2023

Best practices of virtual learning for K-5 students

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BEST PRACTICES OF VIRTUAL LEARNING FOR K-5 STUDENTS

A dissertation submitted in partial satisfaction

of the requirements for the degree of

Doctor of Education in Learning Technologies

by

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October, 2023

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ACKNOWLEDGMENTS

I must thank my Lord and Savior, Jesus Christ. I would never have pictured being here today, ten, five, or just a few years ago when I started this program in 2020. Younger me pictured a teacher who would eventually become a principal one day when I felt the time was right. However, I did not realize that God had bigger plans for me and my purpose. He guided me through this journey and continues to guide me daily. All I can say is, "When we plan, God laughs."

Next, I would like to thank my mother and father for always having my back and being my number one supporter. Despite all the hard times I have been through during this program, their love and support never changed. They always knew I could make it through even when I did not think I could go anymore. I will always work hard for them as they have given me everything I need to succeed in life.

To Howard and Miso, I appreciate you two more than you know, and I could have never gotten through this program without your unwavering love, kindness, and support. You two will always have my heart.

To my Pepperdine family, I am so blessed to have created lifetime friendships during this program! We have many memories together, and I am so grateful to have met you all. More importantly, to my committee, Dr. Gabriella Miramontes, Dr. Farzin Madjidi, Dr. Maria Brahme, Dr. Theresa Dawson, and Dr. Kevin Wong, I cannot thank you enough for guiding me through this journey. You made this process seamless, and always believed in my research, even when I did not believe in it. Getting to this point in my educational career would have never happened without you all. Thanks to this program, I have a lifetime of memories and am just so grateful that I am here today.

VITA

EDUCATION

California State University, Northridge
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Liberal Studies, Emphasis in Elementary Education
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COMPETENCIES

Leadership

- Lead and manage the development of equity-based practices for my organization.
- Lead and manage students toward reaching their academic and personal goals.
- Lead programs that support the development of advanced students.

Engagement

- Create engaging materials that support in-person and online learning.
- Create ways to engage parents in student outcomes.
- Support educators and administrators in understanding best practices that engage young learners.

Collaboration

- Effectively communicate and collaborate with organizations' stakeholders.
- Collaborate with several educators to discover best practices that support young learners.
- Collaborate with colleagues for research projects that have been presented to policymakers, educators, and administrators from around the nation.

PROFESSIONAL EXPERIENCE

Carnelian Elementary & Stork Elementary, Alta Loma School District, California (*2017-Present*)

[3rd grade; 4th grade, Multiple-Subject Educator]

- Collaborate with colleagues and implement new math curriculum that increased math scores by 15%.
- Manage 30-plus students toward the achievement of their academic and personal goals.
- Collaborate and actively communicate with parents daily to ensure student success.
- Modify and implement an ELA curriculum that led to an increase in ELA scores by 14%.

- Create and evaluate grade level appropriate curriculum.
- Analyze data and determine appropriate instructional methods to meet students' needs.

[4th Grade Level Team Leader]
- Collaborate with educators and site administrators to ensure that learning coursework aligns with state standards.
- Research best practices surrounding e-learning and virtual learning programs to support fellow educators in developing their virtual classes.
- Lead and support educators toward meeting district-wide goals and initiatives.
- Co-lead professional development on digital programming to 24 educators that support digital program management.

[GATE/STEM Coordinator]
- Organized and developed curriculum to support over 30 advanced students in STEM-related projects.
- Developed curriculum to support the continued advancement of gifted learners.

[LCAP Advisory Team Member]
- Collaborated with administrators and stakeholders to support district initiatives to improve student achievement.

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Best Practices of K-5 Virtual Learning

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ABSTRACT

With the increase in technology, virtual learning programs continue to grow in popularity within the United States. Before the coronavirus (COVID-19) pandemic, the kindergarten through fifth grade (K-5) virtual learning population has increased each year slowly since the late 1900s. However, due to the COVID-19 pandemic millions of K-5 students were engaged in virtual learning. However, the academic outcomes and learning loss that resulted from the school shutdowns caused many misconceptions regarding the educational and social developments of K-5 students enrolled in virtual classes. Yet, studies consistently prove synchronous virtual instruction can be as effective as traditional face-to-face learning. The purpose of this study was to examine the strategies and best practices that K-5 virtual educators use to maximize learning, challenges associated with teaching K-5 students virtually, how virtual educators define, measure, and track academic success, and recommendations that virtual educators have for pre-service teachers interested in teaching in highly technological environments. Data collection followed a qualitative phenomenological approach. The researcher interviewed 12 K-5 virtual educators or administrators to understand better how students in a virtual learning environment could achieve academic and social success comparable to students in a traditional classroom. Results suggest that engaging, synchronous instruction allows virtual educators to maintain student academic and social success through interactive resources and community-building activities. However, learning coach support, small group interventions, and immediate feedback also support students' academic achievement. The findings of this study led the researcher to create a training course for pre-service or current K-5 brick-and-mortar educators to take before beginning a virtual teaching role called the *Fundamentals of K-5 Virtual Learning*. Implications of the findings and recommendations for future research are shared in hopes that this research

contributes to the existing literature on virtual education.

Chapter 1: Introduction

Background/Historical Context

Distance and virtual learning options are increasingly used within the kindergarten through twelfth grade (K-12) education system (Korkmaz & Toraman, 2020; Rice, 2006). The advances in technology-led instruction have opened the possibility of remote learning options for K-12 students (Ogodo et al., 2021). According to the National Center for Education Statistics, in the 2019-2020 school year, 4.5 million K-12 students were enrolled in part-time or full-time virtual classes (de Brey et al., 2021). The number of students enrolled in part-time or full-time virtual classes is expected to have increased in 2021 (Molnar et al., 2021). However, the statistics have not been available for the 2020-2021 and 2021-2022 school years (Molnar et al., 2021). There is an increase in virtual enrollment, yet more research on K-12 virtual learning spaces is needed to understand how virtual learning can be just as effective as in-person learning options (Korkmaz & Toraman, 2020; Molnar et al., 2021).

