loud, full of distractions)

found it difficult to absorb information and stay engaged (Hassan et al., 2020; Lassoued et al., 2020; Radha et al., 2020). A positive learning environment played a vital role in how effectively students learned and absorbed new information (Lassoued et al., 2020).

The lack of positive learning environments affected student success, especially for students learning virtually (Nambiar, 2020). Teachers were challenged to maintain positive learning environments in virtual settings (Hassan et al., 2020; Yates et al., 2020). Perhaps the most common challenge students faced in virtual learning was the lack of face-to-face engagement with teachers and other students (Javurek & Mendenhall, 2020). Teachers provided virtual instruction in various ways, such as sharing slide show presentations, posting videos of recorded lectures, or streaming lectures live (Lassoued et al., 2020). Despite the variety of ways teachers fostered student engagement, students did not find a virtual classroom as engaging as a traditional classroom (Bethel et al., 2014; Hassan et al., 2020). The lack of in-person communication, such as verbal and nonverbal instruction, became problematic for students who were struggling to understand learning material, according to Minkos and Gelbar (2020).

In March 2020, the COVID-19 virus caused over 55 million U.S. schools to close and forced school-aged children to stay in their homes (Abuhammad, 2020; Hodges et al., 2020; Pokhrel & Chhetri, 2021). The shutdown of schools posed challenges to students and teachers. Public education was not prepared to cope with a situation like the COVID-19 pandemic (Huber & Helm, 2020). Schools lacked the structures to sustain effective teaching and learning during the shutdown (Huang et al., 2020; Kapasia et al., 2020). Students' academic

performance deteriorated during the pandemic, along with student progress and other developmental skills (Rahiem, 2020). Students lacked daily access to the basic supports needed to be successful while learning from home, such as regular learning schedules, productive work environments, and ability to use technology (Dorn et al., 2020).

Studies by Minkos and Gelbar (2020) showed the crisis widened existing socioeconomic disparities such as poor cognitive development, poor learning ability, and difficulty with socioemotional processing. As a result, students with learning deficits who struggled under normal circumstances in a regular classroom setting had difficulties receiving effective instruction due to interruptions in their learning (Minkos & Gelbar, 2020). The 2020-2021 school year began with schools in virtual or hybrid learning models. Kaden (2020) stated upon the start of the new 2020-2021 school year, teachers should have identified struggling students and offer more academic and emotional assistance because the learning and emotional gap would widen. Minkos and Gelbar (2020) stated, "It will take a long time for students to recover from the shutdown" (p. 418). COVID-19 was the catalyst for schools to move to virtual learning. Virtual learning may have been the best possibility during the initial COVID-19 outbreak; however, the COVID-19 crisis and the unparalleled education disruption was far from over. In the fall of 2021 as schools moved back to in-person teaching and working through the continual issues of COVID-19, it was important to look at the outcome of virtual learning to identify possible areas of needed improvement to best serve teachers and students.

Proponents of virtual learning claimed students learning virtually from home allowed them the flexibility to control their own time, which provided them with additional time for self-care, exercise, and family time (Radha et al., 2020; Rahiem, 2020; Wargadinata et al., 2020). Opponents claimed the quick transition to virtual learning during COVID-19 led to student learning loss, specifically in rural areas where virtual technology was not always available due to lack of internet access and lack of required devices to learn virtually (Hodges et al., 2020; Lassoued et al., 2020; Wargadinata et al., 2020). Student lack of opportunity was a reoccurring theme in opponents' claims against virtual learning (Hodges et al., 2020; Huang et al., 2020; Kapasia et al., 2020; Nambiar, 2020: Rahiem, 2020; Yates et al., 2020). The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment.

Research Questions

The development of research questions was the most critical component of a research project, guiding the researcher to develop context, methods, and sophisticated analysis that stimulated knowledge (Anfara & Mertz, 2015). Effective research questions drive a researcher's study guiding the study toward noteworthy and impactful results (Alvesson & Sandberg, 2013; Anfara & Mertz, 2015). I used the following research questions to guide my study and to determine effective data collection and analysis methods (Alvesson & Sandberg, 2013).

Research Question 1

What are rural high school teachers' perceptions of the relationship between virtual learning environments and students' emotional health?

Research Question 2

What are rural high school teachers' perceptions of the relationship between virtual learning environments and students' motivation?

Research Question 3

What are rural high school teachers' perceptions of the relationship between virtual learning environments and students' personalized instruction?

Research Question 4

What are rural high school teachers' perceptions of the relationship between virtual learning environments and students' classroom performance?

Research Question 5

What are rural high school teachers' perceptions of the relationship between virtual learning environments and students' learning loss?

Theoretical Framework

A theoretical framework was defined by Anfara and Mertz (2015) as "an empirical or quasi-empirical of social and psychological processes, at a variety of levels, that can be applied to the understanding of a phenomenon" (p. 15). A theoretical framework supported a researcher in making sense of myriad data and providing a framework for methods design and analysis, ultimately culminating in relevant and impactful results and implications from the researcher's study (Anfara & Mertz, 2015; Merriam & Tisdell, 2016). The researchers recommended an intentional use of the theoretical framework of a qualitative study to best

ensure the study was objective and precise. Where a theory was an overarching

dialogue about interrelated ideas, a concept was a word or phrase that connects

the thoughts, often within a larger theory (Anfara & Mertz, 2015; Merriam &

Tisdell, 2016). I used a theoretical framework to narrow further the lens within

which I examined the topics of rural high school teachers' perceptions of the

relationship between the following:

- Virtual learning and student emotional health;

- Virtual learning and student motivation;

- Virtual learning and student personalized instruction; and

- Virtual learning and student classroom performance;

- Virtual learning and student learning loss.

I used the concept of Mezirow's transformative learning as a framework to

guide this study. The transformative learning theory best fit this study because it

explained personal experience was essential for the learning process (Mezirow,

2000). Further, teachers' and students' interpretations of their personal

experiences played a role in bringing about changes in behaviors, beliefs,

assumptions, judgments, and mindset (DeSapio, 2017; Kitchenham, 2008;

Mezirow, 2000). The transformative learning theory was associated with

changing students' and teachers' judgment, beliefs, and expectations (DeSapio,

2017; Lee & Tsai, 2010; Mezirow, 2000). Transformative learning was the idea

that learners getting new information were also evaluating their past ideas and

understanding and were shifting their worldview as they obtained new

information through critical reflection (Lee & Tsai, 2010; Mezirow, 2000). A

transformative learning experience involves a fundamental change in perceptions where learners started to question what they knew or thought before and examined things from new perspectives to make room for new insights and information (DeSapio, 2017; Kitchenham, 2008; Lee & Tsai, 2010; Mezirow, 2000).

According to Jack Mezirow's transformative learning theory, learning began with an experience that led to *disorienting dilemmas* such as cognitive dissonance, or the discomfort that comes from realizing your understanding of the world did not fit with current events (Kitchenham, 2008). The unexpected, unplanned, and sudden shift to virtual learning as a result of COVID-19 had been an experience that led to cognitive dissonance, challenged assumptions about education, and inequities in our system were worsened (Yates et al., 2020). Society learned even with best intentions and despite teachers' best efforts, teachers could not reach every child to provide the supportive learning environments and tasks the students needed, a truth which had to change (Kapasia et al., 2020). All students should be provided with the same learning opportunities.

From a virtual learning perspective, teachers applied transformative teaching strategies in their virtual classrooms. For example, teachers presented real-world problems to students using examples from today's world and gave students time to ask questions via video (such as Zoom), chat, or email (Hannum et al., 2008; Lee & Tsai, 2010; Rahiem, 2020). Students also participated in small groups via video breakout groups and collaborated in online presentations (Noor et al., 2020; Rapanta et al., 2020). Teachers provided feedback through virtual

platforms and supported students virtually by checking in with them daily (Radha et al., 2020; Rahiem, 2020). Teachers also posed guiding questions so students could learn new information (Noor et al., 2020; Scull et al., 2020). These practices were components in Mezirow's transformative learning theory.

It was important for teachers to remember students needed quality, differentiated instruction virtually and in the classroom (Kuhfeld et al., 2020). Mezirow (2000) framed the transformative learning theory around transformative teaching and learning. Transformative teaching was a strategy in virtual learning that provided students with opportunities to use what they already knew so they could transform it into something new (Lee & Tsai, 2010; Mezirow, 2000). Mezirow (2000) stressed transformative learning was the process of changed views and habits based on experience (DeSapio, 2017). According to Kitchenham (2008), the use of transformative learning in the online learning environment led to strategies that could be successful to the student:

- Creating a safe environment;
- Encouraging students to think about their experiences, beliefs, and biases;
- Using teaching strategies that promoted student engagement and participation; and
- Posing real-world problems that addressed societal inequalities.

Teachers utilized these strategies to foster transformative learning to best support students in the classroom and in virtual learning (Kapasia et al., 2020; Lee & Tsai, 2010).

Significance of the Study

At the time of this study, limited research-based data existed about learning loss as a result of virtual learning. In this study, I expanded on existing literature and research by providing teacher perceptions of student learning environments as a result of virtual learning. The extant data collected by researchers did not include teacher perceptions of student learning environments at the rural high school level. The goal was to expand the opportunities for rural high school students and teachers to develop ways to close learning gaps and to improve virtual learning for students and teachers. The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment.

At one time, most American students went to small schools in small school districts in small rural communities (Wang et al., 1994). Over recent decades, however, both schools and districts grew dramatically in size. Districts merged and consolidated, forming larger districts and less smaller districts. Small, rural school districts decreased in number, from about 115,000 school districts at one time to about 15,000 districts today (Wang et al., 1994; Wargadinata et al., 2020). In the half-century from 1940 to 1990, the size of the average U.S. school district rose from 217 to 2,637 students and the size of the average school rose from 127 to 653 (Wang et al., 1994; Wargadinata et al., 2020). My topic was especially important to rural schools because small rural communities provided chances to build strong relationships and get to know students in both school and

out-of-school settings. Rural teachers made a huge impact for the students they teach.

At the time of this study, literature focused on the unexpected transition to virtual learning to continue providing education to students during COVID-19; however, the literature lacked discussion on the learning gaps that resulted from virtual learning, specifically in grade levels 9-12 (Abuhammad, 2020; Hannum et al., 2008; Hodges et al., 2020; Kapasia et al., 2020; Rahiem, 2020). Through this study, I filled the gap regarding student learning environments resulting from virtual learning in the rural communities and high schools in East Tennessee.

Description of the Terms

In a qualitative study, researchers must clarify any terms that may have been ambiguous or had an unknown meaning (Roberts & Hyatt, 2019). I described the following terms according to how I used the terms in my study to clarify the purpose, research questions, and overall study (Creswell & Creswell, 2018).

Rural High Schools

Rural high schools serve less than 1,000 students in grades 9-12, within non-urban communities of 49,999 people or less. Boser (2013) noted the National Center for Education Statistics defined *rural* as territories that are more than 25 miles from urbanized areas and more than 10 miles away from urban clusters. The U.S. Census Bureau defined anything not considered urban as rural (Ratcliffe et al., 2016). The U.S. Census Bureau calculated urban areas based on population density and other factors to adjust for the geography of the landscape and the

ability for a geographic area to urbanize (Ratcliffe et al., 2016). For the purpose of this study, areas with a population of 50,000 or more were considered urban.

Student Classroom Performance

Lamas (2015) defined *student classroom performance* as the act of performing or doing something successfully using knowledge as distinguished from merely possessing it. For the purposes of this study, I defined *student classroom performance* as the measurement of student achievement across various academic subjects. Teachers typically measure achievement using classroom performance, graduation rates and results from standardized tests. According to Kapasia et al. (2020), students' classroom performance depended on several socioeconomic factors like students' attendance in the class, family income, mother's and father's education, teacher-student ratio, presence of a trained teacher in school, sex of the student, and distance of schools.

Student Learning Loss

Strauss (2021) defined *learning loss* as any specific or general loss of knowledge and skills or reversals in academic progress, most commonly due to extended gaps or discontinuities in a student's education.

Student Emotional Health

David (2016) defined *student emotional health* as a student's ability to accept and manage feelings through challenge and change. For the purposes of this study, I defined *student emotional health* as how students think and feel. Student emotional health was about students' sense of wellbeing, their ability to cope with life events, and how students acknowledged their own emotions.

Student Motivation

Hardré and Sullivan (2009) defined *student motivation* as students' desire or lack of desire to participate in the learning process. Student motivation also included students' involvement or noninvolvement in academic activities (Hardré & Sullivan, 2009).

Student Personalized Instruction

Kronholz (2011) defined *student personalized instruction* as an educational approach that aimed to customize learning for each student's strengths, needs, skills, and interests. With *student personalized instruction*, each student received a learning plan based on what students know and how students learn best.

Virtual Learning Environments

Racheva (2017) defined *virtual learning environments* as a learning environment enhanced through utilizing computers and the internet both outside and inside the facilities of the educational organization. The instruction most commonly takes place in an online environment. The teaching activities are online, whereby the teacher and learners are physically separated (in terms of place, time, or both).

Organization of the Study

In Chapter I of this document, I introduced the topic of learning loss caused by virtual learning in rural school districts; the Statement of the Problem; research questions about teachers' perceptions of student learning environments as a result of virtual learning; the theoretical framework of the transformative learning theory; the Significance of the Study; and a description of important

terms. In Chapter II, I provided a review of related literature regarding rural high school learning environments, the COVID-19 pandemic, school closures and rural students, school closures and learning loss, virtual learning environments, benefits of virtual learning, challenges of virtual learning, and how student emotional health, motivation, and personalized instruction were related to student learning. Following the literature review, in Chapter III, I described the qualitative, semi-structured interview research design where I asked teachers in a rural county about their perceptions of student learning environments as a result of virtual learning. Further in Chapter III, I discussed the collection, transcription, and analysis of the interview data. I described the qualitative procedures used and how the procedures produced reliable and valid findings. Finally in Chapter III, I discussed the participants and setting of my study. I also discussed and provided evidence that established the validity and reliability of any instrumentation I used in the data collection process.

After completing the study, in Chapter IV, I analyzed results for the data collected from the 24 participants utilizing Creswell's (2018) Data Analysis Spiral. According to the data, participants believed there were obstacles for teachers and students to successfully use virtual learning. Participants believed the negative aspects of using virtual learning in rural schools will improve as more awareness will be brought to their situation. Further in Chapter IV, I addressed each research question, and presented a summary of the main points of the chapter.

In Chapter V, I summarized the findings, applied my results to my problem and purpose statements, considered implications for future research, and

offered recommendations for practices to be considered for implementation of virtual learning to enhance and improve student learning environments.

In this introductory chapter, I described an overview of the research study and its purpose. In the following chapter, Review of the Literature, I provided detailed histories, explanations, and clarifications for topics and contexts relevant to teacher perceptions of student learning environments during the COVID-19 pandemic in Tennessee rural high schools. Teacher perceptions of student learning environments during the COVID-19 pandemic were essential in my research in the Review of the Literature. For many rural schools, COVID-19 was the catalyst to virtual learning.

Chapter II: Review of the Literature

In March 2020, government officials issued the first COVID-19 stay-at-home order requiring closures of public schools to help stop the spread of the COVID-19 virus (Storey & Slavin, 2020). Many schools in the United States required virtual learning in place of in-person instruction so learning could continue (Abuhammad, 2020; Quezada et al., 2020). Virtual learning was when teachers taught a course either solely online or when a portion of face-to-face instruction was taught online along with virtual learning, in place of in-person instruction so learning could continue (Abuhammad, 2020; Kapasia et al., 2020; Quezada et al., 2020).

No one could have foreseen the impact COVID-19 would have on education (Gonzalez et al., 2020; Rapanta et al., 2020). Initial hopes for a brief interruption of a normal way of life were met with the harsh reality that COVID-19 would be around for months (Storey & Slavin, 2020). The stay-at-home order in the United States required teachers to make quick changes on behalf of their students, changing teaching and learning environments (Huang et al., 2020; Kapasia et al., 2020; Rahiem, 2020). Teachers switched from traditional classroom settings to virtual learning which served as virtual classrooms to communicate with students and parents (Rapanta et al., 2020). Students lacked access to traditional classroom learning, and virtual learning required increased self-regulation and motivation from students who experienced less face-to-face support than they were used to getting from teachers in traditional classroom settings (Rahiem, 2020). The stay-at-home order due to COVID-19 was known as a *preventive lockdown*, defined as a preemptive plan to

address an unusual scenario or a weakness in a system to preempt any danger to ensure the safety and security of people (Storey & Slavin, 2020). Lockdown orders in the United States required citizens to stay at home and to only leave home for necessities such as groceries and work (Storey & Slavin, 2020).

The switch from traditional classroom learning to virtual learning had an adverse effect on student learning (Hassan et al., 2020; Huber & Helm, 2020; Yates et al., 2020). Teachers had to thrust students into a learning environment that demanded them to have the skills to learn virtually (Kapasia et al., 2020). This produced culture shock for students (Huber & Helm, 2020; Lassoued et al., 2020). While some students were successful when they transitioned to virtual learning, other students struggled due to a lack of understanding of how to use and navigate virtual learning (Huber & Helm, 2020). Students faced challenges in their transition to virtual learning, such as poor internet connectivity and access, lack of understanding of how to use virtual learning, and lack of motivation to learn (Wargadinata et al., 2020; Yates et al., 2020). Given challenges for students, I investigated how the transition to virtual learning during COVID-19 altered teaching and learning from multiple perspectives with my focus being learning loss as a result of virtual learning. The information from this literature review provided the foundation for this study of how learning environments changed due to COVID-19 and how the transition from traditional classrooms to virtual learning altered learning for rural students and transformed teaching and learning (Hassan et al., 2020; Kapasia et al., 2020; Rapanta et al., 2020).

Rapanta et al. (2020) defined virtual learning as a type of teaching and learning situation consisting of the following situations:

- The learner was at a distance from the tutor/instructor;

- The learner used some form of technology to access the learning materials;

- The learner used technology to interact with the tutor/instructor and with other learners; and

- Teachers provided out-of-classroom support to learners.

The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment. COVID-19 presented benefits and challenges to teaching and learning environments (Hassan et al., 2020; Nambiar, 2020). COVID-19 altered learning environments of students, particularly rural students (Dorn et al., 2020). Rural students lacked access to technology devices and internet connection making the transition to virtual learning difficult (Dorn et al., 2020; Javurek & Mendenhall, 2020). The virtual learning environments due to COVID-19 were catalysts for other occurrences, such as widened learning gaps in rural students, reduced emotional health of students, and students' lack of motivation to learn virtually (Hassan et al., 2020; Kaden, 2020; Kuhfeld et al., 2020).

I began this literature review by describing rural high school learning environments before COVID-19 occurred. I then defined COVID-19 and how it originated and moved from China to other countries. I later defined learning

environments and focused on how learning environments changed due to the COVID-19 pandemic when schools transitioned to virtual-only instruction. At the time of this study, the literature reflected a lack of focus on teachers' perceptions of learning environments in rural areas and secondary grades 9-12 during COVID-19. Because of the lack of research on these topics at the time of this study, I focused this study on how the COVID-19 pandemic presented benefits and challenges to virtual learning, how altered learning environments affected rural students, and transformed teaching and learning.

I investigated the topics of my study by searching peer-reviewed articles in the online databases of Education Resources Information Center, Google Scholar, and the Lincoln Memorial University libraries. I made use of Boolean search strings that included words such as COVID-19, impact, public schools, virtual learning, pandemic, rural schools, emotional health, teachers' perceptions, students' perceptions, and challenges. I evaluated these search results by looking for peer-reviewed articles about teachers' perceptions and students' perceptions of learning environments during COVID-19. Both teacher and student perceptions were important in understanding how COVID-19 impacted learning environments. At the time of my study, I found little research on the topic of teacher perceptions of student learning environments as a result of virtual learning in rural high schools. Extant studies focused on college-level students or elementary-level students. Further, at the time of my research, rural high schools were not a focus of research studies. This may be because urban areas were more researched due to higher populations. I avoided topics that did not pertain specifically to learning environments or public schools. I also reviewed studies

where the researchers investigated the qualitative and quantitative effects of impacted learning environments during the shutdown time of COVID-19.