Due to a lack of research and understanding of the topic, various terms are used interchangeably without meaningful definitions to describe these non-traditional learning modalities (J. L. Moore et al., 2011). These modalities include distance learning, online/virtual learning, hybrid learning, and emergency remote teaching (Korkmaz & Toraman, 2020; J. L. Moore et al., 2011). As non-traditional learning options continue to evolve, researchers have yet to agree on a standard definition for each type of learning modality (Korkmaz & Toraman, 2020).

Furthermore, this phenomenon has yet to be studied closely for the K-12 population as no standard definition exists to describe this learning model (Korkmaz & Toraman, 2020; Molnar et al., 2021). Educators worldwide could find themselves emerging in a virtual learning

environment in the future with little to no understanding of how to teach students effectively in a virtual setting. Further, the more virtual programs begin to grow, the more virtual learning could expand within the traditional classroom.

Non-Traditional Learning Modalities

Non-traditional learning modalities refer to the ways and locations students can learn that are different from the traditional brick-and-mortar, in-person classroom learning environments (Brinson, 2015). Through these different avenues of learning, students are no longer bound to learn in a single location. Students now have the opportunity to learn from various locations and access their learning environment without the stress of being physically present (Korkmaz & Toraman, 2020; J. L. Moore et al., 2011). In the event of a national emergency, students still have the ability to access a learning environment with the support of internet access and technological devices that grant them access to the internet (Trust & Whalen, 2020).

Distance Learning

Distance learning is an umbrella term that refers to instruction that occurs synchronously and asynchronously while instructors and students are in various locations (J. L. Moore et al., 2011). Before the computer technological innovation, distance learning was referred to as correspondence education and was synonymously used when describing a non-traditional learning modality. Distance learning dates back to the 1700s as the prospective clergy members learned through correspondence courses (Adams & Olszewski-Kubilius, 2007; Olszewski-Kubilius & Corwith, 2011). As the US postal service expanded throughout the 1900s, it provided the means for correspondence courses at the university level (Olszewski-Kubilius & Corwith, 2011). However, as computer technology has evolved, computers have caused the meaning of

distance education to expand to what it is now, which could now include e-learning, virtual learning, online learning, and web-based learning (Conrad, 2006; Korkmaz & Toraman, 2020).

Online/Virtual Learning

With virtual or online learning, technology is used to support a distance learning format (Benson et al., 2002; Korkmaz & Toraman, 2020). Beginning in the late 1900s, technology began to evolve, particularly computer technology, and with the advent of the internet, university administrators adopted online learning formats at the university level (J. L. Moore et al., 2011; Olszewski-Kubilius & Corwith, 2011). Online learning is the most commonly used term among researchers studying technology-supported instruction (Benson, 2002; Korkmaz & Toraman, 2020). However, some researchers often debate whether online or virtual learning instruction is solely online or simply includes some technology to support the delivery of instruction. Recently, online or virtual learning has been considered the new version of distance learning as technology is used to support a distance learning format for education. For the sake of this study, the terms *virtual learning* or *online learning* will be used interchangeably to describe the learning environment growing in popularity in the K-5 field.

Hybrid/Blended Learning

Research on hybrid learning environments is limited as this term is often used interchangeably with blended learning (Macaruso et al., 2020). The difference between hybrid and blended learning is that the students can work online or in person in hybrid environments. Whereas blended learning combines in-person face-to-face instruction with online learning as students can complete assignments virtually or access digital tools at any time and place (Macaruso et al., 2020).

Emergency Remote Teaching (ERT)

In the wake of the COVID-19 outbreak, hundreds of schools across the country were forced to close and sent teachers into emergency remote teaching (ERT; Trust & Whalen, 2020). Although online or virtual learning has been around for many years, thousands of teachers were not prepared to shift their teaching pedagogy towards solely remote teaching. Researchers found that teachers teaching in blended learning environments easily transitioned to remote education. However, as educators were given minimal preparation time and throughout the 2020 pandemic, it became evident that there is a variation in teachers' ability to support their students at a distance (Trust & Whalen, 2020).

Adoption of Virtual Learning in K-12

Despite some universities adopting online learning formats, online classes were almost unheard of for K-12 student populations before the late 1900s as K-12 school districts were slow to embrace online learning (Olszewski-Kubilius & Corwith, 2011). However, some began to adopt virtual learning as an option for some students in the late 1980s, depending on their individual needs (Trust & Whalen, 2020). Although it became most commonly utilized among high school student populations, it was and continues to be an option for a limited number of primary and middle school students (Wallace, 2009). Under the No Child Left Behind (NCLB) Act in 2001, virtual schools were considered an option for elementary, middle, and high school students (Rice, 2014). This was seen as an acceptable alternative for districts that did not meet the school choice requirements under NCLB (Rice, 2014). Based on the National Center for Education Statistics, since 2002, the number of students participating in an online learning format has continued to increase yearly in primary, middle, and high school (de Brey et al., 2021). From 2017 to 2019, roughly 300,000 more students enrolled in a virtual learning

alternative (Molnar et al., 2021). As mentioned earlier, Molnar et al. (2021) found that this number had only increased in recent years due to the pandemic. With the increasing technological advances, the potential for the efficacy of online learning formats grows (Korkmaz & Toraman, 2020; Wallace, 2009).

K-5 Students

For K-5 students, distance learning can provide individualized classes through the internet (Musgrove & Musgrove, 2004). When distance learning first expanded to primary-aged students, the target population was academically advanced students. Hence, the promise of individualized instruction that fits each student's needs was a prominent feature of the program (Musgrove & Musgrove, 2004). Although distance learning worked for this particular population, there is not much clarity on how online learning can support non-academically advanced populations who require additional behavioral and academic support. Bandura (1969) found that schools are the primary location for cultivating cognitive competencies. Without a physical school setting, there must be an understanding for both teachers and administrators of distance learning platforms on how they will expand these skills for their students virtually.