Rural High School Learning Environments

Rural areas encompassed all population, housing, and territory not included within an urban area (Minkos & Gelbar, 2020). Rural high schools were grades 9-12 located in districts with fewer than 600 students and in towns of less than 2,500 people (Minkos & Gelbar, 2020; Yates et al., 2020). Given their prevalence and importance in their communities, rural high schools merit more attention than previously given (Javurek & Mendenhall, 2020). Rural high schools acted as the center of social, recreational, and cultural life in their communities (Minkos & Gelbar, 2020). Because of their small size, researchers and policy analysts overlooked rural schools (Lassoued et al., 2020); however, according to Wargadinata et al. (2020), approximately one-half of school districts, one-third of schools, and one-fifth of students in the United States were in rural areas with higher populations at the high school level.

Rural high schools had challenges such as high levels of poverty found in many rural communities (Javurek & Mendenhall, 2020; Yates et al., 2020). Nationwide, 64% of rural counties had high rates of child poverty compared with 47% of urban counties (Minkos & Gelbar, 2020; Yates et al., 2020). Students who lived in poverty faced educational disadvantages, such as food and housing insecurities (David, 2016; Minkos & Gelbar, 2020; Wargadinata et al., 2020). Students who lived in poverty did not have adequate resources at home, and they had less access to enriching activities outside of school. These students entered

school with a readiness gap that grew as they got older (Bethel et al., 2014; Wargadinata et al., 2020; Yates et al., 2020).

Another problem faced by rural high schools was a lack of funding (Hassan et al., 2020; Kronholz, 2011). Rural school districts received less funding because of their smaller populations, but a lower student population did not always correspond with lower costs (Minkos & Gelbar, 2020). Students in rural districts were spread out over a large geographical area (Hannum et al., 2008; Wang et al., 1994). This resulted in high transportation costs per student because buses had to travel further distances to students' homes (Bethel et al., 2014; Minkos & Gelbar, 2020). Smaller rural schools were at a disadvantage for funding in other ways, such as the Title I funding formula, which emphasized the number of students in poverty rather than the percentage of a school's students who was in poverty (Hassan et al., 2020; Racheva, 2017; Raheim, 2020). The U.S. Department of Education (2018) defined Title I as a part of the Elementary and Secondary Education Act that provided financial assistance to local educational agencies and schools with high numbers or high percentages of children from low-income families to help ensure all children met challenging state academic standards.

Students in rural high schools had unique problems relating to academic performance (Dorn et al., 2020). Rural high school students had lower literacy rates than urban and suburban high school students, which was likely a reflection of the high levels of poverty found in rural areas (Raheim, 2020; Wang et al., 1994). Students in rural high schools had access to fewer advanced classes than urban students; providing higher-level coursework was a challenge for rural

schools due to smaller teaching staffs (Minkos & Gelbar, 2020). Offering

advanced coursework required additional training or more teachers, something

rural schools had difficulty to fund (Bethel et al., 2014; Hassan et al., 2020).

According to the National Center for Education Statistics (2015) rural students

scored higher on the National Assessment of Education Progress (NAEP)

compared to their urban peers and the national average (see Figure 1).

Figure 1

Average National Assessment of Education Progress Math and Reading Scale
Score of High School Public School Students
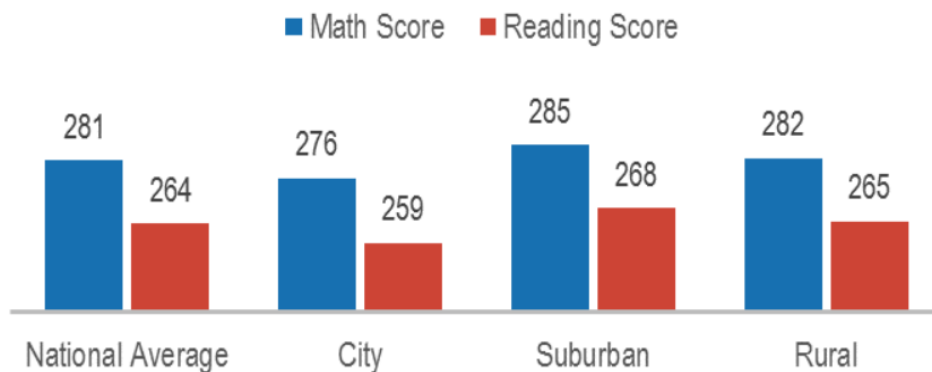
Source: National Assessment of Education Progress (2015).

Finally, while rural students were more likely to graduate from high school

compared to their urban peers (Dorn et al., 2020), they were less likely to enter

and graduate from college (Kronholz, 2011; Minkos & Gelbar, 2020).

According to the U.S. Department of Agriculture (2021), 40% of the rural

population ages 25 and older had completed high school in 1960. By 2019 that

number increased to 87% (U.S. Department of Agriculture, 2021). Over the same

period, the proportion of rural adults 25 and older with a bachelor's degree or higher increased from 5% to 21% (U.S. Department of Agriculture, 2021). In urban areas, this proportion stood at 35% in 2019 (U.S. Department of Agriculture, 2021). The reasons rural students did not attend college included financial concerns (Minkos & Gelbar, 2020), physical distance from colleges (Kronholz, 2011), and lack of preparation from advanced coursework (Raheim, 2020) (see Figure 2).

Figure 2

U.S. Educational Attainment in Rural and Urban Areas in 2000 and in 2019
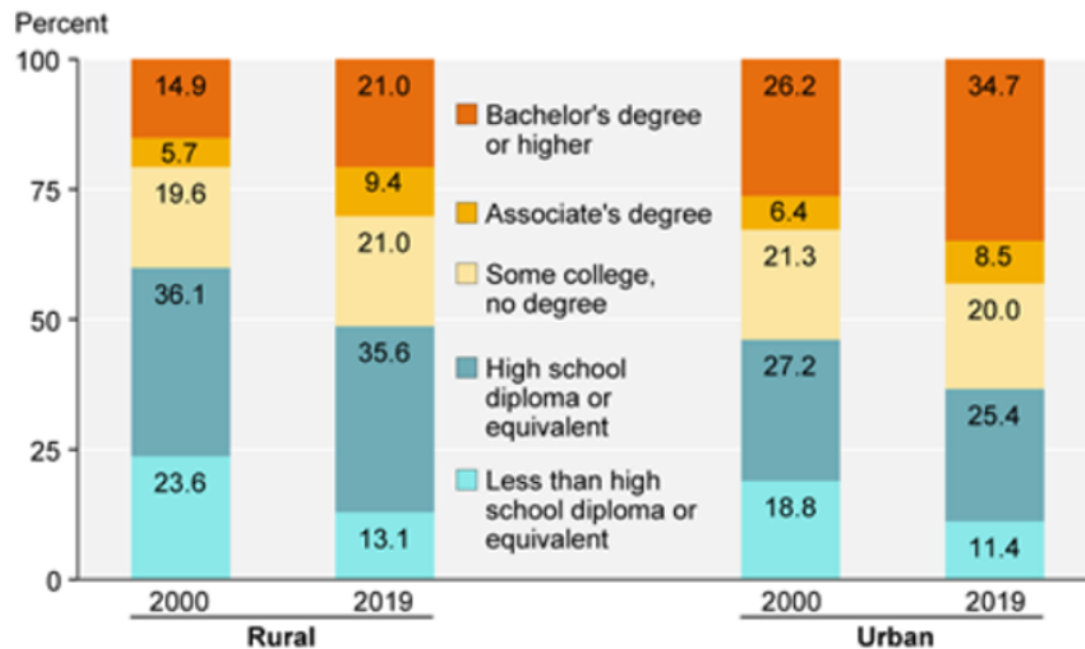
Source: U.S. Department of Agriculture (2021).

Rural high schools had lower teacher-to-student ratios than urban high schools, allowing more personalized instruction for students (Kapasia et al., 2020); however rural school districts suffered from a severe teacher shortage

(Hassan et al., 2020). Teachers at rural schools had lower salaries and benefits than their urban counterparts (Hassan et al., 2020). Teachers and principals lacked access to high-quality, relevant professional development opportunities, as rural schools were far away from the location of such events (Bethel et al., 2014; Dorn et al., 2020), and the programming was not relevant to the needs of rural schools (Hassan et al., 2020; Minkos & Gelbar, 2020). Rural teachers faced professional isolation (Raheim, 2020); the smaller staffs of rural schools meant teachers and principals needed to take on additional roles and responsibilities, such as building administration or bus driving (Minkos & Gelbar, 2020). Because of all these factors, rural schools faced high teacher turnover rates (Raheim, 2020). According to Latterman and Steffes (2017), the more rural the school, the more challenging recruiting and retaining a qualified teacher became. Schools and Staffing Survey (SASS) data showed in the 2012-2013 school year, the attrition rate for rural teachers was 8.4%, compared with 7.3% for suburban teachers and 7.9% for urban teachers. As a result of the high turnover rate, rural school districts spent more time and resources hiring and training new teachers, further compounding their funding problems (Hassan et al., 2020; Minkos & Gelbar, 2020; Raheim, 2020).

The COVID-19 pandemic resulted in an increase in teachers' workloads, lower levels of happiness and wellbeing, and a rise in anxiety and stress (Fullard, 2021). These factors made teachers want to leave the profession (Fullard, 2021; Rahiem, 2020). In the United States, principals were concerned COVID-19 would lead to a mass exodus of teachers (Fullard, 2021) (see Figure 3).

Figure 3

Classroom Teachers Reported Likelihood of Leaving the Teaching Profession by the Summer of 2021, 2022, and 2025
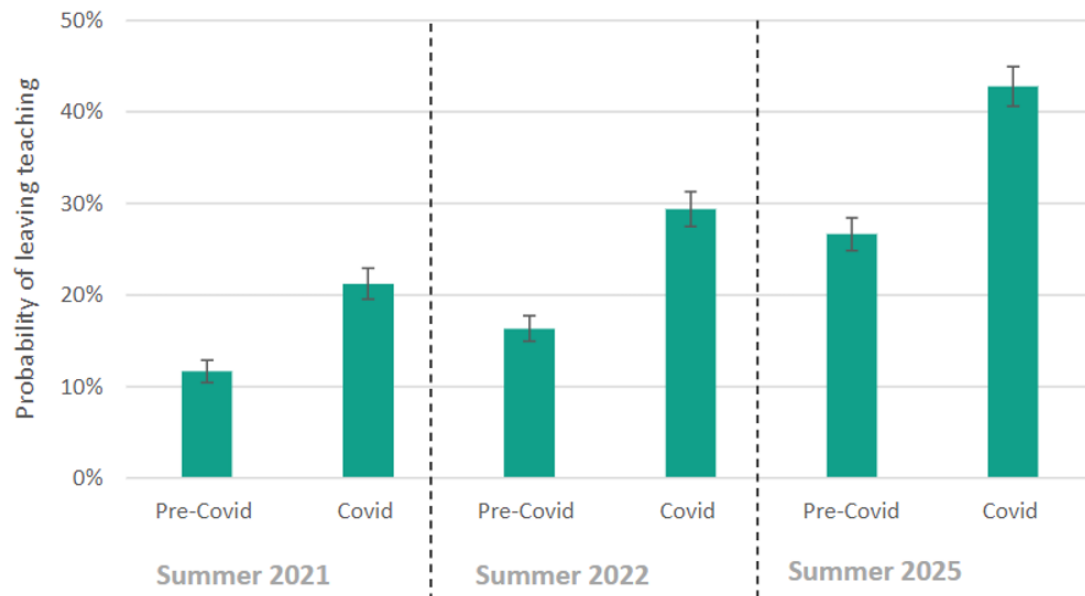
Source: Fullard (2021).

The COVID-19 Pandemic

The global outbreak of the COVID-19 virus affected 220 countries and territories around the world (Storey & Slavin, 2020; Wargadinata et al., 2020). The World Health Organization (WHO). first identified the outbreak in December 2019 in Wuhan, China (Kapasia et al., 2020; Rapanta et al., 2020; Storey & Slavin, 2020). Health officials worldwide cautioned the public to take responsible care such as handwashing, wearing face masks, and social distancing (Dorn et al., 2020; Kuhfeld et al., 2020; Storey & Slavin, 2020; Wargadinata et al., 2020). In the United States, individual state governors mandated lockdown orders to flatten the curve of the infected population and control the transmission of COVID-19

(Sintema, 2020; Story & Slavin, 2020). The mandated lockdown orders brought

about virtual learning for students (Rahiem, 2020; Rapanta et al., 2020). The

Centers for Disease Control and Prevention defined *flattening the curve* as a

visual display of a bell curve that shows the onset of illness among cases

associated with an outbreak and making the curve flatter over time by preventing

transfer of the illness (Storey & Slavin, 2020). The visual display, a graph,

showed the comparison of healthcare capacity with and without protective

measures over time (Storey & Slavin, 2020) (see Figure 4).

Figure 4

Comparison of Healthcare Capacity in Patients that Used and Did Not Use

Protective Measures in Contracting COVID-19
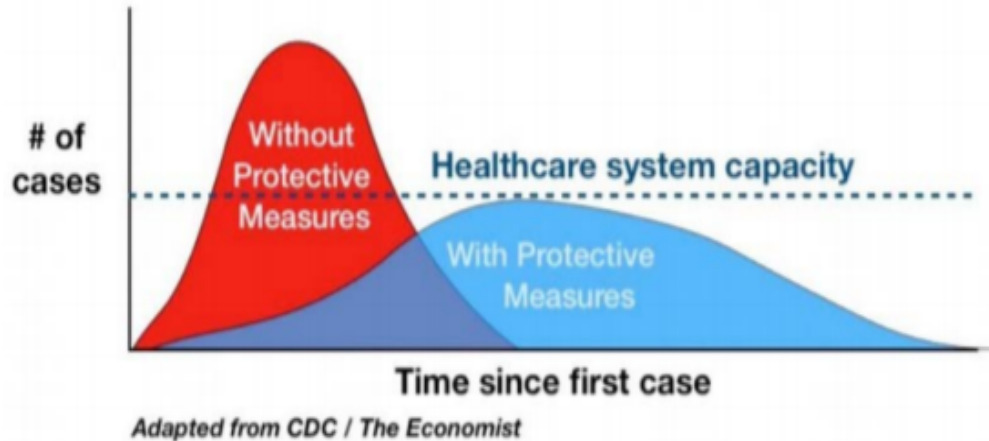
Source: Storey and Slavin (2020, p. 12).

There was a high curve created by a steep increase in the number of cases

per day, followed by a sharp decrease in the number of cases due to the

implementation of protective measures (Storey & Slavin, 2020). A gradual

increase in the number of cases per day and a gradual decrease resulted in a flatter

curve (Minkos & Gelbar, 2020; Storey & Slavin, 2020). Over time, the number of

new cases that occurred each day decreased (Javurek & Mendenhall, 2020; Storey

& Slavin, 2020). It was necessary to flatten the curve during the outbreak of

COVID-19 because the hospitals and health care facilities could have exceeded

capacity worldwide if too many people sought healthcare simultaneously (i.e., red

curve) (Storey & Slavin, 2020). Scientists predicted the flatter the curve, the more

likely hospitals would continue to deliver care to the people they served (i.e., blue

curve) (Storey & Slavin, 2020). The slowdown of the transmission of COVID-19

resulted in a flatter curve (Javurek & Mendenhall, 2020; Minkos & Gelbar, 2020;

Storey & Slavin, 2020). The timeline of major events below showed how quickly

COVID-19 evolved (see Figure 5).

Figure 5

Timeline of Major COVID-19 Events in the United States
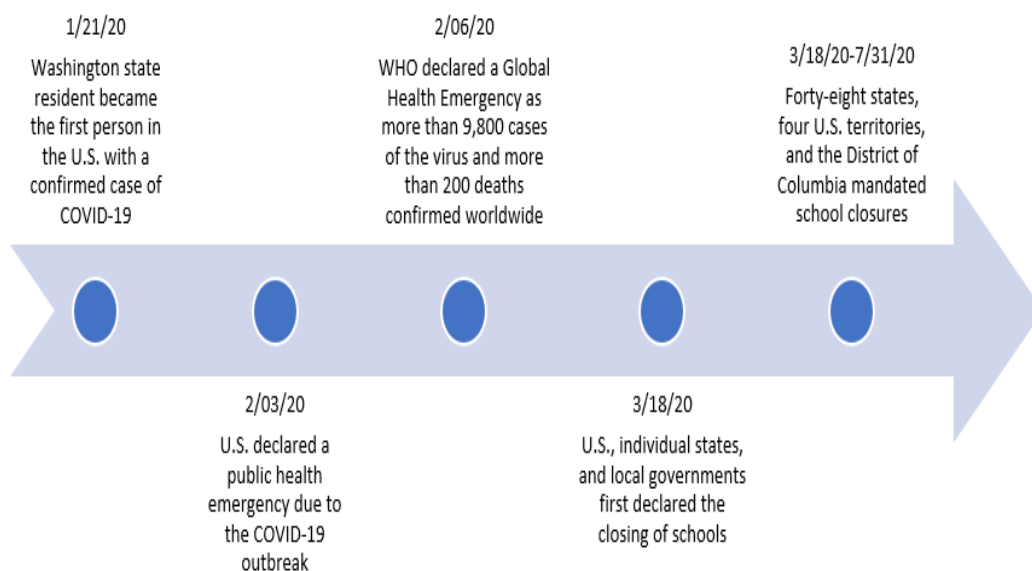
On January 21, 2020, a Washington state resident became the first person in the United States with a confirmed case of COVID-19, having returned from Wuhan, China, on January 15, 2020 (Pokhrel & Chhetri, 2021; Storey & Slavin, 2020). On February 3, 2020, the United States declared a public health emergency due to the COVID-19 outbreak (Pokhrel & Chhetri, 2021; Storey & Slavin, 2020). The announcement of a declared public health emergency came three days after the WHO declared a Global Health Emergency as more than 9,800 cases of the virus and more than 200 deaths had been confirmed worldwide (Pokhrel & Chhetri, 2021; Rahiem, 2020; Storey & Slavin, 2020). In the United States, individual state and local governments first declared the closing of schools in the third week of March 2020 to stop the spread of the COVID-19 virus (Javurek & Mendenhall, 2020; Minkos & Gelbar, 2020; Pokhrel & Chhetri, 2021; Storey & Slavin, 2020). Forty-eight states, four U.S. territories, and the District of Columbia mandated school closures from March 2020 to July 2020 (Minkos & Gelbar, 2020; Pokhrel & Chhetri, 2021; Rahiem, 2020; Storey & Slavin, 2020).

The lockdown due to the COVID-19 pandemic caused many changes in the United States (Pokhrel & Chhetri, 2021; Rahiem, 2020; Storey & Slavin, 2020). The lockdown altered learning environments, teaching, and learning (Javurek & Mendenhall, 2020; Rahiem, 2020). Schools discontinued face-to-face teaching during the lockdown period from March 2020 to July 2020 (Storey & Slavin, 2020). The implementation of virtual teaching and learning strategies gave normalcy to a stressful situation by allowing teachers and students to stay connected and to be able to collaborate instead of being completely isolated (Dorn et al., 2020; Minkos & Gelbar, 2020; Rahiem, 2020). The COVID-19 pandemic

interrupted education (Kuhfeld et al., 2020). Students, parents, teachers, had to change their routines and activities. School closures led to greater use of virtual learning (Kaden, 2020). Virtual learning ensured learning continuity during the COVID-19 pandemic (Dorn et al., 2020; Minkos & Gelbar, 2020; Rahiem, 2020).