Middle School Students

Virtual learning can be effective for middle school students or students in grades 6-8 (Aslan & Duruhan, 2021). Middle school students are older and have more cognitive abilities than elementary-aged students, which means that if distance learning is effective for advanced elementary students, it is also effective for advanced middle school students (Aslan & Duruhan, 2021; Wallace, 2009). However, much pushback from stakeholders is the lack of social-emotional and academic support that distance learning programs can provide in the current state

of distance learning courses (Hauge, 2020). Virtual learning will only flourish within the middle school space if teachers understand how to support the whole child.

High School Students

Distance learning courses are more desirable for high school students because they can have more autonomy with how they spend their time and work on their assignments (Beese, 2014). High school students have a better grasp of how to hold themselves accountable for their work while also having the ability to work independently, solve their technical issues, and communicate their needs effectively with their instructors (Beese, 2014). Some high schoolers report that they struggle with distance learning due to their inability to reach out to their instructors or manage the workload independently. However, some students find that distance learning works for their learning needs (Beese, 2014). While virtual learning may not work for all high school students, some students would opt into virtual learning if given the opportunity (Beese, 2014). However, more research and training are needed to prepare teachers for teaching high school students virtually (Beese, 2014).

K-12 School Closures in 2020

Despite virtual learning not being the number one option for most primary, middle, and high school students, there was a time when most students in the public school system within the United States had to partake in virtual or hybrid learning. During the COVID-19 pandemic, all students from the public education system engaged in online learning in some capacity (Shamir-Inbal & Blau, 2021). Hinson et al. (2007) found that instruction must continue despite any unfortunate circumstance that traditional brick-and-mortar schools could face. As a result of school closures, teachers across the country scrambled to alter their instructional practices to fit the online learning format through the use of synchronous and asynchronous instructional

practices (Shamir-Ibal & Blau, 2021). However, many teachers still needed to become more familiar with understanding the International Society for Technology in Education, (ISTE) standards and digital learning tools (Ogodo et al., 2021). Despite the efforts of school districts to train teachers on best teaching practices in an online format, the brief training was not deemed effective in preparing teachers for the year (Ogodo et al., 2021).

Not only did teachers struggle with adjusting their classroom practices to fit the needs of the distance learning format, but students also struggled to adapt to their new learning environments (Hauge, 2020). Furthermore, the time spent in ERT exposed the many inequities within our education system (Irwin et al., 2022). Students with a comfortable and supportive learning environment had a higher chance of performing well during ERT, yet students with negative or stressful learning environments were likelier to have an experience that resulted in some learning loss (Hauge, 2020; Irwin et al., 2022). Ultimately, this experience left educators with a negative impression of virtual learning spaces for K-12 students.

Equity in Virtual Learning

In the context of the educational system within the United States, the term equity can be defined as the educational opportunities that are distributed based on students' needs and not their race, parental income, or zip code (Robinson, 2018). During the 2020 pandemic, there was much discussion surrounding the inequities associated with virtual learning (Acosta et al., 2021; Miller et al., 2021). However, the inequities stemmed from the pre-existing inequities associated with school districts and the educational system within the United States (Miller et al., 2021).

ERT is solely a response to crisis (Acosta et al., 2021). This form of learning is not intended to replace or replicate the same learning experience one would have in an in-person classroom setting. Yet, due to this experience for many K-12 students during the 2020 pandemic,

existing academic gaps between low and high socioeconomic groups only increased (Pozos et al., 2021). When equitable practices are evaluated based on the students that participated in virtual learning during the pandemic, reports show that there were many inequities during ERT (Tate & Warschauer, 2022). However, studies that are centered around equitable practices of K-12 online learning, not in the context of a pandemic, are limited (Tate & Warschauer, 2022).

Pros and Cons of Virtual Learning

While virtual learning has a negative stigma based on the experiences of ERT (Shamir-Inbal & Blau, 2021), there are positive attributes that come with virtual learning. Students have more opportunities to enroll in courses that fit their needs and interests while feeling more comfortable taking academic risks (Miller et al., 2021). Further, parents or guardians who enroll their students in online classes can be more involved in their child's education as parents or guardians often have to take on the role of a learning coach or facilitator to support their students learning during asynchronous instruction or instruction that takes place offline. Fortunately, for virtual learning programs, the technology today allows teachers to replicate as much of an in-person learning experience as possible as small groups, and one-on-one interaction can still occur with the support of the available technological resources (Pozos et al., 2021; Tate & Warschauer, 2022).

While there are positive aspects of virtual learning, there are also negative aspects that must be considered for K-12 students enrolled in a virtual class. Due to the virtual environment, students cannot interact with other students the same way they can in a traditional brick-and-mortar classroom (Pozos et al., 2021; Ruef & Shepard, 2022). The primary interaction is through

a webcam. It only sometimes allows students to understand vocal inflection, body language, and other vital social cues that one can access in person (Ruef & Shepard, 2022). Further, parents cannot always support their students at home due to their work schedules or other personal reasons. In a virtual learning environment, parents are the learning coaches to help their children as necessary with their schoolwork while also acting as technical support for their child whenever the student has problems with their technological devices or internet connection (Ricker et al., 2021). While older students can resolve their technical issues, young students or K-5 students are unable to resolve these conflicts on their own (Ricker et al., 2021). Ultimately, while there are pros and cons, these virtual classes continue to expand and increase in popularity.

Conclusion

With the lack of knowledge behind best practices of technology usage with students, inequitable learning environments, and lack of positive research surrounding online learning (Olszewski-Kubilius & Corwith, 2011), many educational stakeholders have negative perceptions of virtual learning in the K-12 space (Ogodo et al., 2021). Due to these negative perceptions, K-12 virtual learning programs have minimal room to grow as they could be deemed ineffective and harmful to students' education based on the ERT experience. Further, due to the pros and cons associated with virtual learning, K-5 programs have even less room to grow due to the high demand for parent involvement. However, based on the literature available, there is a clear need for more effective virtual learning programs that address the whole student and their diverse needs while also addressing the need for equitable access to a high-quality educational program.

Statement of the Problem

Virtual learning options are increasingly being used among K-12 populations (Arnett, 2021). More specifically, the K-5 population has begun to see an increase in the number of young students enrolled in a virtual learning option. Although the number of students participating in virtual learning increased yearly before the COVID-19 pandemic, post-school closures have dramatically increased the number of students opting for virtual education (Arnett, 2021). To keep up with the current demand of the remote learning wave, school districts are implementing fully online virtual learning options for their K-12 students (Arnett, 2021). These virtual classes are led by district teachers rather than third-party administrators who are experts in virtual learning (Arnett, 2021).

Teachers who are leading these virtual courses may not be experts in Technological Pedagogical Content Knowledge (TPACK; Mishra & Koehler, 2006). In a study based on 596 K-12 online teachers, most teachers reported that they felt confident in the content pedagogy aspect of their role but not as confident in the technology associated with their role as virtual teachers (Archambault & Crippen, 2009). Similar results emerged when ElSaheli-Elhage (2021) found that 63% of elementary, middle, and high school educators did not feel prepared to teach students remotely at the beginning of the COVID-19 pandemic. It is imperative that teachers feel confident in TPACK to be both content knowledge and technical content experts, as national emergencies may throw all educators into online learning formats (Archambault & Crippen, 2009).

Pre-service teachers need to be adequately prepared to teach in a virtual environment, just as they need to be prepared to teach in an in-person classroom. Yet, the problem is that there needs to be more training for educators who can be merged into this potential learning

environment. Without the proper training in K-5 virtual learning environments, pre-service teachers could move into a teaching environment they are unprepared for, which could affect the students enrolled in their classes. Further, the lack of training and knowledge behind virtual learning could hinder the potential of this learning format within the current school system in the United States.

Purpose Statement

Given the advances in technology within the K-5 school system, teachers must know how to facilitate virtual learning effectively. School districts are eager to hire teachers with a solid understanding of instructional technology as classrooms switch toward blended learning environments. However, universities are not preparing teachers for online learning environments or potential ERT (ElSaheli-Elhage, 2021; Shamir-Inbal & Blau, 2021). Current trends show that students are increasingly engaging in virtual learning environments. Yet, online learning policies are the same for in-person instruction (Molnar et al., 2021). Therefore, there is no standard framework for teaching in advanced technological environments. The ISTE (Epps for Digital Equity and Transformation, 2022) has begun to work with educator preparation programs (EPP) nationally to refresh EPPs to help educators learn about digital equity and how they can transform their instructional practices to fit the needs of diverse learners.

Virtual learning can occur anytime, especially during a school shutdown (Shamir-Inbal & Blau, 2021). Instead of ignoring the potential that virtual learning spaces have for K-5 education, teachers must be prepared for what their careers could become one day. Therefore, this study aimed to provide the best practices for virtual learning environments while also understanding how these findings can help inform universities' future recommendations for their teacher preparation programs. This study determined:

- the strategies and best practices of K-12 teachers teaching virtually,
- the challenges that K-12 teachers face when teaching virtually,
- how teachers can define, track, and measure the success of their students virtually, and
- the recommendations that K-12 teachers have for pre-service teachers in advanced technological environments.

Research Questions

The following research questions are used to guide the study:

- RQ1: What strategies and best practices are employed by K-12 teachers to teach students virtually?
- RQ2: What challenges are faced by K-12 teachers when teaching students virtually?
- RQ3: How do teachers define, measure, and track the success of students that are learning virtually?
- RQ4: What recommendations do teachers have for pre-service teachers in advanced technological environments?

Theoretical Frameworks

Appreciative Inquiry

To best understand K-12 virtual learning spaces, Appreciative inquiry (AI) guided the researcher throughout the study. AI is a theoretical framework that encourages organizational change based on the aspects within the environment that already work well (Mishra & Bhatnagar, 2012). Rather than changing based on the negative aspects of an organization, AI focuses on leveraging the aspirations and potential that the organization has to grow and expand

(Horn & Govendor, 2019). Hall and Hammond (1998) find that AI honors an organization's past work; these organizations could learn something new based on their analysis of previous work.

When this lens is applied to virtual learning environments, educators can appreciate that teachers and students have already emerged in this space. However, more research must be done to understand what makes K-12 virtual learning successful. Analyzing the past work done by K-12 teachers with experience in virtual learning spaces will allow researchers to explore the potential of what virtual learning could become for young learners.

Through AI, the researcher can further their understanding of virtual learning spaces by analyzing the best practices for engaging students in a K-12 virtual classroom (Mishra & Bhatnagar, 2012). Best practices can be defined as research-based procedures that have produced optimal outcomes for an individual or organization. Best practices within virtual learning would include the following: student engagement, social-emotional health, collaboration, differentiated lessons, parent involvement, and individual student needs. While there are no clearly defined standards for K-12 virtual learning spaces, we can assume that the existing standards are similar to in-person classroom standards. Therefore, challenges must be addressed while understanding the best practices so that the researcher can understand how those challenges are addressed and overcome in the virtual classroom.

Technological Pedagogical Content Knowledge (TPACK)

TPACK is a conceptual framework centered around the ways teachers are able to utilize technology to support instruction (Mishra & Koehler, 2006; Monte-Sano, 2011). This framework enables teachers to reflect on the ways that technology plays a role in their instructional practices to support the student's understanding of the content being taught (Monte-Sano, 2011). The development of this framework was centered around pedagogical content knowledge (PCK)

(Shulman, 1987), which describes how teachers are able to recognize the best instructional strategies to support students' needs. By adding the technological aspect to PCK, Mishra and Koehler (2006) were able to establish a framework that educators can use going forward with the advancement of technology within the education system.

Research has shown that the more confident a teacher is in using technology, then the more likely they are to incorporate technology into their daily instruction (Fauzi & Khusuma, 2020; Gonzalez & Mohamad, 2022). Essentially, technology integration is more challenging for teachers who are unfamiliar with digital technology. During the 2020 pandemic, it was found that teachers who did not use technology within their daily instruction prior to the pandemic struggled with the adjustments to virtual learning. Whereas teachers who felt confident with technology and used TPACK in their classrooms prior to the pandemic had a smoother transition into their new online teaching environment (Gonzalez & Mohamed, 2022).