School Closures and Rural Students

Existing research on the effects summer vacation, weather-related school closures, and out-of-school time due to absenteeism had on learning provided a rough estimate of how the time out of school due to COVID-19 altered achievement when students returned to traditional instruction (Kuhfeld et al., 2020). Learning loss during extended school closures varied depending on students' access to virtual learning, the quality of remote instruction, home support, and the degree of engagement (Dorn et al., 2020). Many students and teachers lacked internet service in rural areas (Huang et al., 2020; Kaden, 2020). Teachers best supported students during extended school closures who had access to technology and the capability to access technology (Kapasia et al., 2020; Rahiem, 2020). Minkos and Gelbar (2020) researched extended school closures and found schools where teachers were prepared to address a wide variety of student academic needs were more successful than schools that were not prepared during prolonged school closure. Students from rural or digitally disadvantaged families were the most susceptible to falling behind academically (Dorn et al., 2020; Minkos & Gelbar, 2020).

Kapasia et al. (2020) examined the effect of the COVID-19 lockdown on high school students in rural areas. Students, particularly those from rural areas, were confronted with various problems related to depression, poor network

connectivity, and an unfavorable learning environment at home (Dorn et al., 2020; Huang et al., 2020; Kapasia et al., 2020). Leaders of school systems did not equip teachers for virtual learning or digital resource use (Kapasia et al., 2020; Quezada et al., 2020). Students did not have the required devices, internet access, or resources needed to study remotely online (Raheim, 2020). Further, some learners and teachers were not familiar with the digital platforms such as Zoom and online programs such as Canvas, which they had to use at such short notice (Huber & Helm, 2020; Wargadinata et al., 2020).

Minkos and Gelbar (2020) indicated COVID-19 disproportionately impacted rural students. Javurek and Mendenhall (2020) described rural students as *digitally disadvantaged* because of circumstances beyond their control, including financial and social hardships, as well as problems within students' families (Kapasia et al., 2020; Minkos & Gelbar, 2020). Digitally disadvantaged also included students who, under regular circumstances where a quick transition to virtual learning would not happen, would not be disadvantaged by some sort of natural disaster (Dorn et al., 2020; Javurek & Mendenhall, 2020). Inequalities of access and opportunity during COVID-19 occurred in rural areas where known issues related to a reliable power supply to their homes and internet availability existed (Chaturvedi et al., 2020; Dorn et al., 2020). Further, rural areas consisted of more poverty and less technology than urbanized areas (Minkos & Gelbar, 2020) (see Figure 6).

Figure 6

American Workers in Poverty in 2015

Percent of U.S. householders aged 25-54 that worked at least part of the year in 2015, by poverty threshold.

■ Below 50% of poverty line   ■ 50-99% of poverty line   ■ 100-149% of poverty line
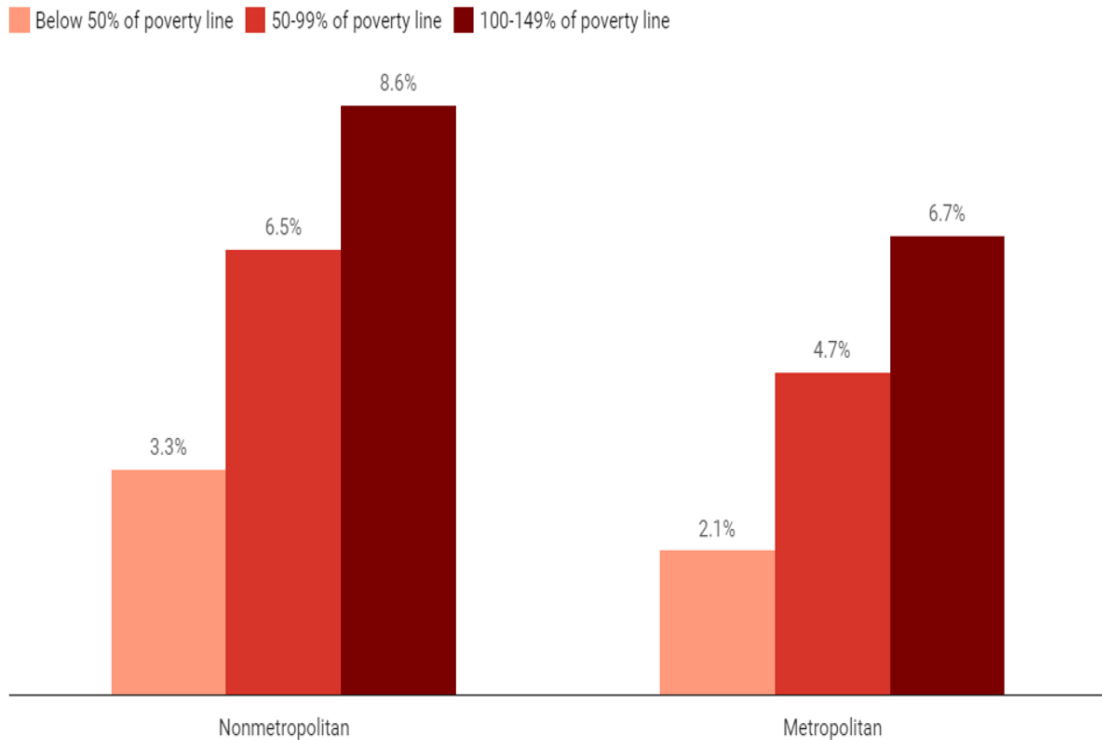
Source: Minkos & Gelbar (2020).

The digital divide that came from virtual learning during COVID-19 impacted students in rural communities more than students in nonrural communities (Javurek & Mendenhall, 2020; Kapasia et al., 2020). Minkos and Gelbar (2020) defined the term *digital divide* as the gap between individuals, households, businesses, and geographic areas at different socio-economic levels with their opportunities to access information and communication and to their use of the internet for a wide variety of activities. Kapasia et al. (2020) stated students from remote areas faced enormous challenges for studying and participating in virtual learning during the COVID-19 pandemic.

The short-term and long-term effects of COVID-19 were complex, multifaceted, and particularly difficult for digitally disadvantaged students (Minkos & Gelbar, 2020). Kaden (2020) showed short-term effects of the digitally disadvantaged where many rural students did not have reliable internet connections at home and the costs for internet were high. Kuhfeld et al. (2020) showed long-term effects for rural students being out of school for an extended time as lower reading comprehension, lower math comprehension, and lower self-esteem because they lacked access to virtual learning resources.

School Closures and Learning Loss

In the spring of 2020, it remained unclear how effective virtual learning was during the COVID-19 shutdown, given K-12 students and teachers had little experience with online instruction and gaps in technology existed in many parts of the country (Kuhfeld et al., 2020). There were persistent achievement gaps across income levels and among White students, Black students, and Hispanic students (Kaden, 2020). School shutdowns led to excessive learning loss for these students causing possible long-term effects on these students' well-being (Dorn et al., 2020; Kapasia et al., 2020).

Additionally, parents in rural areas faced barriers to assisting their children with virtual learning during the pandemic (Abuhammad, 2020; Lassoued et al., 2020). Parents performed the responsibility of helping teachers to teach their students from home (Javurek & Mendenhall, 2020; Yates et al., 2020). For parents with lower education levels, this was a difficult task (Hassan et al., 2020; Huang et al., 2020); parents informed teachers that they could not help their children study specific subjects and handle the necessary technology to help their

child's learning experience (Abuhammad, 2020; Hassan et al., 2020; Huang et al., 2020). The qualitative research of Abuhammad (2020) used Jordanian Facebook groups to explore parents' perceptions regarding the challenges of virtual learning (e.g., personal, technical, logistical, and financial) faced by their children during the COVID-19 pandemic. Abuhammad (2020) concluded modifications were required to remove these challenges to find ways to develop relationships with other online students and teachers and to implement support strategies for lower-achieving students.

Gross and Opalka (2020) identified gaps between the expectations for instruction, staying in touch with students, and progress monitoring from a sample of 477 school systems in the United States. Gross and Opalka (2020) further found only 27% of rural and small-town school districts expected teachers to provide virtual instruction, compared with over half of urban school districts. Gross and Opalka (2020) stated there were similar gaps for expectations to monitor engagement: 43% of rural school districts expected teachers to regularly take attendance or check-in with their students, compared with 65% of urban districts. While it was common for rural areas not to have the technological support that was accessible in urban areas, Gross and Opalka (2020) identified a rural-urban divide in teaching and learning expectations that resulted in the economically disadvantaged students in rural areas being left behind due to lack of services during the COVID-19 pandemic. Gross and Opalka (2020) further showed affluent districts in urban areas were twice as likely as high-poverty districts to require live video instruction so students could interact with their teachers live. Gross and Opalka (2020) determined the need to have equal

expectations of teaching and learning during a pandemic. All students are entitled to equal education and expectations regardless of economic means (Chafouleas et al., 2020; Gross & Opalka, 2020; Lassoued et al., 2020).

Virtual Learning Environments

Bates (2019) described the following as a learning environment:

A diverse physical location, context, and culture in which students learn. Since students may learn in various settings, such as outside-of-school locations and outdoor environments, the term was often used as a more accurate or preferred alternative to the classroom, which has more limited and traditional connotations, such as a room with rows of desks and a chalkboard. The term *learning environment* also has to do with how individuals interact with and treat one another, as well as how teachers organize an educational setting to facilitate learning. (p. 271-272)

Virtual learning had been in existence since 1999 when it was first used at the collegiate level to allow students who could not attend college due to geographical or time constraints the opportunity to learn (Hodges et al., 2020). There were varied terms for virtual learning:

- Web-based (Lassoued et al., 2020);

- Online (Raheim, 2020);

- Virtual learning (Hannum et al., 2008);

- Blended learning (Radha et al., 2020); and

- Computer-mediated learning (Noor et al., 2020).

Lassoued et al. (2020) described web-based learning as an educational situation that required communication between the teacher and the student through multiple media via modern audio-visual communication technologies. Raheim (2020) defined online learning as education that took place over the internet. Hannum et al. (2008) defined virtual learning as a process that schools used to meet students' learning needs. Radha et al. (2020) defined blended learning as a style of education in which students learned through online media as well as traditional face-to-face teaching. Noor et al. (2020) defined computer-mediated learning as any human communication that occurred using electronic devices. For this literature review, I used the term *virtual learning* for consistency.

While virtual learning evolved in different forms, it continued to provide opportunities for students to learn outside the physical classroom to promote student personalized instruction (Goodyear & Dimitriadis, 2013). A typical virtual learning environment had web and mobile applications that allowed learners to access their course from anywhere at any time (Hannum et al., 2008; Rahiem, 2020). Virtual learning enabled teachers to deliver online lessons via Google Classroom, Zoom, and Microsoft Teams (Noor et al., 2020; Yates et al., 2020). Virtual learning required highly collaborative features like email, chat, wikis, and blogs (Bukhkalo et al., 2018). Virtual learning allowed innovative lesson delivery with the capability of gamified instruction (i.e., learning games meant to supplement instruction) and flipped classrooms that helped promote student classroom performance (Bukhkalo et al., 2018; Hannum et al., 2008). Flipped classrooms reversed the traditional homework-first, discussion-later format (Bukhkalo et al., 2018). Virtual learning allowed the use of synchronous (i.e.,

learning in which the learner and teacher are in the same place, at the same time) and asynchronous (i.e., learning that takes place virtually and can occur in different times particular to each learner) learning in classes (Bukhkalo et al., 2018; Rahiem, 2020). For example, a teacher would meet with students the first 15 minutes of the class to discuss concepts, then would leave the online platform so students could work on their assignments (Rahiem, 2020).

Virtual learning had been a tool to support student emotional health and motivation because teachers used platforms such as Zoom and Google Meet for regular check-ins with students to continue to build and maintain trusting relationships (Hodges et al., 2020). Regular check-ins with teachers helped students with positive emotional health and improved student motivation to learn (Hodges et al., 2020; Rapanta et al., 2020). Teachers who established regular and predictable communication routines with students had better relationships with their students (Yates et al., 2020). Once teachers established check-in routines, teachers posted videos that helped create flexibility for students and families, giving even more emotional support for students (Rapanta et al., 2020; Yates et al., 2020).

Virtual Learning Precipitated by COVID-19

Throughout history, people perceived quality education to be a long-term rescue for challenges in society; therefore, the need to find an alternative solution to the traditional classroom during COVID-19 concerned all stakeholders (Hassan et al., 2020; Radha et al., 2020). The best option was virtual learning (Hassan et al., 2020; Raheim, 2020; Rapanta, 2020); during COVID-19, virtual learning was a practical, targeted, and essential means of teaching and learning (Yates

et al., 2020). State and district leaders helped provide access to the latest methods or capabilities of virtual learning but the areas that did not use the latest methods or capabilities became underdeveloped, and it would be difficult for them to coexist in the information era (Lassoued et al., 2020; Yates et al., 2020).

Adnan and Anwar (2020) stated successful virtual learning implemented dependable technology that used engaging virtual learning techniques and ensured online delivery. Kaden (2020) stated the sudden move to virtual learning might have been the catalyst to create a new, more effective teaching methods. The necessary shift to virtual learning forced a new way of teaching and learning. Researchers found evidence that virtual learning improved the education experience for teachers and students (e.g., teachers and students had more flexibility of when and where they learned) (Ghazi-Saidi et al., 2020; Javurek & Mendenhall, 2020; Nambiar, 2020). Virtual teaching and learning platforms strengthened education because they provided additional tools when traditional classroom settings were impossible (Javurek & Mendenhall, 2020; Nambiar, 2020). Overall, the COVID-19 pandemic enhanced virtual learning practices (Noor et al., 2020).

Virtual Learning in the Midst of COVID-19

COVID-19 changed student learning environments from traditional classroom settings to virtual learning settings. Approximately four months after the start of COVID-19, the United States government began to make decisions regarding going back to the way things were before COVID-19 began, a process that Sahin and Shelley (2020) referred to as *normalization*. Local governments began discussing reopening schools on hybrid schedules, which meant alternating

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students so half the students at a school were in person on certain days while the other half were virtual (Dorn et al., 2020; Sahin & Shelley, 2020). Teachers made changes in teaching due to COVID-19, which resulted in a need to innovate and implement virtual learning (Dorn et al., 2020). As a result of COVID-19, school districts designed an expansion of virtual learning options for K-12 students (Dhawan, 2020). According to Kuhfeld et al. (2020) COVID-19 caused school closures that sent over 50 million K-12 students home to learn virtually. The challenges and opportunities of education during the COVID-19 pandemic allowed schools an opportunity to identify what improvements needed to be made so all teachers and students could best be supported in future situations that precipitated school closure and chaos like the COVID-19 pandemic (Rahiem, 2020).

Benefits of Virtual Learning

I found benefits of virtual learning in the literature, including students having more free time (Rahiem, 2020), students accessing multiple virtual learning platforms (Wargadinata et al., 2020), and students accessing recorded instruction (Hassan et al., 2020; Wargadinata et al., 2020). In virtual learning, teachers fostered learning in new ways to make education more equitable, resilient, and practical because they formed personal connections with each student using virtual platforms (Javuresuk & Mendenhall, 2020; Radha et al., 2020). According to Raheim (2020), the biggest lesson from the COVID-19 crisis was disasters or health crises could arise at any moment; therefore, preparation must be essential to enable society to face such threats. Students had to adapt, and

teachers had to be prepared with direct skills to transform their teaching during

such emergencies (Chafouleas et al., 2020; Minkos & Gelbar, 2020).

Online education was a necessary learning and teaching platform during

the COVID-19 pandemic, but it was also an alternative and innovative model that

should continue to be used in conjunction with classroom teaching to prepare

students and teachers if other emergencies arose causing long-term school

closures (Wargadinata et al., 2020). During the COVID-19 pandemic, teachers

and school leaders successfully strengthened skills and practices related to the

implementation of virtual learning environments and addressing various student

needs (Hassan et al., 2020; Radha et al., 2020). Lessons learned from the

challenging times of COVID-19 were valuable in addressing achievement gaps in

a meaningful, long-term way by ensuring all students had equal access to

instruction and learning materials (Minkos & Gelbar, 2020; Nambiar, 2020).

Hassan et al. (2020) concluded teachers and students should not consider online

platforms for virtual teaching and learning a viable solution just during

emergencies. Instead, virtual learning should be used in conjunction with

classroom teaching as a blended learning model of education to improve teaching

and learning (Chafouleas et al., 2020; Hassan et al., 2020; Javurek & Mendenhall,

2020).

Teaching Benefits

Teachers reported the positive aspects of online teaching as improved

class structure, minimalized disturbances, and implemented innovative tools like

screen share (Nambiar, 2020). Virtual instruction also incorporated more visual

elements such as graphs, charts, and videos, which could be preserved in the

classes' content for future reference and use (Nambiar, 2020). Technology could not replace a caring, high-quality teacher, but in combination with adult and peer interactions, digital tools and data expanded teachers' reach and increased their impact by allowing teachers to continue teaching during the COVID-19 pandemic (Javurek & Mendenhall, 2020). School faculty who had online learning material in place possessed infrastructure knowledge, technical skills, and online teaching experience (Germani et al., 2020; Rahiem, 2020). This facilitated smooth navigation of teaching and learning during the COVID-19 shut down (Ghazi-Saidi et al., 2020). Researchers Scull et al. (2020) highlighted the importance of engaging learners through making personal connections. Scull et al. (2020) also drew attention to the benefits of using various tools to differentiate the curriculum and optimize all learners' participation. Scull et al. (2020) found virtual learning helped teachers make personal connections with students who were not as likely to speak out in the classroom. Students were more comfortable to interact in the virtual learning process than in the traditional setting (Hodges et al., 2020; Scull et al., 2020).

Karakaya et al. (2020) performed a qualitative phenomenological study that involved a sample of 62 biology teachers. The researchers used semi-structured interviews to collect the data and evaluated the data with a content analysis method (Karakaya et al., 2020). Karakaya et al. (2020) found virtual learning increased technology use, cooperation, empathy, and positive thinking. For example, students participated in regular class discussions and accessed online assignments regularly (Karakaya et al., 2020). In other research by Scull et al. (2020), teachers worked to strengthen participation by building

relationships and connecting with the students to encourage them to develop help-seeking behaviors and model effective online study habits.

Researchers identified an increase and change in workload for teachers (Hodges et al., 2020; Kaden, 2020; Rahiem, 2020). Online education supported learning for students during COVID-19, but teachers had to individualize the design to reduce inequality and social divides (Dorn et al., 2020; Zimmerman, 2008). Teachers had the potential to learn how to use new technology and have proved themselves with minimal resources during the pandemic (Rahiem, 2020). Noor et al. (2020) suggested teachers should attend virtual workshops and development courses organized by principals to ensure more effective online teaching results. Noor et al. (2020) described teachers as the custodians of our future generation who continued to provide their services with great enthusiasm, even during the pandemic crisis.

Learning Benefits

Researchers Wargadinata et al. (2020) collected data in a descriptive, qualitative study through observation, questionnaires, interviews, and documentation determined learning took place optimally because students and lecturers communicated and shared through virtual learning resources. Wargadinata et al. (2020) recommended other researchers uncover the solution to obstacles experienced by students in virtual learning and the development of other media to implement effective online lectures. The amount of work assigned to students and quality of virtual instruction for the students' varied (Minkos & Gelbar, 2020). According to researchers, students said studying at home allowed them the flexibility to control their own time, which provided them with

additional time for self-care, daily exercise, and family time (Radha et al., 2020; Rahiem, 2020; Wargadinata et al., 2020). At the same time, students also studied in a comfortable and familiar environment (Rahiem, 2020; Scull et al., 2020). Radha et al. (2020) collected primary data from Google forms to determine high school students' attitude toward virtual learning. Radha et al. (2020) performed a study that showed virtual learning became popular among students across the world, starting with the lockdown period due to the COVID-19 pandemic. Radha et al. (2020) determined virtual learning to be a growing trend.