Within the virtual teaching space, TPACK plays a critical role in the proper development and training of educators going into virtual teaching (Gonzalez & Mohamad, 2022). Teaching virtually requires the use of technology to support instruction which means the application of TPACK is not an option for virtual educators, but a requirement. By understanding the best practices of K-5 virtual learning, more virtual educators will be able to understand what TPACK looks like in practice.

Significance of the Study

This study aimed to help teachers understand the affordances of virtual learning and how universities can help prepare pre-service students for teaching in highly technological environments. Further, this study can support educators considering going into the field of virtual teaching as they will gain an understanding of how best to support students virtually. The

National Center for Education Statistics shows that the number of students enrolled in virtual learning continues to increase yearly (de Brey et al., 2021). Given the increase in technology within school districts, online learning could be an option for each public school district based on current policies that support using virtual learning for K-5 students.

Despite policymakers beginning to change educational policies to account for the number of students who may be enrolled in a K-5 virtual school, there is still not enough research on virtual schools for policymakers to make fully informed decisions (Olszewski-Kubilius & Corwith, 2011). Current policies are based on the little information and research behind best practices of K-5 virtual schools. Therefore, the recommendations from this study can be used to support the following professionals: K-5 teachers, pre-service teachers, university instructors, and policymakers.

Significance for K-5 Teachers

Current K-5 teachers would benefit from understanding best practices for virtual instruction. However, most professional development instruction does not include the affordances of virtual teaching. As teachers are trained on new digital technologies, they are not exposed to how these technologies could transform their current instructional practices. Veteran teachers may be reluctant to alter their current instructional practices due to their lack of knowledge or unwillingness to accept change within their classrooms (Monteiro et al., 2020). Suppose teachers had the opportunity to explore programs in depth while receiving assistance from school leaders or ed-tech professionals. In that case, more teachers may buy into new technologies and practices that could transform their classrooms (Monteiro et al., 2020).

Significance for Pre-Service Teachers

Within teacher preparation programs, pre-service teachers are not always exposed to the concept of TPACK (Archambault & Crippen, 2009), which results in little understanding of how to integrate technology into daily lesson plans effectively. Promoting technology integration within teacher education programs is essential for pre-service teachers' buy-in to incorporating technology into their future classrooms. Wilson (2021) states, "To facilitate TI (technology integration), it is important for academics and practitioners in teacher education and educational technology to define best practices" (p. 1). Whether teachers plan to go into virtual or traditional classrooms, pre-service teachers must understand how to incorporate technology into instruction effectively.

Significance for University Instructors

Teacher education programs understands that they can shape pre-service teachers' thoughts and beliefs on technology integration (TI; Wilson, 2021). Through integrating technology courses in teacher education programs, teachers can shape their personal views and beliefs on the effectiveness of technology in the classroom. Furthermore, this will impact teachers' ability to teach in virtual environments. Based on the trend of virtual learning and the impact that the COVID-19 pandemic had on education, technology will continue to increase in both traditional and non-traditional classrooms (Korkmaz & Toraman, 2020). Therefore, university instructors must know the best teaching practices for highly technological environments.

Significance for Educational Policy Makers

Current policies surrounding virtual learning is shaped by the limited research regarding best practices for virtual instruction (Bueno, 2020; Olszewski-Kubilius & Corwith, 2011).

Although virtual learning has been around for decades, K-5 virtual instruction is beginning to have more traction based on the current state of education. More students enrolling in virtual learning environments could impact both virtual and traditional schools' funding. Therefore, as more information on virtual learning becomes available, educational policymakers can make more informed decisions regarding the budget and requirements for K-5 virtual schools.

Assumptions of the Study

The assumptions of this particular study are as follows:

- participants are K-5 teachers who show exceptional competencies in virtual teaching,
- the participants were direct and honest in their responses,
- participants did not respond based on their own biases regarding virtual learning,
- the researcher did show any inherent bias in asking and interpreting participant responses, and
- the researcher designed the questions to solely understand the participants' best practices.

Limitations of the Study

Price and Murnan (2004) state, "A limitation of a study design or instrument is the systematic bias that the researcher did not or could not control and which could inappropriately affect the results" (p. 66). By reporting the limitations of the study, the researcher is able to make suggestions for further research that could have not been explained within the current study (Price & Murnan, 2004). Given the nature of qualitative research, interviews will be held with participants as they answer open-ended questions asked by the researcher. These open-ended questions allow the participants to share their viewpoints on a given topic based on their own personal experiences. Collectively, these experiences could limit the study due to the

interpretation and analysis of the experiences (Creswell & Creswell, 2018). The following are further limitations that must be considered:

- The overall teaching experience of the participants may have limited the study as the criteria of inclusion require a total of five years of teaching experience, but participants may not have taught virtually for the entire duration of the five years.
- The study was limited to individuals who teach K-5 grade levels virtually and does not represent any other grade levels.
- The participant's teaching experience may limit the study as these participants teach in a setting where parents willingly enrolled their children in a virtual classroom as opposed to their students having to participate in virtual learning solely due to a national pandemic.
- Participants were asked to be a part of the study, and the data that was collected only represents individuals who agreed to partake in the interview process.

Definition of Terms

The following terms are used frequently throughout the study:

- *Appreciative Inquiry:* A framework utilized in organizations that promotes growth based on the strengths and assets existing within the organization (Whitney & Cooperrider, 1998).
- *Asynchronous Instruction:* Students work independently on their own schedule and use teacher support as necessary (Shamir-Inbal & Blau, 2021).
- *Blended Learning:* Learning occurs inside a classroom using virtual technologies to assist learning (Macaruso et al., 2020).

- *Brick-and-Mortar Schools:* Education that occurs at a physical location as opposed to a virtual classroom (McFarlane, 2011).
- *Common Core State Standards:* The California Department of Education defines the Common Core State Standards (CCSS) as a set of English and Math standards adopted in 40 states within the United States to ensure that students will receive a good education no matter their location (Barkauskas, 2022).
- *Curriculum:* The lessons or academic content used for instruction at a school (McFarlane, 2011).
- *Distance Learning:* A type of virtual learning enabling learning from any location (Shamir-Inbal & Blau, 2021).
- *Emergency Remote Teaching (ERT):* A type of virtual learning that preserves teaching and learning processes by enabling educational services from various electronic devices with internet access (Shamir-Inbal & Blau, 2021).
- *Equity:* Within an educational context, equity is best described as educational opportunities based on students' needs and not their socioeconomic status (Robinson, 2018).
- *Hybrid Learning:* A type of virtual learning that enables students to work in-person or online based on their personal preferences (Macaruso et al., 2020).
- *Learning Coach:* A parent, guardian, or family member who will support the student in their virtual learning environment (Ricker et al., 2021).
- *Pedagogy:* The methods and practices of a teacher (Segall, 2004).
- *Pre-Service Teachers:* A term given to students not teaching professionally yet (Fajet et al., 2005).

- *Problem-Based Learning (PBL):* An instructional method where students can learn by solving real-world based problems (Hmelo-Silver, 2004).
- *Student-Focused Teaching:* An instructional method that allows students to explore content more deeply than a traditional teacher-focused instructional method (Stes et al., 2008).
- *Synchronous Instruction:* When students are online with the teacher during a guided lesson or activity (Shamir-Inbal & Blau, 2021).
- *TPACK:* A theory used to explain how teachers can teach content effectively while using technology (Yeh et al., 2021).
- *The ISTE Standards:* Standards for using technology in teaching and learning (The International Society for Technology in Education, n.d.).
- *Traditional Classroom:* A typical face-to-face classroom where all students and instructors are in-person (Z. Yang & Liu, 2007).
- *Virtual Learning:* A type of learning where students are instructors are engaged in learning via the internet in synchronous or asynchronous sessions within various locations of the world (Z. Yang & Liu, 2007).
- *Whole Child:* A view of children in schools that shifts away from solely looking at the academic child and looks at the broader aspects of a student, including their physical, mental, social, moral, spiritual, and emotional aspects too (Noddings, 2005).

Chapter Summary

Chapter 1 focused on virtual learning and how veteran and pre-service teachers must understand the best teaching practices within a highly technological environment. Due to

technology's expansion in education, teachers could see more virtual learning options for students. The introduction of virtual learning for many K-12 educators began with ERT in response to the 2020 pandemic. However, while this was a new concept for some, not all teachers were new to this way of teaching.

There are various methods in which virtual learning is shown, whether a 100% online virtual classroom or a hybrid or blended learning environment where some instruction may be online. Other learning occurs synchronously within a school. To understand the best practices of teachers who have experience teaching in this space, the study takes a phenomenological approach to break down the best practices of those who have experience teaching. This study will look at these best practices through the lens of the appreciative inquiry framework (Mishra & Bhatnagar, 2012).

Lastly, Chapter 1 explained the importance of who this study could help support. Not only can pre-service teachers benefit from this study but also veteran teachers who are used to teaching in an entirely in-person setting. Without the teachers' understanding of these best practices, these teaching methods cannot be adapted to fit the mold of an in-classroom structure. Moreover, policymakers will also benefit from this study as research is limited within this space. Educational policies have not been adjusted to fit the needs of those opting for virtual learning due to the traditional classroom model's status quo. Chapter 1 sets the scene for why this study is critical and who can benefit from it. Chapter 2 will be the literature review, where the researcher will explore virtual learning in-depth and understand all aspects of this learning model. Chapter 3 will discuss methodology, research design, and data collection and analysis. While Chapter 4 will present the findings, and Chapter 5 will explain the recommendations for best practices when teaching in a highly technological environment.

Chapter 2: Literature Review

Introduction

Virtual learning has evolved into an experience that allows students to learn from anywhere in the world. Statistics show that virtual learning has increased in popularity amongst K-5 populations in the past decade (Barbour, 2011; Barbour & Harrison, 2016; de Brey et al., 2021; Dung, 2020; Natale & Cook, 2012). Before the COVID-19 pandemic, virtual learning slightly increased their K-5 populations yearly. However, post-pandemic, K-5 virtual learning options have increased dramatically among youth populations (Ricker et al., 2021). Although virtual options only meet the needs and demands of some K-5 students, there is a pool of students who prefer the virtual learning option (Barbour, 2011; Mann et al., 2021). When implemented correctly, virtual learning has been proven to be just as effective as in-person learning (Snow & Coker, 2020).

Post-COVID-19 pandemic, more families worldwide opt for a virtual learning environment for their children (Mann et al., 2021). Based on a digital learning snapshot, roughly 375,000 students were enrolled in a virtual learning option before the pandemic in the 2019-2020 school year, and that number only increased in the 2020-2021 school year with 656,000 students (Digital Learning Collaborative, 2020). The reasons vary as to why students now participate in virtual learning instead of traditional in-person learning. However, DiPietro et al. (2008) and Dung (2020) find that the research on best practices of virtual learning environments needs to be improved. During the COVID-19 pandemic, most of the K-5 population participated in a virtual learning option which caused educators and parents to question if this was an effective mode of learning for elementary-aged students (Digital Learning Collaborative, 2020; Dung, 2020; Ricker et al., 2021).

Therefore, this section aims to understand not only why parents are opting for virtual learning options for their children but also the understanding of why students can benefit from a virtual learning option and the ways that virtual learning still needs to grow to meet the needs of the learners enrolled in these programs. Now that students have been exposed to this option, some may have found that this learning option works best for them for either a short or extended period (Dung, 2020; Ricker et al., 2021). However, more research is needed to understand how educators can make this a compelling experience for young learners.

History of Virtual Learning

Distance education began in the early 1700s when perspective clergymen were trained through correspondence (Olszewkski-Kubilius & Corwith, 2011). As time progressed, colleges and universities introduced learning via correspondence in the 1800s, allowing many women to continue their education from home as women were known to stay at home with their children during this era (C. Moore, 1982; Olszewkski-Kubilius & Corwith, 2011). With the introduction of the US postal service, universities began to use these services to send work to students who were continuing their education from home (Olszewkski-Kubilius & Corwith, 2011). Beginning in the 1900s, technological advancements allowed for radio broadcasts, television, and computers to help support distance education formats at the collegiate level (Olszewkski-Kubilius & Corwith, 2011).