Agarwal and Kaushik (2020) obtained responses from 77 high school students about their perceptions at the end of 40-minute Zoom lectures they attended for 12 days. The researchers found 97% of the students indicated the sessions were relevant to their learning needs, and 99% perceived the sessions tailored to their learning level. All the participants suggested online classes should be made a part of their curriculum. Agarwal and Kaushik (2020) concluded virtual learning should continue to be a part high school teaching.

Challenges of Virtual Learning

Some researchers found virtual learning degraded the education experience for teachers and students (e.g., teachers and students lacked the personal connection of classroom settings) (Hassan et al., 2020; Hodges et al., 2020; Huang et al., 2020; Minkos & Gelbar, 2020; Noor et al., 2020). Teachers and students needed improvements and access to quality education services to improve virtual learning experiences (Bahasoan et al., 2020). Bahasoan et al. (2020) conducted a quantitative, descriptive study using survey methods conducted online; data collected from 115 high school respondents determined

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virtual learning to be inefficient due to constraints during the COVID-19 pandemic (i.e., lack of equity and accessibility to technology, computer literacy, and lack of student engagement and willingness to learn).

Mailizar et al. (2020) performed a quantitative study and examined the views of high school mathematics teachers in Indonesia about virtual learning implementation barriers (i.e., "any condition that makes it difficult to make progress or achieve an objective," p. 2) during the COVID-19 pandemic. Mailizar et al. (2020) collected data using a cross-sectional online questionnaire that involved 159 participants from lower and upper grades in high schools. The researchers found four barriers existed that prevented adequate virtual learning during COVID-19: teacher, school, curriculum, and student (Huang et al., 2020; Kapasia et al., 2020; Mailizar et al., 2020; Rahiem, 2020; Rapanta et al., 2020). The teacher barrier consisted of a lack of teacher confidence, teachers' unwillingness to change their practice, teachers' lack of understanding of virtual learning advantages, and teachers' knowledge and experience (Mailizar et al., 2020; Rahiem, 2020). The school barrier consisted of hardware and software availability, access to internet connection, and school policy (Kapasia et al., 2020; Mailizar et al., 2020). The curriculum barrier consisted of mismatches between students' assessments and virtual learning (Huang et al., 2020; Mailizar et al., 2020). The student barrier consisted of inadequate virtual learning skills, students' lack of access to technology infrastructure, students' lack of internet connection, and students' lack of motivation to use virtual learning (Mailizar et al., 2020; Rapanta et al., 2020). The researchers suggested virtual learning be improved to help break down the four barriers to virtual learning they identified during

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COVID-19 (Huang et al., 2020; Rahiem, 2020, Yates et al., 2020). The removal of the barriers allowed an easier transition to virtual learning when the COVID-19 pandemic occurred. Lassoued et al. (2020) stated virtual learning required communication between the teacher and the student to remove potential learning barriers.

Teaching Challenges

School teaching staff provided education to all students during COVID-19, despite the difficulties, issues, and challenges they faced (Dorn et al., 2020; Noor et al., 2020). The teaching staff of all levels of experience prepared and delivered their classes from their homes with all the practical and technical challenges this entailed, and often without needed technical support (Hodges et al., 2020). While virtual learning was not new, researchers identified challenges that arose regarding this learning platform during the time of COVID-19:

- Lack of preparation time; teachers had not prepared their learning material to enable them to adjust to virtual learning, and the preparation of such material was time-consuming (Huang et al., 2020);

- Teacher/student isolation left them frustrated and helpless (Rahiem, 2020); and

- Teachers needed practical pedagogical approaches to keep students motivated and engaged during virtual learning (Kapasia et al., 2020).

According to Bates (2019), "A good quality teaching design [was] associated with clear learning objectives, carefully structured content, controlled workloads for faculty and students, integrated media, relevant student activities, and assessment strongly tied to desired learning outcomes" (p. 167). Teachers

became skilled at adjusting to virtual learning that continually changed while they met the needs of a student population that increased in diversity (Minkos & Gelbar, 2020). Hassan et al. (2020) showed teacher survey results in which students did not take virtual learning seriously and there was an inadequate response to assignments assigned to students by teachers online. Noor et al. (2020) conducted a study highlighting the issues and challenges confronted by teachers in delivering online lessons via Google Classroom, Zoom, and Microsoft Teams, such as high-cost internet packages, uncooperative learners, low attendance of learners, teachers' technology confidence, limited availability of educational resources, and poor network infrastructure. Teachers stated they lacked human touch and direct interaction in the virtual teaching process, which made it difficult for them to teach students (Noor et al., 2020; Yates et al., 2020).

Learning Challenges

As a result of the COVID-19 pandemic, schools across the world closed to mitigate the spread of the virus. Students, teachers, and parents had to adapt to a whole new education system of web-based virtual learning (Rapanta et al., 2020). For some, this was a smooth transition, but for others, it was a challenge and reminder of the inequality that existed in the education system (Louis-Jean & Cenat, 2020). Limited access to electronic devices, internet service, and technology fluency made virtual learning more challenging than expected for students (Javurek & Mendenhall, 2020; Lassoued et al., 2020). Virtual learning methods have increasingly developed and shifted conventional learning during COVID-19 (Chafouleas et al., 2020; Wargadinata et al., 2020).

A mixed-methods study performed by Besser et al. (2020) with a sample of 1,217 high school students from five public high schools in Israel completed online questionnaires after they transitioned to synchronous virtual learning during the COVID-19 pandemic. Besser et al. (2020) showed the participants reported higher levels of stress and isolation as well as a negative mood in synchronous virtual learning experiences compared to their experience in previous traditional face-to-face learning. Moreover, they reported lower levels of positive mood, relatedness, concentration and focus, motivation, and performance (Besser et al., 2020). Some of these factors could be correlated to dealing with the challenges of the pandemic itself (Besser et al., 2020; Huang et al., 2020). Besser et al. (2020) also found students who had developed a capacity to be adaptable were able to cope with personal disasters and situations that needed quick adjustment. According to Rapanta et al. (2020), adaptability was necessary to thrive in uncertain times. During COVID-19, the respondents higher in adaptability were both less upset and more positive when asked to evaluate their transition in learning conditions (Lassoued et al., 2020; Rapanta et al. 2020).

Most studies found full-time virtual learning did not deliver the classroom performance or academic results of in-class instruction because student achievement in classroom grades was lower (Adnan & Anwar, 2020; Dorn et al., 2020; Nambiar, 2020). Yates et al. (2020) showed 90% of students preferred learning at school because they struggled to self-manage, feeling they had too much freedom. Some students recognized a lack of time management altered their motivation and learning and attributed those to not having a school routine (Nambiar, 2020). Rahiem (2020) stated students argued teachers overwhelmed

them with assignments contradictory to the degree of flexibility, and they found it difficult to control their time. Students felt distracted by their siblings and the noise at home, while other students felt remote learning was more tiring than face-to-face learning (Rahiem, 2020). Nambiar (2020) found students perceived face-to-face learning more positively than virtual learning in terms of social presence, interaction, satisfaction, classroom performance, and overall quality.

In a qualitative study performed by Chaturvedi et al. (2020), a survey of 1,182 individuals of different age groups from various high schools in Delhi, India, showed 51.4% of the respondents did not utilize their time to manage their schoolwork during the period of lockdown. Furthermore, sleeping habits, daily fitness routines, and social interaction altered the participants' health conditions (Chaturvedi et al., 2020). Chaturvedi et al. (2020) suggested further studies after the establishment of additional teaching methods for virtual learning. Chaturvedi et al. (2020) further suggested a strong need to analyze the issues experienced during the sudden transition to virtual learning so students could be prepared for any future situations.

In a qualitative study performed by Adnan and Anwar (2020), the researchers found moving smoothly from an environment of conventional education to virtual learning could not happen overnight. The rapid transition led to various obstacles and challenges (Adnan & Anwar, 2020). Researchers Adnan and Anwar (2020) used a qualitative online survey technique that consisted of 126 high school students: 84 female and 42 male participants. All students who participated in the survey attended online courses during the COVID-19 pandemic. The survey results showed a lack of access to internet facilities, lack of

proper interaction and contact between students and teachers, and ineffective technology were among the major challenges faced by higher education students in Pakistan (Adnan & Anwar, 2020). The survey participants also reported traditional classroom learning was more effective than virtual learning. Finally, Adnan and Anwar (2020) showed 71.4% of participants reported learning in the conventional classroom was more motivating than virtual learning.

Abbasi et al. (2020) conducted a study to explore K-12 students' perceptions of virtual learning during the COVID-19 lockdown. The researchers collected data from 382 students (137 males and 245 females) using a 23 item, 5-point Likert scale that ranged from strongly agree to strongly disagree (Abbasi et al., 2020). The questionnaire consisted of items that covered students' perceptions of virtual learning (Abbasi et al., 2020). The researchers found students felt bored of online learning (Abbasi et al., 2020). The students expected teachers to be more creative to avoid boredom of online learning (Abbasi et al., 2020). The researchers also found students felt their interactions with teachers were not optimal compared to in-person instruction (Abbasi et al., 2020). The researchers found 77.4% of students had negative perceptions of virtual learning (Abbasi et al., 2020). Abbasi et al. (2020) concluded 325 students preferred face-to-face instruction over virtual learning during the lockdown.

Virtual Learning and Student Emotional Health

Extended time out of school altered student achievement, and that impact was hard to estimate with all the unique aspects of virtual learning on schooling and society (Kuhfeld et al., 2020). While addressing academic skills after the extended school closure remained an important objective, students would not be

ready to engage in formal learning until they felt safe, both physically and psychologically (Minkos & Gelbar, 2020); therefore, social-emotional well-being over academic gains should be prioritized by teachers as students return to school physically (Minkos & Gelbar, 2020). Minkos and Gelbar (2020) also showed teachers focused their efforts on ensuring the school environment was supportive, welcoming, and predictable. The impact of the initial school closures may have been minimal for some students, but it represented an adverse childhood experience for others (Minkos & Gelbar, 2020). Chafouleas et al. (2020), Kapasia et al. (2020), and Minkos and Gelbar (2020) have shown exposure to trauma resulted in long-term negative consequences such as developing numbness to the trauma, extreme anger, or emotional outbursts.

Loades et al. (2020) conducted a meta-analysis that involved 63 high school studies. Loades et al. (2020) reported the impact of social isolation and loneliness on the mental health of previously healthy children and adolescents (n = 51,576; mean age 15.3 years). In the 63 studies, 61 were observational, and two were longitudinal studies assessing self-reported loneliness in healthy children and adolescents. Loades et al. (2020) concluded social isolation and loneliness increased the risk of depression and possibly anxiety when loneliness was measured. The duration of loneliness was more strongly correlated with mental health symptoms than the intensity of loneliness. Loades et al. (2020) further showed children who experienced enforced isolation or quarantine were five times more likely to have required mental health services and experienced higher levels of posttraumatic stress.

Husky et al. (2020) conducted research that consisted of an online survey among first-year high school students. The researchers provided the participants with a description of the study, and informed consent was obtained before starting the survey (Husky et al., 2020). Husky et al. (2020) showed first-year high school students who did not participate on a sports team endured more confinement than those students who did participate on a sports team. More than half of the sample (60.2%) indicated their anxiety level had increased since the beginning of virtual learning (Husky et al., 2020).

Bethel et al. (2014) found building resilience, defined as "staying calm and in control when faced with a challenge" (p. 216), in children ages 6-17 lessened the negative impact of adverse childhood experiences. In their study, Bethel et al. (2014) stated children who demonstrated resilience had higher school engagement rates. For children in some families, stressors present before the pandemic, such as financial insecurity, housing instability, food insecurity, social isolation, and limited access to quality health care, increased since the pandemic (Minkos & Gelbar, 2020). Students faced various problems related to depression, anxiety, poor internet connectivity, and unfavorable study environments at home while learning virtually (Javurek & Mendenhall, 2020; Kapasia et al., 2020).

Dodd et al. (2021) identified the high school students in their study as a very high-risk population for mental health difficulties because of substantial disruptions to their education and home life. Dodd et al. (2021) performed an online cross-sectional survey with 787 high school students (15+ years) who studied at an Australian high school. A total of 86.8% of students reported switching to virtual learning had impacted their studies. Overall, 34.7% of

students reported a sufficient level of well-being, while 33.8% showed low well-being, and 31.5% showed very low well-being. Well-being was higher in older students, and anxiety was higher in younger students. Dodd et al. (2021) confirmed all students' health, well-being, and learning experiences should be of high priority in virtual learning.

Researchers Kapasia et al. (2020) suggested targeted interventions in their study to create a positive space for students from vulnerable sections of society. Strategies needed to build a resilient education system that developed employability and young minds' productivity were of key importance (Javuresuk & Mendenhall, 2020; Kapasia et al., 2020). Within the context of virtual learning, more students have presented with increased socio-emotional needs (Minkos & Gelbar, 2020). Researchers indicated chronic stress and trauma affect the brain in a variety of ways (Chafouleas et al., 2020). Children who suffered from chronic stress and trauma due to virtual learning had difficulty processing emotional and social responses, sustaining attention, and utilizing memory effectively (Chafouleas et al., 2020; Swick et al., 2013). Consistency served as a crucial aspect of support for children who needed to recover from stressful and potentially traumatic experiences (Minkos & Gelbar, 2020: Swick et al., 2013). Students encountered a lack of certainty, insecurity, volatility, and reduced autonomy as typical feelings while learning virtually (Germani et al., 2020).

Virtual Learning and Student Motivation to Learn

Brick and mortar school environments were fun for most students as they spent time with friends and their teachers inspired and motivated them (Hassan et al., 2020; Rahiem, 2020). Hassan et al. (2020) stated attending school allowed

learners to follow the learning and work in a disciplined manner. Students performed best academically and socially when they followed a strict schedule of learning (Hassan et al., 2020). Researchers Urdan and Schoenfelder (2016) found motivation to be a complex aspect of human psychology and behavior that altered how people wanted to spend their time, the amount of energy they expended on each assigned task, how they thought and felt about the task, and how long they were engaged in the task. Rahiem (2020) found students were still eagerly attending online courses, working on assignments, and maintaining their grades despite all the barriers and challenges they faced. Numerous factors had a tangible influence on learning and motivation: the school environment, educator's attitudes, expectations, and family and social values (Hassan et al., 2020; Rahiem, 2020). Wang and Pomeranatz (2009) stated these were critical factors that impacted student participation and academic performance. Motivation was, therefore, essential to students' academic achievement (Raheim, 2020). Researchers showed students with academic motivation continued to see the school and learning as necessary, like understanding and enjoying learning-related activities (Zimmerman, 2008). Conversely, a lack of motivation was a crucial explanation for academic underachievement (Scheel et al., 2009).

Rahiem (2020) explored how high school students remained motivated to learn despite the limitations they encountered and endured while learning virtually during the COVID-19 pandemic. Rahiem (2020) employed a qualitative phenomenological approach involving 80 students studying at the Faculty of Education at a state university in Jakaita, Indonesia. Rahiem (2020) showed the

motivation of students fell into three major phenomenological themes with further associated subthemes:

- Personal-challenge, curiosity, self-determination, satisfaction, and religious commitment;

- Social-relationships, inspiration, and well-being; and

- The environment-facilities and conditioning

In a study by Yates et al. (2020), 39% of K-12 students cited *motivation* as the most challenging part of learning at home. Students attributed their lack of motivation to family obligations, social media distractions, inaccessibility of teacher or peer help, lack of extrinsic consequences, and lack of distinction between home and school (Yates et al., 2020). After being out of school for an extended period, some students struggled with day-to-day organizational skills and time management (Yates et al., 2020). Some students had difficulty getting along with other students and forming friendships (Minkos & Gelbar, 2020). Some students with psychological hardiness suffered a loss of motivation to perform, and even worse, some students experienced a severe state of depressed mood (Cole et al., 2017). Individuals with *psychological hardiness* were more likely to put stressful life events into perspective and perceive them less of a threat and more of a challenge and as opportunities for personal development (Kapasia et al., 2020). According to Dorn et al. (2020), these factors meant students were at risk of learning loss. While maintaining high expectations for all students was essential, expectations alone did not outline the interventions and scaffolding required to optimize learning for each student, especially given the variance in the skill students had when they returned to school the 2021-2022

school year (Javurek & Mendenhall, 2020). The 2021-2022 school year began with students returning to schools for in-person learning in the southeastern United States. Teachers must continue to work to close the academic gap created from school closures and virtual learning (Dorn et al., 2020; Huang et al., 2020; Rahiem, 2020).

Virtual Learning and Personalized Instruction

In most of the literature review, researchers gave more importance and consideration to students' perspectives than teachers' perspectives (Hodges et al., 2020; Nambiar, 2020). Nambiar (2020) stated, "Teachers' views were equally important because if they, like the education providers, were not satisfied and found the online mode unsatisfactory, then the educational base became weaker" (Nambiar, 2020, p. 789). Teachers were considered the builders of the future generation, with a productive education system based upon personalized instruction and quality education delivery through captivating and knowledgeable teachers (Lee & Tsai, 2010). Teachers were both constructors and actors during COVID-19 (Germani et al., 2020). On the one hand, they needed to design the tasks, environments, and resources that helped students learn. On the other hand, they enacted the designed lesson plan, shifting between roles as appropriate (Goodyear & Dimitriadis, 2013). During the COVID-19 pandemic shutdown, school system leaders asked teachers, almost overnight, to become both designers and tutors, using tools not commonly mastered by most teachers (Rapanta et al., 2020).

Researchers Sahin and Shelley (2020) found new questions emerged from teachers when they switched from face-to-face instruction to virtual learning:

- Do all students have the necessary technology for virtual learning, such as computers, iPads, and high-speed internet?

- Are teachers ready to use virtual learning?

- Do students and teachers have enough support from the school to implement the sudden transition to virtual learning?

- What are the attitudes of the students and teachers toward virtual learning?

- How are students adapting to the use of virtual learning?

- Will students be willing to engage in virtual learning? (Sahin & Shelley, 2020, p. 4)

These questions and others were a challenge to students and teachers as they worked to change their learning and teaching methods (Sahin & Shelley, 2020). Teachers had to find new ways to teach their students virtually and students had to learn new ways to learn successfully. For both teachers and students, this was new territory (Sahin & Shelley, 2020).

In an exploratory study performed by Rapanta et al. (2020), they selected 250 teachers according to their proven expertise and experience in the field of virtual teaching and learning. There were three main criteria the teachers had to possess to be chosen as an expert for study:

- Research expertise with more than 100 citations on Google Scholar, with virtual teaching and learning innovation forming a major part of their research.

- Virtual teaching experience, with more than 10 years of working as an online teacher.

- Experience with different national education systems.

Rapanta et al. (2020) found the design of effective learning environments and embedding online technologies served as catalysts for teachers to experiment with new things, explore creative alternatives, and reflect on their own practices during the COVID-19 shutdown. According to Rapanta et al. (2020):

> The essence of an online course was the organization of learning activities that enabled the student to reach certain learning outcomes. These activities or tasks should be based on a mix of design approaches (synchronous, asynchronous, online, offline) and communicated in a clear manner, have an adequate level of difficulty for students' capabilities, and be accessible to all students. (p. 937)

Virtual Learning and Classroom Performance

Gonzalez et al. (2020) performed a qualitative study and analyzed the effects of virtual learning on public education students in grades 6-9 in Madrid during the COVID-19 confinement. A sample of 458 students showed a positive effect of virtual learning on student performance (Gonzalez et al., 2020). Gonzalez et al. (2020) found students engaged with an increased number of assessments while learning virtually (Gonzalez et al., 2020). The researchers concluded virtual learning during the COVID-19 confinement changed students' learning strategies to a more continuous habit, improving their efficiency. For example, Gonzalez et al. (2020), found students had a set schedule for virtual learning and study sessions. For these reasons, Gonzalez et al. (2020) predicted better scores in students' assessments and improvements in learning performance.