Though distance education has a long past, the advancements in computer technology have allowed not only college-level students to continue their education outside of a classroom but K-12 students too (Barbour, 2011; Dung, 2020; Natale & Cook, 2012). The first K-12 online course was offered by a private charter school in California in 1991 (Barbour, 2011). From there, the virtual programs grew significantly (Dung, 2020). Within 2008 alone, 44 states made online

learning programs available for this population of students to support learning from home. Due to the high use of technology in these learning formats, distance education has become a dated term as online or virtual learning has taken over.

Virtual learning options became widely available as a supplemental program for K-12 students in the early 2000s (Barbour & Harrison, 2016). The options for students to retake courses, complete necessary credits, and take more advanced and personalized courses made this option highly attractive for high school-level students (Barbour & Harrison, 2016). However, as online learning has become popular, more students have begun enrolling in full-time online schooling options (Hasler-Waters et al., 2014). In March 2005, the U.S. Department of Education released its first report on distance education statistics amongst K-12 students (Watson, 2005). In 2005 alone, 36 percent of school districts had a distance or online learning program as an option for their students. The number of districts offering virtual learning options has only increased since 2005 as technological advances have begun to make virtual learning options accessible to more students.

Steadily since the early 2000s, the K-12 population slowly began to increase their enrollment in a virtual education format through the increase in technological advancements. Growth rates for virtual learning amongst K-12 programs are anywhere from 20 to 45 percent annually (Watson, 2005). With technology, virtual learning has expanded to become a solution for some learners. Despite the growing popularity of virtual learning, there has yet to be an established framework for how K-12 virtual teachers can engage their students and support them in meeting the state's academic standards (DiPietro et al., 2008; Dung, 2020).

Brick-and-Mortar Schools vs. Virtual Schools

Brick-and-mortar schools are for physically present students rather than a virtual or online environment (Barbour, 2011). Brick-and-mortar schools differ from virtual school options as they are the traditional school choice (Barbour, 2011). These institutions receive funding from enrollment and additional funding based on their student population's needs, such as Title 1 schools (Barbour, 2011). Title 1 schools is a term given the brick-and-mortar schools with a high population of students from lower socioeconomic backgrounds (Thomas, 2008). These funds are often applied to additional learning programs that will help close the academic gap between students with a lower socioeconomic status than other students. Typically, these schools are less cost-effective than virtual schools as they have to supply students with textbooks, materials, classrooms, teachers, administrators, and support staff (Barbour, 2011).

In contrast, virtual learning courses can be created for full-time K-12 students or used as supplemental courses for any courses students may lack (Barbour, 2011; Korkmaz & Toraman, 2020). The use of virtual learning environments can benefit a range of students, including students who do not have access to particular classes based on their demographics and the schools they are assigned to attend (Barbour, 2011). Online learning options are also ideal for students with disabilities or who have not had an optimal learning experience in a traditional classroom setting (Black et al., 2022: DeLaina et al., 2021).

Virtual schools are unique as they are not continuously funded like public brick-and-mortar schools (Barbour, 2011). Though a few virtual schools in the United States are funded similarly to brick-and-mortar schools, or ones that receive block grants from the government, most schools are private, for-profit schools. Due to their funding strategies, tracking these institutions' costs is often difficult compared to a traditional, brick-and-mortar school. Based on

what researchers know about virtual schools, they are more cost-effective than brick-and-mortar schools as they do not have the exact physical needs as traditional schools (Barbour, 2011).

Funding virtual schools has caused ongoing issues for state policymakers and administrators (Stedrak et al., 2012). Virtual schools do not carry the exact operational costs as brick-and-mortar schools. Virtual schools are primarily online, and educators and administrators can work from home. However, virtual schools do not require the same amount of physical space and buildings as a traditional school would need. Further, they also have fewer teachers and school administrators, potentially saving the state and school districts additional funding (Stedrak et al., 2012).

However, this could cost school districts more if the funding for the virtual school is channeled through the school districts (Stedrak et al., 2012). For instance, after the COVID-19 pandemic, more school districts began adopting virtual learning options for their students as the demand for them increased (Mann et al., 2021). Due to this increase in enrollment, it becomes controversial among policymakers because the overhead costs for school districts could increase as they fund virtual schools or classes. Furthermore, local taxpayers could also face the burden of increasing enrollment in virtual schools as school districts will require more funding to support in-person and virtual school options (Stedrak et al., 2012).

Not only has the question of funding surrounded virtual schools, but the question of whether or not virtual schools are as rigorous and practical as brick-and-mortar schools have dominated the field since the emergence of full-time virtual schools (McFarlane, 2011). Proponents of virtual schools find that virtual schooling can help boost and foster creativity and individualized support. In contrast, critics believe virtual schools do not foster vital social skills. that young students need (McFarlane, 2011). Although both stances have valid reasoning for

their beliefs, it becomes evident that there needs to be a clear consensus on whether or not virtual schools are less effective than brick-and-mortar schools (McFarlane, 2011).

Synchronous Instruction vs. Asynchronous Instruction

Virtual learning can come in different forms, as chapter one highlights. Many virtual charter schools appear in two different forms, synchronous instruction and asynchronous instruction (Falloon, 2011; Rehn et al., 2018). Both forms consist of the support of a virtual educator to plan targeted instruction for the students. However, only one form appears to mimic the instructional flow of a traditional brick-and-mortar classroom (Rehn et al., 2018).

Asynchronous instruction consists of work that students complete online or offline without the assistance of a virtual educator (Falloon, 2011). Asynchronous instruction typically requires more support from a learning coach than the teacher's assistance. Some asynchronous programs will allow virtual educators to meet with students weekly or a few times monthly for testing and individual support. However, these programs are not intended to mimic the structure of a traditional classroom. Instead, they are closely related to a home school program where parents do not need to plan the instruction but will need to structure the learning environment and assist students through their work (Falloon, 2011). Asynchronous programs are much more flexible than synchronous ones but are often deemed ineffective (Rehn et al., 2018).