Summary of Review of Literature

Understanding how COVID-19 impacted teaching and learning and overall learning environments allowed teachers and school leaders to know what direction to move to next to improve the challenges of virtual learning (Hassan et al., 2020). Wargadinata et al. (2020) recommended other researchers should uncover students' obstacles with virtual learning. Previous studies by Abuhammad (2020), Dorn et al. (2020), Huang et al. (2020), and Wargadinata et al. (2020) regarded teaching and learning during the COVID-19 pandemic were mostly comprehensive. Further, most studies focused on early grade levels (K-5) or collegiate-levels (Kapasia et al., 2020; Radha et al., 2020; Rapanta et al., 2020). Raheim (2020) found many studies have explored university students' insights and observations. Raheim (2020) suggested further studies involving more dispersed samples. Besser et al. (2020) found there was very little research dedicated to how virtual learning impacted teaching and learning in rural high school grades 9-12. The research of Noor et al. (2020) suggested further studies on teaching and learning strategies be conducted to gain a broader and deeper understanding of how virtual learning affected the education system.

Virtual learning during COVID-19 might have been the catalyst to create a new, more effective teaching method according to Kaden (2020). Some researchers found evidence that virtual learning during the time of COVID-19 had benefits for teachers and students (Radha et al., 2020). Examples from the research were minimal disturbances (Nambiar, 2020), virtual learning increased teachers' reach and impact (Javurek & Mendenhall, 2020), and students were more comfortable interacting with their teachers (Scull et al., 2020). Other

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researchers found evidence that virtual learning during the time of COVID-19 had challenges for teachers and students. Examples from the research were teacher/student feelings of isolation (Huang et al., 2020), students struggled with time-management and self-management (Yates et al., 2020), students not being able to learn while they dealt with distractions from home (Rahiem, 2020).

During my research of the literature, I found a considerable amount of research on how COVID-19 negatively impacted rural students the most. Javurek and Mendenhall (2020) and Minkos and Gelbar (2020) found rural students to be digitally disadvantaged because of detrimental circumstances beyond their control, which prevented them from excelling academically. The literature gave many examples of how rural students were underserved during the COVID-19 pandemic; some of those examples were less technology and internet access (Chaturvedi et al., 2020; Kapasia et al., 2020, Minkos & Gelbar, 2020), social and health consequences (Kaden, 2020; Storey & Slavin, 2020), and difficult home conditions that created an unsuitable learning environment (Dorn et al., 2020; Kaden, 2020; Kuhfeld et al., 2020).

I also found studies on the topics of student motivation and student emotional health during the COVID-19 pandemic in the literature (Dorn et al., 2020). Student motivation to learn in virtual environments prevailed during the shutdown of COVID-19 according to the literature (Rahiem. 2020). Some students struggled with staying motivated while virtual learning during the extended school closure (Yates et al., 2020), but other students showed self-determination in being successful academically (Lassoued et al., 2020; Rahiem, 2020). For my study, I focused on how students found, or did not find,

balance and motivation while learning virtually during the COVID-19 shutdown. Student emotional health was an important topic I wanted to include in my research because researchers Kapasia et al. (2020), Kuhfeld et al. (2020), and Minkos and Gelbar (2020) showed students would not be ready to learn virtually until they felt safe. The researchers found students faced problems related to depression, anxiety, poor technology access for learning, and unfavorable study environments (Dodd et al., 2021; Minkos & Gelbar, 2020).

Through a thorough review of existing literature, I noted an existing gap concerning how COVID-19 impacted teaching and learning at the high school (9-12) level, specifically in rural high schools. This qualitative study filled that gap by conducting interviews with rural high school teachers in East Tennessee. The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment. In Chapter III, I gave an overview of the research design and described the methodology of the study (including the population, data collection methods, and methods of analysis) of this study. I also described the concepts and a brief historical background of the specific research design I used. Also in Chapter III, I discussed and provided evidence that established the validity and reliability of my data collection process.

Chapter III: Methodology

COVID-19, the disease caused by the SARS-CoV-2 virus, became a global public health threat in March 2020. Coronavirus was the virus that caused the novel COVID-19 outbreak (Radha et al., 2020; Rahiem, 2020). Schools in the United States required virtual instruction (i.e., when a course was taught either solely online or an online portion mixed with a face-to-face instruction) in place of in-person instruction so learning could continue (Abuhammad, 2020; Kapasia et al., 2020; Quezada et al., 2020). To help reduce learning loss during the COVID-19 pandemic, educational leaders and policymakers in the United States considered virtual learning as an alternative to traditional classroom settings (Nambiar, 2020). The claims of those in favor and those against virtual learning during the COVID-19 pandemic conflicted, and because of this, I decided my research should focus on learning environments during COVID-19.

The literature reviewed in Chapter II revealed a knowledge gap due to long-term school closures and potential learning loss as a result of virtual learning. The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment. In Chapter III, I described specific research methods that involved the research design, the role of the researcher, including background information and potential bias, and the participants in the study. Then I explained the data collection, including instrumentation, permissions, and pilot tests. Finally, I revealed the limitations, delimitations, and assumptions of the study.

Research Design

I chose to conduct a qualitative study to explore the behavior, perspectives, feelings, and experiences of people. Roberts and Hyatt (2019) stated qualitative studies focus on people's experience from their perspective. Merriam and Tisdell (2016) stated, "To some extent all forms of qualitative research are trying to uncover participants' understandings of their experiences" (p. 24). Qualitative researchers were interested in the meanings people attached to the activities and events in their world and were open to whatever emerged from the data collection. Qualitative research lay in the interpretive approach to social reality and in the description of the lived experience of human beings (Roberts & Hyatt, 2019).

The most common form of qualitative research involved interpretive research in which I sought to acquire the perceptions and experiences of people in their natural settings (Merriam & Tisdell, 2016). In the fall semester of 2021, I conducted a qualitative, interpretive research study to better understand teacher perceptions of virtual learning. The need to understand the group of teachers who implement, monitor, and support students who learn virtually necessitated a qualitative, interpretive study, which included interviews of teachers related to the support they provided students in their school building. Creswell and Creswell (2018) utilized educational research as data-based evidence to conduct quality studies that informed educational policy through a constructivist worldview, ethnographic designs, and behavior observations. Researchers valued how other qualitative researchers explored and revealed meanings individuals assigned to a problem (Creswell & Creswell, 2018).

Role of the Researcher

In this qualitative, interpretive study, I operated as the primary, sole agent of the data processes and collection, which adhered to the historical intent of qualitative research (Creswell & Creswell, 2018; Merriam & Tisdell, 2016). I acted alone as I conducted this study and was the primary data collector and analysis (Merriam & Tisdell, 2016). I designed the interview questions (see Appendix A), completed a pilot study, analyzed the raw data to construct codes and themes, verified trustworthiness, planned for limitations and delimitations, and reported accurate data about the specific participants in the study.

According to Creswell and Creswell (2018), ethical research should be reported objectively and honestly, shared with participants, originally published without plagiarism, and duly credited to the contributing authors. I adhered to those guidelines by crediting all authors and contributors, reporting information truthfully, anonymizing data, and securing sensitive information. I completed my roles and responsibilities as a researcher, while causing as little disruption to the participants as possible (Creswell & Creswell, 2018).

In qualitative research, the researcher was the most integral instrument of the study, collecting the data, conducting the interviews, analyzing the documents, and analyzing the information (Creswell & Creswell, 2018). Roberts and Hyatt (2019) noted qualitative researchers bring the culmination of their knowledge, history, and personal experiences into the research study. As the integral instrument, they must be careful to identify and minimize any biases that could affect the study and findings. Creswell and Creswell (2018) recommended qualitative researchers identify themselves relating to their values and personal

backgrounds, such as gender, history, culture, and socioeconomic status, which may shape their interpretations formed during a study. I conducted interviews using the same questions, interviewed teachers from each of the four high schools in the Brax County School (pseudonym) district, and utilized snowball sampling to minimize my impact on the study.

Participants of the Study

Researchers used purposeful sampling in qualitative studies to gain insights from specific individuals or learn about a specific phenomenon (Creswell & Creswell, 2018; Merriam & Tisdell, 2016). According to Merriam and Tisdell (2016), "Purposeful sampling was based on the assumption that the investigator wanted to discover, understand, and gain insight and therefore must select a sample from which the most can be learned" (p. 96). According to Creswell and Creswell (2018), in qualitative research, I should purposefully select participants or sites that best helped me understand the problem and answer the research questions. I selected rural high school teachers from each of the four Brax County high schools as participants for this study because of their experience with virtual learning during COVID-19. I chose to research Brax County high schools because of their lack of funding, lack of access to technology, and lack of internet access (Huang et al., 2020; Kaden, 2020; Kapasia et al., 2020; Rahiem, 2020). I used purposeful sampling to identify and solicit participation from individuals who met the criteria of a rural high school teacher who participated in virtual learning in Brax County.

The most common form of purposeful sampling was snowball sampling, in which participants recommend other individuals who were knowledgeable

about the topic and interested in participating (Merriam & Tisdell, 2016).

Merriam and Tisdell (2016) described the benefits of snowball sampling as a

randomization effect because I was not selecting the participants. Instead, existing

participants selected the potential participants, and the potential participants then

self-select if they wanted to be a part of the study. I aimed to find the similarity

among the pool of initial participants by their involvement in virtual learning. I

was interested in the perceptions of rural high school teachers regarding their

functions and roles supporting students while they were learning virtually;

therefore, it was necessary to ask rural high school teachers about their

experiences directly. I developed three initial participant criteria:

- The participant was certified by the State of Tennessee;

- The participant worked at a rural high school; and

- The participant engaged in virtual learning during the COVID-19
  shutdown and continued using virtual learning.

Setting

In Tennessee, Brax County consisted of 622 square miles of land plus 2.4

square miles of rivers. The majority of Brax County was located within the Ridge

and Valley Appalachians, a range characterized by long, narrow ridges alternating

with similarly shaped valleys (U.S. Census Bureau, n.d.) The extreme

southeastern part of Brax County was located within the Blue Ridge Mountains,

specifically a subrange of the Blue Ridge known as the Bald Mountains (U.S.

Census Bureau, n.d.). This range straddled Brax County's border with North

Carolina and included Brax County's two highest points: Gravel Knob, which rose

to over 1,480 meters, and Camp Creek Bald, which rose to over 1,476 meters (U.S. Census Bureau, n.d.)

The U.S. Census Bureau (n.d.). estimated the county population for 2020 to be 68,879. The U.S. Census Bureau estimated Brax County's median household income to be around $42,595 for 2020 (U.S. Census Bureau, n.d.). The total employed of Brax County's population in 2020 was 22,850, with 15.9% of the population living in poverty (U.S. Census Bureau, n.d.). The average income of a Brax County resident was $19,998 per year; the U.S. average was $28,555 per year (U.S. Census Bureau, n.d.). The Median household income of a Brax County resident was $35,860 per year; the U.S. average was $53,482 a year (U.S. Census Bureau, n.d.). There were four high schools in the Brax County School System (see Table 1).

Table 1

Brax County High Schools Student Enrollment

School Name	Student Enrollment
Stoneybrook High School	710
Riverdale High School	395
Valley High School	525
Batavia High School	735

Source: Tennessee Department of Education (n.d.b).

Note: Enrollment numbers represent grades 9-12.

Brax County schools spent $8,399 per student; the U.S. average was $12,383

(U.S. Census Bureau, n.d.).

Choosing Participants

For this research study, I began with purposeful sampling to select

interview participants. In purposeful sampling, participants were chosen based on

their ability to provide researchers with the most relevant and helpful information

for the study's specific purpose and research questions (Creswell & Creswell,

2018). I chose the four high schools in the Brax County Schools District as my

research site. I considered teacher participants as certified teachers of grades 9-12

in the Brax County Schools District. I gained access to the teacher participants

through the Director of Brax County Schools, who gave me permission to contact

the high school principals at each of the four high schools. Each Brax County

high school principal suggested one teacher for me to contact. I contacted the

teachers and the teachers agreed to take part in my study. After I interviewed the

first teacher from each school, the teacher gave me a name of another teacher to

contact.

In 2021, Brax County Schools employed 423 teachers, 130 within grades

9-12. I interviewed 24 teachers in this study, five teachers from each of the high

schools in the Brax County Schools District. Where possible, I omitted

individually identifiable information about participants—the specific occupations,

gender-identifying pronouns, and specific pseudonyms (Admin01, Teacher01)

assigned to each participant—to help protect the identity of the participants.

Teacher participants had varying years of experience (5-20+ years) and taught

various subjects (e.g., math, science, language arts, history). I interviewed teacher

participants until I reached the point of *saturation*, when new data generated from the qualitative study produced no new knowledge (Merriam & Tisdell, 2016).

Data Collection

I used a qualitative, interpretive research methodology with an interview design in this study. The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment. In research, it was necessary to gain clearance to conduct a research study from appropriate parties before beginning (Creswell & Creswell, 2018). In September 2021, I emailed the Director of Brax County Schools, Tennessee, in which I described the purpose and design of my research study. The Director of Brax County Schools returned an email to agree for me to conduct my research in Brax County. With the help of my dissertation committee, I completed the research proposal form for Lincoln Memorial University's Institutional Review Board (IRB). After receiving approval from the IRB, I individually emailed the participation request letter with implied consent (see Appendix B) to a teacher each high school principal suggested. The selected teachers met the participant criteria for this study. I selected additional teachers by snowball sampling. I individually emailed the participation request letter to the teachers identified by snowball sampling.

Interview Protocol

For the personal interviews of this study, I developed an interview protocol, a set of instructions, and a list of interview questions to support me in

maintaining some standardization across my semi-structured interviews (Creswell & Creswell, 2018). I developed my interview questions to purposely address my research questions and to gain insight to my topic. Then I conducted pilot interviews using the interview protocol. According to Roberts and Hyatt (2019), pilot testing was "important to establish whether the instrument will provide the data that will inform your research questions" (p. 151). Roberts and Hyatt (2019) encouraged people who are not directly involved in the research study to provide feedback. I used fellow teacher colleagues from my high school, also not employed by Brax County School District, for the pilot interview participants. The purpose of these pilot interviews was to test the effectiveness of the questions and to answer my five research questions, not for gathering actual response data from the test participants. After completing the pilot interviews, I changed the wording of two of my interview questions for clarity and to better focus on my research questions.

Interviewing Participants

I identified myself as a student of Lincoln Memorial University when I introduced myself to prospective participants, thereby not creating a false perception that I was affiliated with Brax County School District. I arranged a date and time with the participants to conduct the interview. Before beginning my interview, I briefly greeted the interviewee to not display any biases or preconceived responses intentionally or unintentionally to the participants. I asked the interviewee if I could record the conversation. A recording device allowed me to capture participant responses precisely without any subjective misinterpretation (Creswell & Creswell, 2018; Roberts & Hyatt, 2019). I used a Sony ICD-PX370

digital audio recorder. I advised participants that I may also take handwritten notes, that I would safeguard their confidentiality, and that they may stop the interview at any time. I then made a note of the time and proceeded with asking the questions per the interview protocol. During the interviews, I took notes of non-audible observations. Once the participant finished their responses to the final questions, I turned off the audio recorder and concluded the interview. At the conclusion of each interview, I asked the participants for another teacher's name and contact information. Other than the first teacher I interviewed from each school; snowball sampling was how I selected my participants.

The audio data from the interviews were transferred from the recorder via a USB cable to a secure flash drive. I was the only person who had access to the audio files on the secure flash drive. I was the only person to maintain the data. Using Microsoft Word and a USB transcription pedal, I transcribed the interviews verbatim. I stored the transcribed interviews in the secure flash drive.

Methods of Analysis

Researchers such as Creswell and Creswell (2018) and Merriam and Tisdell (2016) suggested varying methods of qualitative coding data. I followed Creswell and Creswell (2018) coding process, which included the following six steps:

1. Organize and prepare the data for analysis;

2. Read through all the data (i.e., questionnaire transcriptions);

3. Begin open coding by choosing one transcript and read through it a second time, assigning codes to important phrases or segments of texts;

4. Make a list of the codes rendered from the first document, group similar and redundant codes;

5. Apply the new list of axial codes to the remaining documents in the data set and highlight specific quotes that support each code; and

6. Reduce the list of codes to five to seven themes supported with rich descriptions from the data.

The purpose of data analysis was to make sense of the data collected (Creswell & Creswell, 2018), so I began analyzing the data early in the collection procedures to organize and refine the data analysis process (Merriam & Tisdell, 2016). My goal was to develop codes that defined the participants' experiences to obtain complete and thorough perspectives. I carefully read the interview transcripts and developed sections or groups of codes—words or short phrases meant to capture the essence of the participants' responses (Creswell & Creswell, 2018). First, I used open coding using the participants' transcribed answers to the open and closed questions to construct the categories for each research question (Merriam & Tisdell, 2016). I used axial coding from the meanings (Merriam & Tisdell, 2016) constructed from open coding techniques until patterns emerged. I developed themes unique to each research question from the patterns in each data set until saturation of categories for each research question existed (Merriam & Tisdell, 2016). As each theme developed, I identified quotes and data to illustrate how participants experienced situations and conveyed the qualitative information through rich, thick descriptions to the best of my ability (Creswell & Creswell, 2018; Merriam & Tisdell, 2016).

After the data had been analyzed, coded, and categorized into themes, I reported the findings using quotes from the participant interviews to support each theme; I reached a point of saturation after 24 interviews. After I ensured the data answered my research questions, I concluded the data analysis and prepared the findings for written reporting.

Trustworthiness

Qualitative researchers were more concerned with trustworthiness than replicability, validity, and reliability (Creswell & Creswell, 2018; Merriam & Tisdell, 2016). Creswell and Creswell (2018) suggested various strategies to increase the trustworthiness of qualitative research, including triangulation, member checks; rich, thick description; and reflexivity. Merriam and Tisdell (2016) believed triangulation was probably the best-known strategy to shore up the internal validity of a study. To maintain the trustworthiness of the data collection, analysis, and reporting, I included the participants with varying years of experience, seeking the opinions of rural high school teachers across various demographics. I asked the same interview questions to all participants. In this manner, I triangulated data to ensure themes occurred across multiple data sources and checked for informational accuracy throughout all participant interviews.

I made no changes to the finalized interview questions once I sent them to the first participant in the research study. This consistency increased trustworthiness and decreased the factors that commonly influenced traditional interview responses, such as variation in the wording of questions or voice fluctuation when I asked the participants. In qualitative research, I, as the researcher, was the greatest threat to trustworthiness by the type of procedures

employed, data collection methods conducted, and how I analyzed and interpreted the data (Merriam & Tisdell, 2016). I mitigated this threat by evaluating potential bias and the honest disclosure of the collection and analysis methods (Creswell & Creswell, 2018).

Limitations and Delimitations

Limitations of a study were the potential weaknesses, problems, matters, and occurrences that I identified but were beyond my control (Creswell & Creswell, 2018). These were situations that created a vulnerability in the study, as noted here. Critical to this study, interview participants' memories and beliefs may not be accurately grounded in shared reality (Creswell & Creswell, 2018). The interview participants in this study recalled virtual learning that has taken place since the initial school closures due to COVID-19. I may have skewed participant perceptions through time and dialogue with others due to the emotion of the topic. Another critical limitation to this study was I interviewed only 24 participants to represent a teacher population of 130. By considering a point of saturation (Merriam & Tisdell, 2016), I felt confident no additional interviews would yield new information.

Delimitations were the boundaries of a study I imposed, stated here to clarify the scope of the research project (Roberts & Hyatt, 2019). I chose to interview teachers for this study because they had first-hand experience with virtual learning. Teachers had a personal lens of how they viewed their students and student learning environments. I wanted to gain insight of teachers' perceptions of virtual learning environments because the teachers' lenses were shaped by teachers' background knowledge and life experiences. The timeframe

for the data collection of this study was in the Fall of 2021, specifically

September through November. COVID was still an issue during the timeframe I

collected my data. I gave participants the option of in-person interviews or Zoom

interviews to mitigate discomfort participants may have with close contact due to

COVID. The study consisted of teachers from four high schools in a county in a

rural area of a southeastern state. Rural schools had limited access to technology,

internet, and computer devices compared to urban schools. While this was a

problem for rural schools, it was also the reason I wanted to include teachers from

rural schools in my study.

Assumptions of the Study

Roberts and Hyatt (2019) stated, "Assumptions are what you take for

granted relative to your study" (p. 111). By stating the assumptions of a study

clearly for readers, researchers provided context that may have increased the

generalizability of the study to future situations (Johnson & Christensen, 2012;

Roberts & Hyatt, 2019). I identified key assumptions in this research study:

- Interview participants did not intentionally attempt to mislead the
  researcher;

- Virtual teachers in Brax County had the same knowledge and training
  in virtual learning, such as Canvas and Microsoft Teams;

- Virtual learning at the rural high school level was an important topic of
  discussion for teachers in that they would speak openly about their
  perceptions;

- Interview participants were knowledgeable about virtual learning in
  Brax County; and

- Participants in the study wanted better opportunities for students.

Summary of Methodology

In this research, I employed a qualitative, interpretive design to answer the guiding research questions. By creating interview questions focused on the study's problem, research questions, and the theoretical framework, the data collected were directly associated with the purpose of the study. The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment. In this chapter, I described qualitative interpretive study design of this research. I discussed my role as a researcher within a qualitative study and the context, demographics, and characteristics of the site for this study, Brax County. I then detailed the data collection and analysis methods of this study. Also, I described strategies I employed to foster the trustworthiness of the research design. Last, I noted limitations, delimitations, and assumptions of the study. I completed the research project with this careful planning and shared my results in the next chapter.

Chapter IV: Analyses and Results

As the first full school year during the COVID-19 pandemic, the 2020-2021 school year brought uncertainty and challenges for teachers and students. To help reduce learning loss during the COVID-19 pandemic, educational leaders and policymakers in the United States considered virtual learning as an alternative to traditional classroom settings (Rapanta et al., 2020). Proponents of virtual learning claimed virtual teaching and learning platforms (i.e., interactive learning environments) strengthened education because they provided additional tools when traditional classroom settings were not possible (Hassan et al., 2020; Javurek & Mendenhall, 2020; Nambiar, 2020; Radha et al., 2020). Opponents claimed virtual learning resulted in learning loss, failing to improve student learning opportunities (Huber & Helm, 2020; Kapasia et al., 2020; Lassoued et al., 2020; Rahiem, 2020; Yates et al., 2020). The claims from proponents and opponents inherently conflicted with the other. For this study, I distinguished teachers from proponents and opponents of virtual learning in that proponents and opponents were politicians, public officials, and those who attempted to influence the opinions of stakeholders. The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment.

Data Analysis

Researchers used qualitative data analysis to break down large amounts of data using categories and themes related to the research questions (Creswell &

Creswell, 2018; Merriam & Tisdell, 2016). For this study, I used semi-structured

interviews that I designed to illicit teachers' perceptions of virtual learning in

rural high schools related to opportunities and lack of opportunities for teachers

and students. This study took place in a rural community consisting of four high

schools where virtual learning had not been used as an instructional tool prior to

COVID-19. My interest was teachers' perceptions at Brax County high schools,

so I categorized participating teachers using a pseudonym and a number (e.g.,

Teacher06). After recording and transcribing 24 interviews, I coded and

categorized the participants' responses into themes in accordance with the

research questions and Merriam and Tisdell's (2016) data analysis procedure.

Notably, participants' overall experience (see Figure 7) of virtual learning was

reflected in their responses and thereby the analysis codes.

Figure 7

Overall Teachers' Perceptions of Virtual Learning
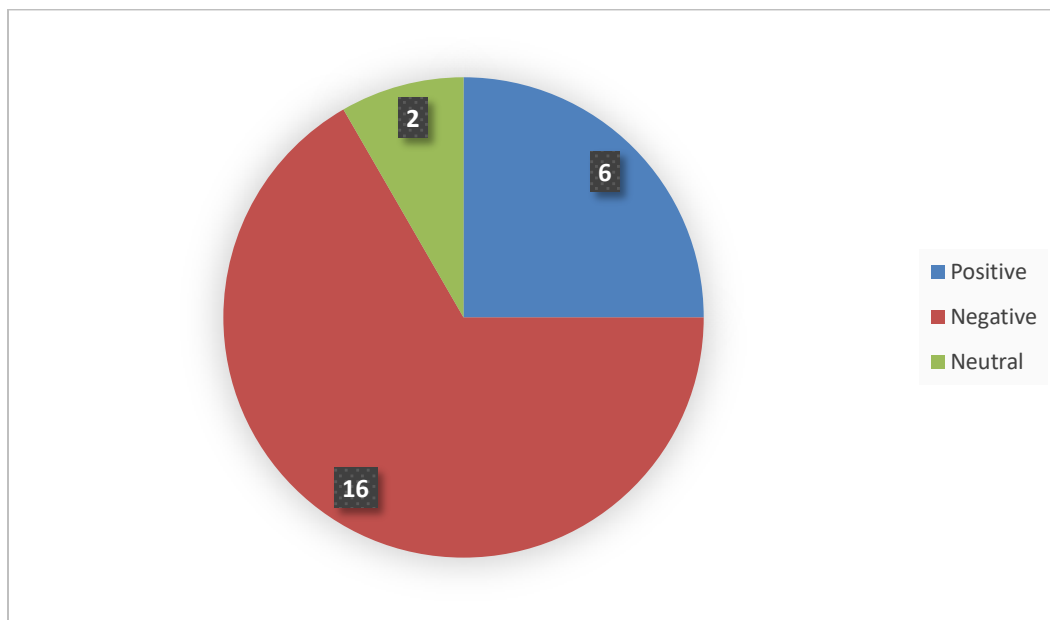
Teachers who had negative perceptions of virtual learning responded unfavorably to interview questions, whereas teachers who had positive perceptions of virtual learning responded favorably to interview questions. Overall, the participants reported mostly negative experiences with virtual learning during the 2020-2021 school year, with 16 reflecting negative responses, 6 reflecting positive responses, and 2 teachers being neutral, meaning their experiences were neither more positive nor more negative.

Research Questions

Using Microsoft Excel, I designed a table with the following columns: participant pseudonym, transcript line number, raw data, open coding, and axial coding. As I reviewed the interview transcripts, I copied and pasted noteworthy raw data quotes and completed the corresponding fields for that item of raw data. I also color-coded rows as I analyzed to signify various items, such as a participant's overall favorability toward virtual learning or to mark an item or raw data for paraphrasing or quoting in this chapter. The Microsoft Excel table allowed me to sort and filter the data for the column of information I wanted to view.

I duplicated this table into six total tabs, one for each of this study's five research questions and another titled *Uncategorized*. To begin coding, I counted the number of times a particular open or axial code was mentioned in the transcripts. I thought the frequency of a code being discussed would determine its relevance to the study. I noticed although some participants were more detailed than others, that did not necessarily mean their comments were more relevant; therefore, I discontinued this analysis strategy. Instead, I chose to count the

number of participants who discussed certain data. Commonalities from those axial codes became the selective codes that formed the themes in the results of my study. Interestingly, the themes formed from my second analysis strategy of counting the number of participants who discussed certain codes were nearly identical to the themes derived from my first analysis of counting the frequency of a code appearing within the raw data.

Research Question 1

What are rural high school teachers' perceptions of the relationship between virtual learning environments and students' emotional health?

Of the 24 participants, 13 participants indicated they had negative experiences with virtual learning and students' emotional health, 9 responded to having positive experiences, and 2 were neutral. I analyzed the raw data I collected to develop open coding and axial coding and developed themes for Research Question 1. Three themes emerged from the data for Research Question 1: student participation, student interaction, and student attendance (see Figure 8).

Figure 8

High School Teachers' Perceptions of the Relationship between Virtual Learning

and Students' Emotional Health

Open Codes	Axial Codes	Themes
Refusal to work in group activities Lack of school involvement Difficulty communicating	Difficulty with involvement and communication	Virtual learning influenced student participation.
Student distractions Few or no friends Lack of interaction Students felt incapable Student depression and anxiety Behavior and attendance issues	Student mental health Student isolation	Virtual learning influenced student interaction.
Attendance not taken seriously by students or parents Missing assignments due to absenteeism Not completing make-up work	Issues with attendance	Virtual learning influenced student attendance.

Student Participation. Sixteen participants discussed student

participation in their responses. Participants responded to having negative

experiences with student participation. Participants noted needs for stricter

participation requirements. Teacher04 specifically discussed students not being

penalized for not attending Zoom sessions if the students completed their work

and turned in their work for grading. Teacher04 said administrators made the

decision not to penalize students who did not attend Zoom sessions without

consulting with teachers first. Six participants had positive experiences with student participation. Teacher07 stated more opportunity was present for him to reach out to individual students in the virtual setting as compared to face-to-face instruction.

The topic of lack of training was also mentioned by 12 teachers. Lack of training was linked to student participation because both teachers and students struggled to operate in a new virtual learning environment. Brax County teachers stated they had little technology experience and did not know how to navigate virtual learning. Teacher10 commented the following:

> Most teachers were not trained at all before we were told to go to virtual learning. Both teachers and students were clueless in how to use learning platforms. How were we supposed to help students learn and show them how to operate in a virtual setting when we didn't know what to do ourselves?

Student Interaction. Fifteen teachers discussed student interaction in their responses. According to Teacher14, although students had more opportunity to FaceTime their friends, text, and virtually communicate with each other, students in quarantine told their teachers they felt alienated and alone. Teacher14 stated students missed having face-to-face interaction with their friends, teachers, and peer groups. Teacher14 further stated students without cell phones or computers reported to their teachers they felt isolated from everyone other than their in-home family members while virtual learning. Teacher08 stated the following:

High school students tend to hide feelings from their teachers and peer groups. When students came back to school this year, students seemed to be glad to get back to normal. Students knew they had emotional support at school because some of them did not have emotional support at home.

Student Attendance. Twenty-one of the 24 participants reported having difficulty with student attendance, and three participants reported no issues with attendance while in a virtual learning environment. Teacher15 reported being excited with the learning opportunity teachers thought the 2020-2021 school year would bring. Teacher15 also thought things would be back to normal, but instead, the 2021-2022 school year had been more difficult than 2019-2020 due to chronic absenteeism:

It doesn't matter if the absences were excused or unexcused, the learning content is still missing. Students are not concerned with missing school or learning content. Some of them are going to the nurse's office and pretending not to feel well so they can be sent home and quarantined for 10 days. Most students in quarantine are not logging in or using Canvas the entire time they are out. Then they come back and ask if they missed anything. This is happening every day, and I can't catch all my students up. I feel like I'm in a losing battle. I'm frustrated and I'm tired. All my colleagues feel the same way. Something has got to give.

Student participation, student interaction, and student attendance were the three themes for factors affecting student emotional health. Teachers responded with positive, negative, or neutral experiences with these three themes (see Figure 9).

Figure 9

Factors Affecting Student Emotional Health
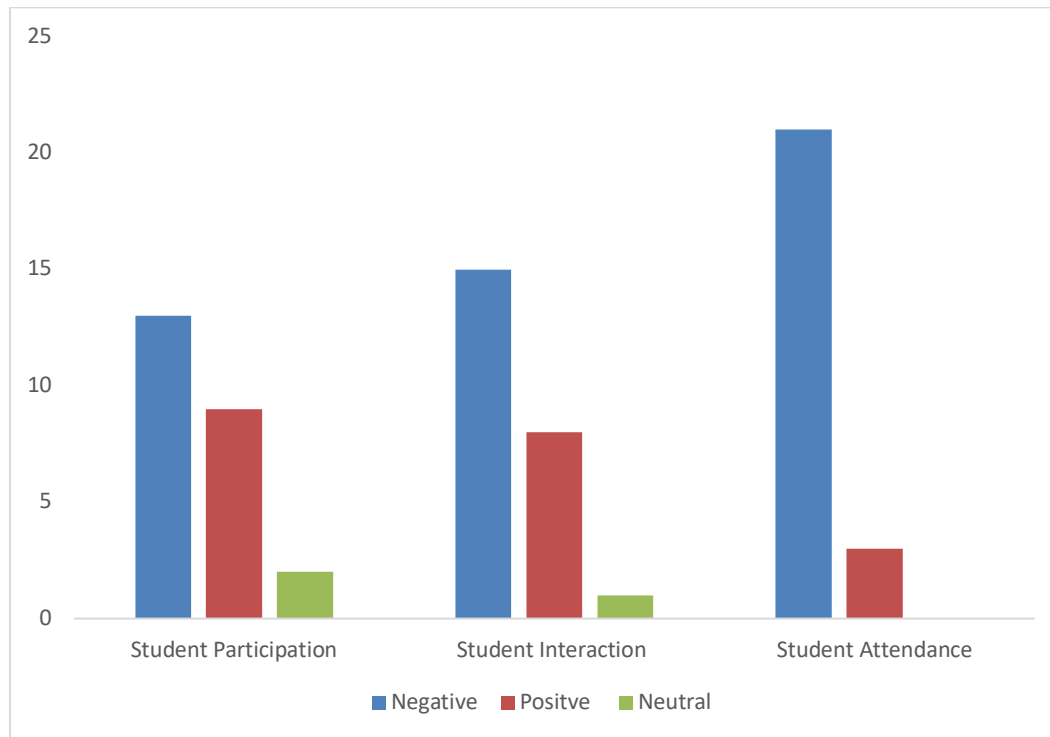
Research Question 2

What are rural high school teachers' perceptions of the relationship between virtual learning environments and students' motivation?

Twenty-two participants indicated they had negative experiences with virtual learning and students' motivation, and two participants indicated they had positive experiences with virtual learning. From the data, three themes emerged for Research Question 2: missed instruction, difficulty adapting to virtual learning, lack of home support (see Figure 10).

Figure 10

High School Teachers' Perceptions of the Relationship between Virtual Learning

and Students' Motivation

Open Codes	Axial Codes	Themes
Students didn't make up missing assignments Lack of student responsibility with schoolwork Grades not a priority for students	Students behind in academics Missed assignments	Virtual learning influenced missed instruction.
Parents did not respond to emails or phone calls Parents and students refused to take responsibility for students' lack of desire to complete assignments	No contact with parents Lack of responsibility	Virtual learning influenced lack of home support.
Teachers lacked training with VL Students lacked access to technology No previous experience with VL	Preference for in-class instruction	Virtual learning influenced adaptation to virtual learning for teachers and students.

Missed Instruction. Twenty-one participants discussed missed

instructional time as the main concern for students during the 2020-2021 school

year. Teacher07 stated the reason for missed instructional time for students as

"students needed to better adapt to at-home curricula." Teacher13 added the

statement:

> I've had kids that will be gone for weeks, then they will pop up for one
>
> week, then miss the next. It's hard to know what their struggles are, how
>
> to wrap your mind around it. I don't know how to help kids that are never

here to learn and never use my Canvas course that I have in place for extra

instructional support for students that are absent.

Teachers who taught tested subject areas reported being concerned with students

with missed instruction time. Evaluation scores of teachers who taught classes

with end of course (EOCs) were based on how their students performed on state

assessments such as EOC exams. A portion of teacher evaluations and school

accountability were measured by student EOC performance. Teacher03 discussed

concerns about 2021-2022 school year:

I am overwhelmed with the amount of work I have this year. I am

constantly trying to catch my students up because they are absent or miss

key concepts the first time it was taught. Students are constantly coming in

and out of quarantine, and we're juggling virtual students along with our

in-person students. I am concerned with how my students will perform on

EOCs but all I can do is my best. I am tired. We are all tired.

Teacher20 commented about experiences with virtual learning:

Virtual learning magnified students' lack of motivation because students

who typically did not exert a lot of effort prior to virtual learning were not

motivated to try to learn during virtual learning. Student motivation to

learn is at an all-time low because students lack the desire to want to learn

because they have been given a free pass since the start of COVID.

Difficulty Adapting to Virtual Learning. Sixteen participants discussed

difficulty adapting to virtual learning in their responses Teacher09 said she

needed additional support and guidance in planning instruction than before

teaching solely in-person. Teacher11 said making sure materials were accessible

was a major challenge, whether posting materials online or making paper packets for students to pick up. Teacher11 further stated, "If students aren't comfortable with the system we have in place, they avoid it. It's hard to measure engagement when you're all still learning how the new system works."

According to Teacher24, students relied on the structure and support of in-person school to help them stay on track with assignments. Teacher24 stated, "Virtual learning can't work for students who are dependent and irresponsible. They need guidance to get to where they need to be." Teacher08 discussed families and students:

> Families may be trying to help, but many were also trying to juggle work while their kids were learning at home. Once students got off track and missed a few assignments, some felt overwhelmed and thought it was impossible to catch up. A lot of times, students chose to disengage instead.

Teacher12 added thoughts about students with difficulty in virtual learning:

> It was likely that some students found online learning so tedious or hard to keep up with that they just stopped using it altogether, especially since schools stopped grading or taking attendance at the start of the pandemic. Students thought they would continue to get a pass like they did last year. A lot of them have had to learn the hard way.

Lack of Student Home Support. Fifteen participants discussed lack of home support in their responses. The area in which I conducted my research was a rural area where most households consisted of both parents in the home working fulltime jobs. A common theme of the teachers I interviewed was their students had to take care of their siblings while at home when their parents were working.

Teacher05 stated, "It was common for my students to be on a Zoom with me while acting as the caregiver for their siblings." According to Teacher05, students were distracted because they could not fully focus on their own schoolwork. According to Teacher07, students with younger siblings said they were too tired to do their own schoolwork after helping their siblings with their schoolwork or keeping their siblings from destroying their house. Teacher07 stated, "These students may attend only half of the classes they are required to attend virtually."

Teacher15 made the point that in the northern area of Brax County, not everyone has a bedroom to themselves, and the northern school community commonly had multiple families who lived in the same house. Teacher15 commented, "If there isn't a quiet space where students can focus, it's just easier for them to not connect with their teacher virtually at all." According to Teacher15, this was a normal practice. Teacher15 reported it was more routine for virtual students to become *ghosts* than for them to connect with her virtually or access her Canvas course.

Missed instruction, difficulty adapting to virtual learning, and lack of home support were the three themes for factors affecting student motivation to learn. Teachers responded with positive, negative, or neutral experiences with these three themes (see Figure 11).

Figure 11

Factors Affecting Student Motivation to Learn
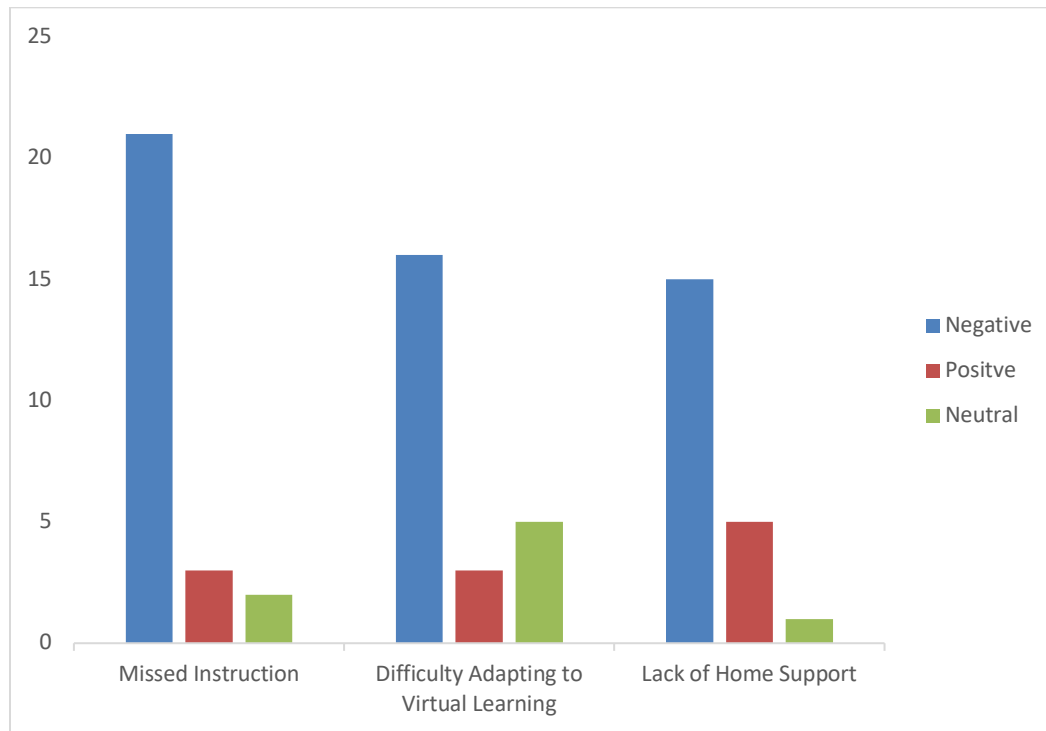
Research Question 3

What are rural high school teachers' perceptions of the relationship between virtual learning environments and students' personalized instruction?

Nineteen participants responded to having negative experiences with virtual learning and students' personalized instruction, and five participants responded to having positive experiences. From the data, four themes emerged for Research Question 3: teacher workload, less planning time, less collaboration, and difficulty in forming relationships with students (see Figure 12).

Figure 12

Open Coding, Axial Coding, and Themes for High School Teachers' Perceptions

of the Relationship between Virtual Learning and Students' Personalized

Instruction

Open Codes	Axial Codes	Themes
Teachers overextended High stress levels Lack of teacher support	Teachers overwhelmed Too many expectations	Virtual learning influenced teacher workload.
Teacher shortages Substitute shortages Teachers asked to work during planning time Teachers used planning time to try to learn how to use VL	Lack of teachers and substitutes Inefficient planning time	Virtual learning influenced less planning time.
Teachers lacked collaboration with other teachers Teachers unsure how to collaborate about VL Not enough time during school day	Lack of collaboration Lack of time	Virtual learning influenced less collaboration.
Lack of virtual learning training Students didn't feel supported Lack of student/teacher relationships made learning strained	Relationships hard to maintain Students felt lack of connection	Virtual learning influenced relationships with students.

Teacher Workload. Twenty-three participants discussed teacher

workload in their responses. Teacher19 commented COVID-19 pressed teachers

into new and challenging teaching conditions that increased their workloads. Prior

to COVID-19, teachers in Brax County high schools had no experience with

virtual learning, stated Teacher03. Teacher05 said teachers found themselves starting the 2020-2021 school year in a fully virtual model, which left them developing new strategies for their classrooms. According to Teacher17, teachers worked in a hybrid model the 2021-2022 school year, with the added challenge of having students both face-to-face and virtual at the same time. Twenty-three out of the 24 teachers stated their teaching experience the 2021-2022 school year had been both challenging and draining.

Teacher12 stated, "Planning for new modes of teaching is extremely time-consuming, especially when you are teaching virtually for the first time." Teacher16 discussed long work hours:

I stare at a computer for eight solid hours, my eyes are strained, my shoulders are tense, and I have to keep reminding myself, all this is new, and we are all learning, and it will get easier, I hope. If it doesn't get easier, I don't know what I will do. I don't know how much longer I can keep this up.

Teacher03 also stated long work hours:

There is not enough time to teach in a hybrid model. Between the lost class time, messages, and extra duties, we are all exhausted. There are not enough hours in the day.

Less Planning Time. 20 participants discussed less planning time in their responses. Teacher shortages and substitute teacher shortages resulted in teachers working extra hours for the 2020-2021 school year, reported Teacher06. To help with the shortages of teachers and substitutes at Brax County high schools, Brax County teachers had the opportunity to teach four classes a day instead of three

classes plus a planning period, according to Teacher03. Teacher03 further stated
Brax County teachers chose to teach four classes instead of three because of the
boost it offered their income. Teachers who opted out of teaching four classes a
day complained they did not get full planning periods.

Teacher01 discussed the need for more planning time:

> Enough time to do everything that is asked of a high school teacher and
> still have time for family doesn't lend itself to any kind of proper balance
> if you are teaching correctly and doing everything you are being asked to
> do. Planning periods are never a full planning period because of constant
> interruptions. The substitute shortage has resulted in teachers always
> having to cover other teachers' classes when they are out. We constantly
> have to take work home. I never feel caught up.

Less Collaboration. Eighteen participants discussed less collaboration in
their responses. Teacher05 stated, "Teachers collaborate in a multitude of ways
when they interact with their colleagues to exchange ideas and resources, discuss
student learning, team up for joint activities and knowledge creation." According
to Teacher05, it was in these ways that teachers co-created and enhanced their
learning with a shared aim to provide quality learning experiences to their
students. In addition to supporting the instructional role of teachers, collaboration
was necessary in building relationships among teachers, so teachers felt part of a
professional community and derived personal fulfilment from their work,
according to Teacher08. Teacher17 talked about a loss of collaboration:

> I feel a major loss of teacher collaboration since COVID-19 hit last year. I
> think less collaboration has caused severe implications for the quality of

virtual learning for our students, especially in rural schools like [Brax County].

Student Relationships. Fifteen participants discussed student relationships in their responses. Teacher11 stated students were not connecting virtually because students reported they felt invisible while they were in the physical classroom, making them feel they would not be missed in the virtual classroom. Teacher08 stated, "Some students didn't find their teachers to be very engaging in person, so they weren't concerned about engaging with those particular teachers virtually." Teacher19 commented about the importance of relationships while students were virtual learning:

> Just like our in-person classrooms, no two virtual classrooms will look the same; however, this was the time for us as teachers to be intentional about the steps and mentalities we plan to adopt to unite our students through positive relationships, doing the best we can to foster meaningful, lifelong learning in our students.

Increased teacher workload, less planning time, less collaboration, and relationships with students were the four themes for factors affecting student personalized instruction. Teachers responded with positive, negative, or neutral experiences with these four themes (see Figure 13).

Figure 13

Factors Affecting Student Personalized Instruction
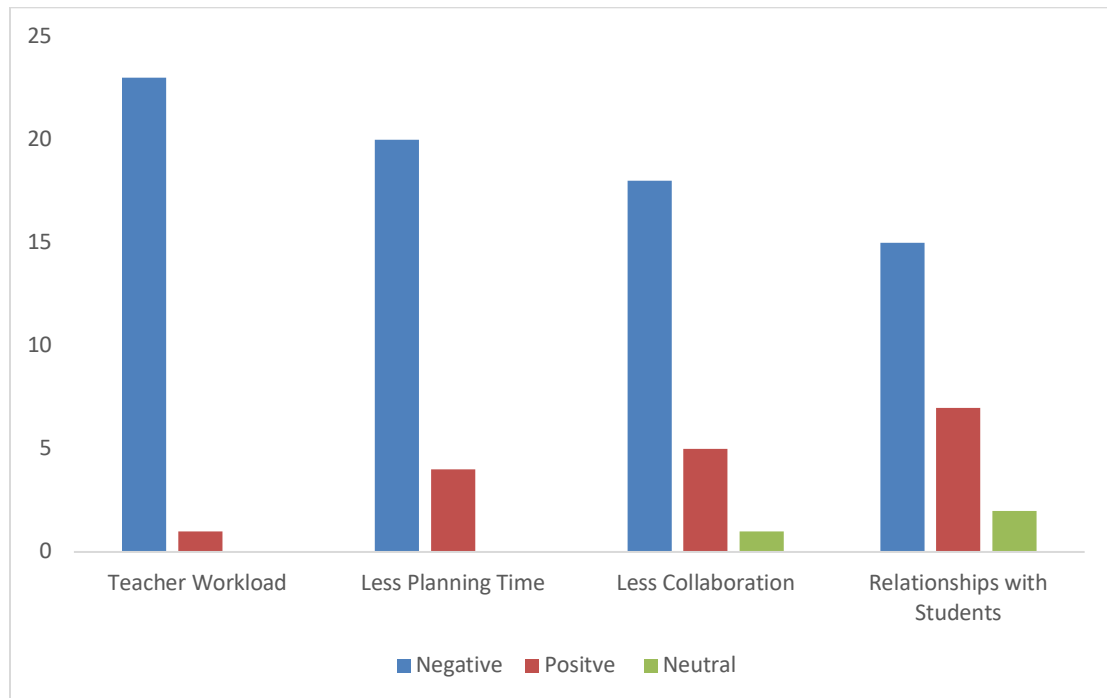
Research Question 4

What are rural high school teachers' perceptions of the relationship between virtual learning environments and students' classroom performance?

Twenty-one participants responded to having negative experiences with virtual learning and student classroom performance, and three responded to having positive experiences. From the data, three themes emerged for Research Question 4: lack of teacher to student communication, lack of internet/devices, and lack of student engagement (see Figure 14).

Figure 14

Teachers' Perceptions of the Relationship Between Virtual Learning

Environments and Students' Classroom Performance

Open Codes	Axial Codes	Themes
Students unsure how to communicate virtually Teachers unable to contact students or parents Students didn't understand their expectations	Struggle with communication Unclear expectations	Virtual learning influenced communication.
Lack of internet and computer devices for teachers and students Teachers unsure how to navigate virtual platforms	Lack of efficient technology	Virtual learning influenced lack of internet/computer.
Students not completing assignments Lack of desire to want to learn Students didn't log in	Issues with student engagement	Virtual learning influenced student engagement.

Communication. Thirteen participants discussed communication in their

responses. According to Teacher22, effective communication between teachers

and students had the potential to improve the virtual learning experience and

create a positive environment in the classroom. Teacher22 stated, "The

student/teachers relationship takes work on both ends." Teacher14 said they

struggled with communication barriers during virtual learning this year, which

made it difficult for students to get the most out of their education. Teacher18

stated, "This year teachers failed to create engaging lessons and struggled to

connect with their students on a one-to-one basis." Teacher21 stated they thought personality differences and peer pressure added to the mix, which made some classroom interactions seem awkward or forced.

Lack of Internet/Computer Devices. participants discussed the lack of internet/computer devices in their responses. Teacher09 stated the following about technology:

There is still a major lack of infrastructure to support internet usage in rural areas. Many county students and teachers live in places where there are extreme limitations to accessing the internet at all. A lot of teachers have resorted to mailing packets home to students instead of using virtual learning due to access issues.

Teacher10 stated, "Students without reliable internet or computer devices are academically crippled because they do not have the opportunity to learn virtually at home."

Teacher02 discussed experiences with internet and technology:

No matter the charisma I bring to the screen while I'm teaching virtually, it's no match for glitchy internet connections. Every day, I have to deal with my virtual students experiencing an outage that cuts into their learning time. Nearly all my students are from low-income families, and many can't afford wired, broadband service.

Teacher24 echoed these concerns but specifically discussed inequities due to the rural area of Brax County:

There is so much inequity in rural education. I literally have taught all over the country and have experienced a lot of diversity in many different

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situations. It wasn't until I got to this area that I saw some of the largest learning and technology gaps I have ever seen.

Student Engagement. Seventeen participants discussed student engagement in their responses. Participants said their students became more passive, had less of a sense of social belonging, and felt disengaged from their learning. Teacher13 stated, "The importance of student engagement cannot be underestimated. Student engagement affects student achievement, students' futures, and it can potentially help close learning gaps."

Participants said they had more challenges with virtual learning students completing their assignments than those who attended school in-person. Question 10 in the interview protocol was *Do you have any additional thoughts you would like to add to these questions?* Four teachers who had experience teaching both virtually and in-person the 2020-2021 school year gave an estimate of how many of their students regularly completed all or almost all their assignments. The teachers estimated 58% of virtual students completed their assignments compared to 84% of students learning in person. Teacher24 echoed this concern:

> The learning gaps are massive. I don't know what the State of Tennessee is expecting in terms of growth. All my students, in every class, are way behind. For example, I teach an honors, class but only half of my class are truly honors level students. I can't teach my honors class like a true honors class because I would be leaving half of my class behind. It has been a real struggle and it will continue to be a struggle for years.

Communication, lack of internet/computer devices, and student engagement were the three themes for factors affecting student classroom performance. Teachers

responded with positive, negative, or neutral experiences with these three themes

(see Figure 15).

Figure 15

Factors Affecting Student Classroom Performance
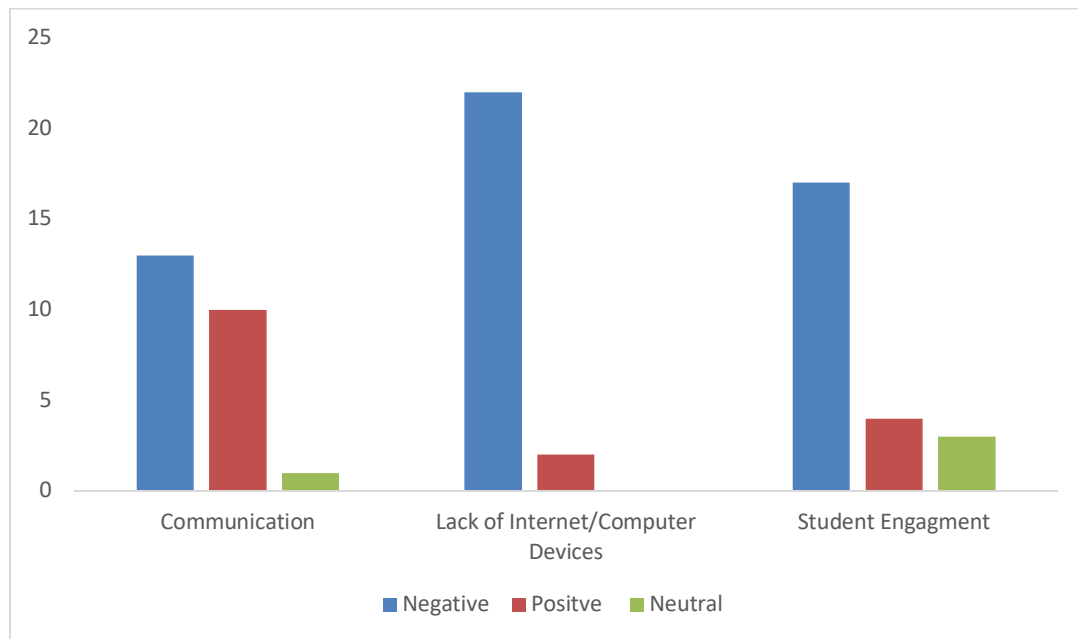
Research Question 5

What are rural high school teachers' perceptions of the relationship

between virtual learning environments and students' learning loss?

Nineteen participants responded to having negative experiences with

virtual learning and student learning loss, four responded to having positive

experiences, and one was neutral. From the data, three themes emerged for

Research Question 5: teacher support, noncovered curriculum, and learning gaps

(see Figure 16).

Figure 16

Teachers' Perceptions of the Relationship Between Virtual Learning

Environments and Students' Learning Loss

Open Codes	Axial Codes	Themes
Lack of training Unable to differentiate learning Limited resources Principal expectations	Difficulty navigating virtual learning Lack of PD/support	Virtual learning influenced teacher support.
Teachers forced to cover curriculum at a slower pace Students didn't feel prepared to take exams	Teachers unable to cover curriculum	Virtual learning influenced noncovered curriculum.
Students didn't expect to work for good grades Teachers tried to catch students up Students lacked desire to learn Students behind	Lack of engagement Missed instruction Learning deficiencies	Virtual learning influenced learning gaps.

Teacher Support. Fourteen participants discussed teacher support in their responses. Teacher20 discussed the lack of teacher support at their school:

It's sad because I love what I do, but I hate all the extra stuff that we're having to do. I have been a teacher for 22 years, and I have never felt more exhausted. All this extra stuff just feels like it's piled on, and it's not like it's not necessary, but it's not the best practice. I just feel like we're trying to go back to normal but normal wasn't great to begin with. I've got like five years left before I can retire. I'm just like, keep on pushing, you're

almost there. I hate that I think that way, and I'm not the only one. We all feel overwhelmed, and our principal has no clue how hard it's been.

Seventeen out of the 24 participants said they took on additional responsibilities and taught in new ways the 2021-2022 year as compared to previous years. Even so, teachers reported they spent less time in formal professional development and mentoring programs, compared to previous years. Teacher04 stated, "I think our principals meant well by giving us more time to prepare to teach, but teachers really could have benefited from useful professional development." Brax County teachers reported their workload and support shifted the 2021-2022 school year, and teachers who taught both virtually and in person reported challenges related to resources, lack of training, and lack of time.

Uncovered Curriculum. Twenty-two participants discussed uncovered curriculum in their responses. The Brax County participants stated they were unable to cover their entire teaching curriculum the 2020-2021 school year. Teachers had several reasons for this, including teachers needed to know the skills their students retained or did not retain from the 2020-2021 school year. Teachers could not teach new material if the foundational knowledge had not been built (Teacher06). Teacher20 commented about curriculum:

> [In 2021-2022], teachers had to make a choice to try to get through all the material we have taught in the past or to focus instead on the underlying basics. We all want to achieve the impossible: catching up students who may be two years behind grade-level standards, while teaching and motivating those who are where they should be at the same time.

Teacher12 stated, "Recovering content that was never able to be learned by the student while virtual learning or has been lost due to absences had been difficult." Teacher19 was concerned with students permanently being behind because teachers could not teach students what students needed to know for the teachers' classes because teachers taught concepts students should have already learned. Teacher19 stated, "I feel like I am spinning my wheels. Math is not a subject that can be taught without previous concepts being covered. I'm at a loss."

Learning Gaps. Eighteen participants discussed learning gaps in their responses. Participants reported seeing learning loss in their students over the 2020-2021 school year when compared with students in previous years. Brax County teachers said their students were behind both academically and socially. Teacher02 said, "The goal was to get students excited about school this year and to help students who needed it most without making them feel like they have fallen off track." Teacher11 commented about learning gaps:

A lot of students have large learning gaps due to being absent or not having what they needed when required to be out due to COVID. We need to offer learning opportunities to fill those gaps.

Teacher23 discussed the importance of having patience and understanding when dealing with students with major learning gaps:

I try to be patient with students and realize they will have major holes in their knowledge base. I also try to listen to them when they tell me about their struggles because we have all had struggles this year.

Teacher21 discussed the importance of teachers needing time to fill gaps and to teach what the students needed instead of rushing along just to cover all

expected curriculum. Teacher21 commented, "Our students will not learn anything this year if we don't slow down to fill in the gaps created by virtual learning." Teacher24 said, "Students need teachers in a small group setting to receive targeted instruction to address their learning gaps. Then we can focus on the new stuff." Teacher support, noncovered curriculum, and learning gaps were the three themes for factors affecting student learning loss. Teachers responded with positive, negative, or neutral experiences with these three themes (see Figure 17).

Figure 17

Factors Affecting Student Learning Loss
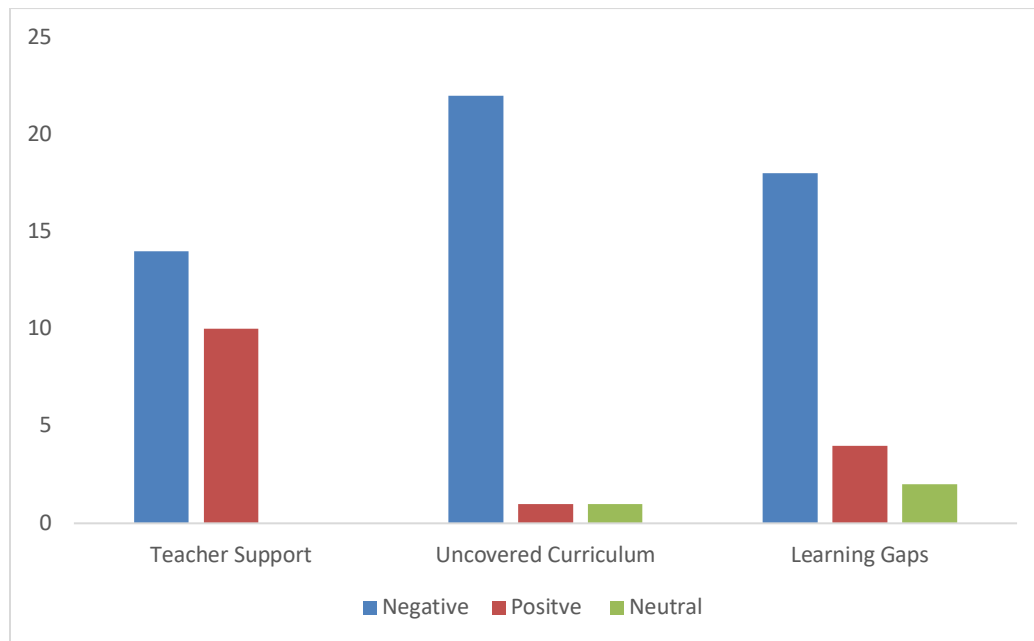
Summary of Results

The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students'

personalized instruction, students' classroom performance, and students' learning

loss in a virtual learning environment. Using semi-structured interviews, I

collected teachers' perceptions regarding virtual learning environments. Through

analysis of the data, themes emerged for each of the five research questions of this

study. Through data analysis, I discovered rural teachers perceived students'

participation, students' interaction, and students' attendance related to Research

Question 1. Students who lacked participation in school, lacked interacting with

peers, and lacked school attendance had more emotional health issues as reported

by teachers in my study.

The themes formed around Research Question 2 were missed instruction,

difficulty adapting to virtual learning, and lack of home support. Students with

less motivation to learn were found to have negative experiences with the themes

of Research Question 2. Themes formed around Research Question 3 were

teacher workload, less planning time, less collaboration, and difficulty in forming

relationships with students. Through data analysis, I discovered rural teachers

identified lack of teacher to student communication, lack of internet/computer

devices, and lack of student engagement was related to Research Question 4.

Students who lacked communication, internet/computer devices, and student

engagement had lower classroom performance as reported by teachers in my

study. Finally, the themes formed around Research Question 5 included teacher

support, noncovered curriculum, and major learning gaps. While specific

comments from the participants did not always align within these themes, the

importance the participants placed on these themes as points of dialogue in their

interview responses informed the discussion of implications and

recommendations in the next chapter, Chapter V: Discussion of the Study.

Chapter V: Discussion of the Study

The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment. I developed five research questions, which helped me identify teachers' perceptions of students' learning environments as a result of virtual learning. Using a qualitative interpretive study, specifically semi-structured interviews with teachers, I generated themes that informed this chapter, Discussion of the Study.

At the time of this study in 2021, researchers focused on the unexpected transition to virtual learning to continue providing education to students during COVID-19; however, the literature lacked discussion on the learning gaps that resulted from virtual learning, specifically in grade levels 9-12. The lack of educational research regarding teachers' perceptions of virtual learning motivated me to fill the gap concerning virtual learning and the difficulty rural teachers and students had in transitioning to virtual learning. This study aligned with the theoretical framework of *transformative learning*. According to researchers, the transformative learning theory referred to the interpretations of personal experiences by bringing about changes in behaviors, beliefs, assumptions, judgments, and mindset (DeSapio, 2017; Kitchenham, 2008; Mezirow, 2000). In education, the transformative learning theory was associated with changing students' and teachers' judgment, beliefs, and expectations (DeSapio, 2017; Lee & Tsai, 2010; Mezirow, 2000). Rural teachers had transformative learning experiences when introduced to virtual learning with limited experience and tools.

Since COVID-19 began, teachers questioned what they previously thought about virtual learning and examined things from new perspectives to make room for new insights and information (DeSapio, 2017; Kitchenham, 2008; Lee & Tsai, 2010; Mezirow, 2000).

Teachers perceived negative experiences with virtual learning led to negative experiences with student emotional health. Virtual learning in rural schools happened primarily because of COVID-19; teachers struggled with getting students to participate in a virtual learning setting. Virtual learning added communication barriers because students had to know how to use different virtual learning platforms for communication and learning purposes. Student interaction while in virtual learning was much less than when students were together in a classroom because students virtual learning environment was too formal and not as natural as their classroom settings.

Teachers in schools with smaller populations benefitted because teachers could more easily catch up who missed virtual learning sessions due to fewer students and smaller class sizes. Even so, this required time and effort on behalf of the teachers. Teaching in the hybrid model (i.e., students attended school two days a week and worked virtually three days a week) during the 2020-2021 school year was a challenge because teachers juggled in-person students and virtual students. Teachers responsible for all their students, even the ones who did not want to attend or participate in learning.

Teachers perceived a negative association with virtual learning and student motivation to learn. Students who did not attend virtual learning sessions missed instruction. Additionally, virtual learning was difficult to students because

teachers changed the way they typically taught. Instead of recording themselves

teaching, teachers resorted to giving their students videos to watch instead of

instructing them directly or in a pre-recorded video. This style of teaching was

less effective because students were not responding to virtual learning. Once

students vocalized this concern with their teachers, teachers responded by

recording themselves teaching and making the recording accessible on their

virtual learning platform, which increased students' adaptation to virtual learning.

In schools located in rural areas, students struggled with virtual learning

because of lack of home support. Students to take care of younger siblings, had

technology access problems, and did not have parental support at home. Both

parents worked, mostly out of the home, and were not home to make sure virtual

learning took place. Students lacked having parents at home to monitor them to

make sure students were completing schoolwork, resulting in the schoolwork not

being completed.

Teachers had a negative association with virtual learning and student

personalized instruction. Teachers worked harder to ensure the uninterrupted flow

of education. Teachers continued to work long hours and tried to make the most

of limited resources. Teachers had other issues related to teacher workload:

- Lack of preparation and support for virtual learning;

- Difficulty monitoring student progress without face-to-face;

  conversations;

- Excessive screen time and eye fatigue; and

- Difficulty finding and creating resources for students.

Teachers who returned from total virtual learning during the 2021-2022 school year improved the lack of planning time and collaboration. Teachers felt overwhelmed and disconnected while teaching during virtual learning. Teachers learned a lot about virtual learning from each other after their in-person return the 2021-2022 school year. Teachers gained knowledge and tools to use as they continued to use virtual learning alongside in-person learning.

Regarding relationships, teachers felt removed and isolated from students during virtual learning. Teachers complained about a lack of a spark with their students during virtual learning because connections had not been made with the students, despite both teachers and students trying. Teachers reported success with relationships with students when in-person instruction returned August 2021.

Teachers perceived a negative association with virtual learning and student classroom performance. Teachers could not communicate regularly with the students during virtual learning because teachers and students lacked access to the internet and computer devices. If students were not one-to-one with technology (i.e., each student has their own computer provided by the schools), lack of ability to communicate and lack of internet/devices lowered overall student engagement. The teachers lacked training to keep their students engaged and challenged. Students lacked knowing how to access and use virtual learning.

Finally, teachers perceived a negative association with virtual learning and student learning loss. The 2020-2021 school year had unexpected turns and the rush to virtual learning was difficult because teachers and students lacked training and support to go to full-time virtual learning. Teachers stated the most exhausting thing for them was trying to hold the attention of their students while

participating in virtual learning. Teachers lacked foundational knowledge in how to use virtual learning tools to help engage their students.

Teachers declared the 2020-2021 school year a *wash*, meaning teachers tried to cover as much of their curriculums as they could. Teachers vocalized the difficulty in trying to teach in a virtual setting when more than half of their students would not participate in the learning. Teachers worked hard to connect with all students but were not successful because the students did not have a responsibility during virtual learning. Teachers covered less curriculum during the 2020-2021 school year while teaching virtually, leading to learning loss of their students. Because of this, teachers had to move much slower and were not able to fully cover their state curriculums. This put students behind for the next year because learning concepts from the 2019-2020 school year had not been met.

Implications for Practice

Teachers need more planning time and professional support, especially when they have new instructional responsibilities. With new responsibilities in any school year (e.g., additional teaching responsibilities, new teaching platforms), teachers face challenges, especially with teaching virtually. Schools continue to face quarantines and illnesses; therefore, it is imperative that principals address these challenges. Teachers should demand more planning time and professional support. Principals should ensure the teachers have more planning time, materials to support virtual learning, and ways to connect with students who continue to miss instructional time. Principals can do this by protecting teachers' planning times, supporting teachers with meaningful professional developments, and providing teachers with mentors to help them

grow in their efforts to teach virtually. As teachers navigate ongoing challenges of virtual learning, principals must provide personal and professional support for their teachers.

Technology barriers continue to cause disadvantages in schools located in rural and economically disadvantaged communities. Inequities persist in teachers' reported challenges with technology and internet access for virtual learning. Teachers in rural districts continue to identify technology barriers and issues with internet access. Teachers must demand the digital divide in their district be minimized so all students can have equal access to virtual learning. Bridging the digital divide must be a priority for principals and district administrators given the increasing use of virtual learning. Principals and district administrators should find a way to serve all students in all areas, especially in rural areas where the digital divide is greatest. Principals and district administrators need to provide internet services and computer devices for students in rural areas so all students can be virtually connected for learning purposes.

Additional resources and support to promote accelerated learning that can make up for missed instructional time are needed by teachers. Students miss instructional time if they do not have adequate access. Teachers need additional learning time through summer school or extended day, extra focus on foundational skills, and individualized support for students to try to make up for lost time. Teachers must be allowed targeted supports to re-engage students as a result of virtual learning. Principals and support staff must make this a priority for the success of students by providing summer school and after school learning opportunities for students.

Lastly, teachers should be able to better personalize students' learning experiences by using the skills teachers learned during virtual teaching for building effective relationships with students. The consistent use of multiple forms of communication, individualized feedback, appealing to students' individual interests, humanizing themselves, and using synchronous meetings can all help to build a sense of community and strengthen relationships. While these strategies are effective for many virtual teachers, they require considerable time and effort on the part of the teacher. Relationship-building in a virtual classroom is a deliberate, and multi-faceted effort. Principals and stakeholders must help with this effort by making sure teachers and students are equipped with the training and technology to improve virtual relationships. Principals and stakeholders can do this by providing meaningful training and professional development for teachers. Teachers desire to improve instruction and relationships with their students now that they have experience with virtual learning. Teachers must use their knowledge and experience with virtual learning to help students become better at navigating virtual learning.

Recommendations for Further Research

The teachers' willingness to participate in this study was evident in the impassioned way they opened up about their perceptions. The final question I asked in the interview protocol was if there was anything else participants would like to share. While the intent of this question was to give participants an additional opportunity to discuss their experiences with virtual learning, participants shared other ideas and concerns that were not a focus of this research study.

This study included teachers at only the high school level. Future researchers should use the design of this study with teachers at both the elementary and middle school levels in rural schools to understand their experiences relative to the grade levels they teach. Further, my focus was solely on teachers' perceptions; future researchers should examine students' perceptions of virtual learning environments in rural high schools. With the additional information of students' perceptions, researchers may find additional ways to improve virtual learning in rural schools.

Future researchers should examine rural school systems that may have more funding. The information gathered from a study in a higher-funded rural area can be compared to this study to determine ways to improve virtual instruction and student learning experiences in lower-funded rural areas. Higher-funded and lower-funded rural districts can compare ways they devised innovative strategies to help put materials and instruction in the hands of students. Also, a higher-funded rural study could help provide ways for additional funding to be provided to lower-funded rural areas to provide equal access for lower-funded students.

Additionally, future researchers should expand this study by investigating a larger population of teachers. A larger teacher population would allow for more diversity in the research. The more people who participate, the better the study would be. Having a larger number of participants would reduce the risk of possible biased groups. A larger teacher population would enable researchers to place greater confidence in the outcome and result in more data and more

information. A larger sample size of teachers will increase the confidence and decrease uncertainties with greater precision.

Also, researchers should expand this research to discover similarities or differences in teachers' perceptions' if they conducted this study in a different county or region. Conducting this research in a different county or region would be beneficial because teachers' perceptions in a different county or region would differ from teachers' perceptions in the rural area where I conducted my research. Researchers should compare teachers' experiences and perceptions to help benefit both teachers and students by identifying ways to improve virtual learning based on teacher and student need in an area.

Finally, researchers should compare this study to a different population interpretive study, such as a suburban school area. Comparing suburban teachers' perceptions of student learning environments resulting from virtual learning to rural teachers' perceptions would help teachers, principals, and stakeholders find ways to give all students the supplies they need to participate in virtual learning adequately. While rural students have digital disadvantages, suburban teachers may provide a new perspective on serving rural students better.

Conclusions of the Study

The purpose of this study was to determine teachers' perceptions of virtual learning and students' emotional health, students' motivation to learn, students' personalized instruction, students' classroom performance, and students' learning loss in a virtual learning environment. Using semi-structured interviews consisting of 24 rural high school teachers and qualitative data analysis of the interview data, I formed key themes for each of the five research questions. From

the existing literature and the findings of this study, I made the following conclusions.

This study benefited rural communities by analyzing teacher perceptions relating to the lack of student opportunity in virtual learning. In doing so, teachers validated their perceptions that ran parallel with others in this study. Teachers increased their awareness of other topics for discussion through perceptions and analyses in this study, which they may not have otherwise considered. Rural communities and teachers benefitted in their reflection and decision-making if presented with the option of virtual learning in their own local schools or districts. Information obtained from this study should help educational leaders and policymakers may make more informed decisions to lead their rural schools and communities when considering virtual learning.

Public officials and leaders in public schools are obligated to their communities and stakeholders, by their positions as public servants, to prepare their teachers to teach their students to the best of the teachers' ability. If virtual learning is in the best interest of the students, then policymakers and educational leaders should develop and communicate clear and specific plans to all stakeholders. All students deserve an education that meets the distinctive needs of everyone no matter where their strengths and weaknesses lie.

Learning loss took place in Brax County Schools due to virtual learning. Students lost academic and social growth the 2020-2021 school year. Teachers need to know how to best serve students who need extra support. Stakeholders will benefit from this study because identifying learning loss from virtual learning will allow teachers to work on how to address and prevent future learning loss

related to virtual learning. This research will help identify learning loss and how to address learning loss in hopes that teachers will continue to use forms of virtual learning in their regular instruction.

Considering the teachers' perceptions of student learning environments as a result of virtual learning, educational leaders and policymakers should benefit from knowledge of teachers' perception of what student learning environments had been like as a result of virtual learning. This study should be used to ignite more research toward virtual learning in rural schools. Successful implementation of virtual learning will help teachers focus on educating the *whole child*, which includes teaching social, emotional, and behavioral skills. With successful supports and training in place, teachers will be able to overcome the disparities in rural schools and improve outcomes for their students.

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Appendix A

Interview Protocol

Candidate Name: Kimber McIntyre
Date of Interview:
Time Interview Began:
Time Interview Concluded:
Participant Pseudonym/Code:
Participant Information:
Teacher

Interviewer (I):
This interview should take about 30 minutes.

Do you mind if I record our conversation? I can pause or stop the recording any time you ask me.

During the COVID-19 pandemic, the unexpected transition to virtual learning changed students' learning environments. Now that your school system has returned to in-person learning, I would like to better understand how virtual learning impacted student learning. I am gathering data that might shed light on teacher perceptions of virtual learning environments and how we can improve the virtual learning process. As a high school teacher, you have first-hand knowledge of how your students' learning environments have been influenced, which makes you a valuable source of data.

Your responses will remain confidential.

At your request, you will be provided a printed copy of the transcript of this interview to provide you with the opportunity to check for accuracy.

You may end the interview at any time. Just tell me you want to stop.

Do you understand everything so far?

Do you have any questions?

May we begin?

Participant (P): Participant Affirmation(s)

1. What changes, if any, did you see in students' motivation to learn while they were learning virtually?

2. What are some methods, if any, that you have used to differentiate instruction for your students to meet individual needs while they were learning virtually?

3. If your students have incurred challenges with classroom performance due to virtual learning, what were those challenges?

4. How did you help students overcome challenges?

5. Retention of learned material is crucial in education. How well did your students learn and retain material while they were learning virtually? Please provide an example of this.

6. Lack of social interaction during virtual learning can lead to feelings of loneliness and isolation. Did you notice a problem with this for your students? Please provide an example.

7. How was your experience teaching students virtually compared to in-person teaching?

8. Do you think your students are learning as much now as they were before switching to virtual learning?

9. In terms of time and work, were your overall expectations for students the same while students were learning virtually or different from a traditional setting?

10. Do you have any additional thoughts you would like to add to these questions?

Appendix B

Participant Invitation Letter with Implied Consent

Researcher: Kimberly McIntyre
EdD Candidate at Lincoln Memorial University
Kimberly.McIntyre@lmunet.edu
Phone: XXXXXXXXXX

Faculty Sponsor: Dr. Cherie Gaines
Professor and Chairperson at Lincoln Memorial University
Cherie.Gaines@lmunet.edu

Dear Educator,

Your participation is being requested for the research study entitled *Teacher Perceptions of Virtual Learning Environments in Tennessee Rural High Schools*. This study is in partial fulfillment of the requirements for the degree of Doctor of Education at Lincoln Memorial University, where I am currently enrolled. Your participation will be extremely valuable to me due to your knowledge and expertise in this subject area; therefore, I am kindly requesting your participation in my research study. Participation in this study is voluntary. Please read the information below and contact me via email or cell phone number listed above with any question you may have before deciding to participate.

The purpose of my research study is to explore teacher perceptions of their roles and responsibilities related to virtual learning. The global disruption that the COVID-19 pandemic created resulted in most schools to move to virtual learning. For teachers to succeed in virtual learning, they must feel comfortable and satisfied while doing their jobs. With your help, this study may help to better prepare teachers with their transition from in-person teaching to virtual teaching. As a result, students, teachers, and administrators may benefit from the results of the data.

You are eligible to participate in this study if you are (a) certified and licensed by the State of Tennessee, (b) work in a high school, (c) work as a classroom teacher.

This study includes 10 questions to be completed via an in-person or Zoom interview and will require approximately 30 minutes of your time. You may refuse to answer any question or discontinue your involvement at any time without penalty. If at any time you discontinue the interview, your results will be discarded. Your responses will be kept strictly confidential, and data will be stored in secure computer files and secure storage location in hard copy. Any report of this research that is made available to the public will not include your name or any other individual information by which you could be identified. Your decision to participate will not affect your current or future relationship with Lincoln Memorial University.

There are no known harms or discomforts associated with this study, as it involves minimal risk and is an effort to highlight your current success as an educator and the support you provide to individuals in your school. To prepare for this study, I am asking that you consider your role as a classroom teacher and share those experiences to the best of your knowledge.

If you are unable to contact the researcher listed at the top of this form or faculty sponsor and have general questions, concerns, complaints, or inquiries

about your rights as for participating in research, please contact the Chair of the LMU IRB, Dr. Kay Paris at (423)869-6323 or by email at kay.paris@lmunet.edu.

This research has been approved by the Lincoln Memorial University's Institutional Review Board. If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you may contact Dr. Kay Paris, Chair of the Human Subjects Committee, Institutional Review Board at 423-869-6834. Additional contact information is available at www.lmunet.edu/administration/office-of-research-grants-and-sponsored-programs-orgso/institutional-review-board-irb

By moving forward and completing the interview I will schedule, you are agreeing that you work as a classroom teacher, you are over the age of 18, and you give your implied consent to participate in this study.

Thank you for your consideration to participate in my study.

Kimberly McIntyre