Synchronous instruction has been shown to be a much more effective virtual learning program than asynchronous instruction (Rehn et al., 2018). Synchronous instruction mimics a traditional classroom since the teacher meets with the students daily to provide live instruction just as they would in a traditional classroom. However, the difference is that the students and teachers are behind a computer from various locations (Rehn et al., 2018). Although a synchronous teacher may provide some moments of asynchronous work for the students to work

on throughout the school day, they are still available online at all times for support. Asynchronous assignments relate to the work completed during the synchronous portion of the instruction, allowing students to independently practice and demonstrate what they know. Depending on the student's age, asynchronous work may require some or no parental support, depending on the student's various learning needs.

Ultimately, both modes of instruction require the learning coach's guidance or support but asynchronous require much more support than synchronous classes (Ricker et al., 2021). However, both modes of instruction are led by a certified virtual educator. Depending on the student's learning needs, parents can choose which program fits their child's needs best.

Virtual Learning vs. Emergency Remote Teaching

Due to the global pandemic, learners worldwide were forced to engage in the form of virtual schooling known as ERT (Ferri et al., 2020; Nisiforou et al., 2021). The use of ERT differs from traditional virtual learning in that teachers and students are forced to shift their face-to-face instructional techniques to a virtual platform with little to no preparation. Understanding the difference between virtual learning and ERT is critical in examining the efficacy and best practices of virtual learning (Hodges et al., 2020).

Without understanding how ERT differs from virtual learning, individuals may quickly refer to virtual learning as less than face-to-face instruction (Hodges et al., 2020). Educators, parents, and policymakers worldwide have associated ERT with online learning as they believe these terms refer to the same type of learning (Hodges et al., 2020). However, it is evident that both modes of instruction differ quite dramatically in that virtual learning was designed to be solely an online class where students and teachers are not in the exact physical location at one time (Hodges et al., 2020). However, ERT is designed to be an in-person class that shifts entirely

online with no time to modify lessons and train teachers when a global crisis begins (Hodges et al., 2020).

While ERT plays a critical role in society in a crisis, this mode of learning has received harsh backlash in recent years due to the COVID-19 pandemic, which has caused virtual learning to be seen negatively (Nisiforou et al., 2021; Trust & Whalen, 2020). Despite students' ability to continue learning throughout their time on lockdown, there was much backlash against school districts for keeping students online. Understandably, virtual learning does not fit all learners, and some students struggle to adjust to online instruction (Reuge et al., 2021). Nonetheless, educators around the country powered through to continue educating students in hopes that they could mitigate the inevitable learning loss that occurred (Reuge et al., 2021; Trust & Whalen, 2020).

COVID-19 Pandemic

School closures due to the COVID-19 pandemic introduced most K-12 public school students to virtual learning (Zhao & Watterson, 2021). However, before the pandemic in 2020, only 2% of the total K-12 population was enrolled in some form of virtual learning option (Black et al., 2022). In March 2020, school leaders introduced distance learning to their students, which caused teachers and students to transition from in-person teaching to emergency remote learning (Ferri et al., 2020). As a result, schools around the U.S. needed to train and support teachers as they navigated their way to support their students remotely (Ferri et al., 2020). Despite the various challenges that the pandemic caused within K-12 education, there were opportunities for teachers to see how virtual learning can meet the needs of some students in the classroom (Ferri et al., 2020).

As discussed previously, there is a difference between online learning and ERT (Nisiforou et al., 2021; Schlesselman, 2020; Trust & Whalen, 2020). Though emergency remote learning often has a negative connotation, various advantages can emerge from learning remotely (Ferri et al., 2020). These advantages include saving time commuting to school, being connected to friends and teachers online, more flexibility, and the opportunity to choose where they want to study and complete schoolwork (Ferri et al., 2020). For many K-12 students, the introduction of emergency remote learning allowed them to learn more about themselves and understand in what environments they learn best (Ferri et al., 2020).

Despite the ability for instruction to continue during a pandemic, for many students, COVID-19 hindered their ability to excel in school. The pandemic created challenges for students who require the face-to-face component of brick-and-mortar schools, but for some, it created a greater inequity gap within the school system (Mitescu-Manea et al., 2021; Aguliera & Nightengale-Lee, 2020). Not all students had a comfortable home learning environment; some needed more one-on-one support, which they could not get as some parents were essential workers working outside the home daily (Aguliera & Nightengale-Lee, 2020). Some disadvantages of emergency remote learning include social challenges, technological challenges, inequities among schools and school districts, and motivational challenges among students and teachers (Aguliera & Nightengale-Lee, 2020).

The closure of schools impacted vulnerable students the most as schools are considered safe spaces for them (Reuge et al., 2021). For many students, education provides more than just learning opportunities. Instead, it is a place where students can receive mental and physical support while supporting and protecting them from events such as early pregnancy, physical and mental abuse, forced recruitment, and child labor. These services cannot be provided remotely,

which caused this particular population of students to experience the most educational and social disparities out of any student population (Reuge et al., 2021).

Before the COVID-19 pandemic, 53% of 10-year-olds could not read. With the shift to ERT during the lockdown, this number is anticipated to drop by ten percentage points due to the pandemic (Save Our Future, 2020). Therefore, this indicates that in-person education is needed to meet the demands of most students across the country (Reuge et al., 2021). However, with the learning loss that the pandemic created, students across the country are not meeting academic standards (Reuge et al., 2021). Vulnerable populations have an even greater risk of being left farther behind if remediation is not implemented to support these students (Aguliera & Nightengale-Lee, 2020; Save Our Future, 2020).

Teacher Self-Efficacy

Teacher self-efficacy refers to the teacher's self-reported belief in their ability to complete their job well (C. Yang et al., 2021). Teacher self-efficacy is critical in teacher retention, overcoming obstacles, and student achievement (Pressley & Ha, 2021; C. Yang et al., 2021). Teachers with a high sense of self-efficacy are more likely to be more persistent and find new teaching strategies to support their students better (Pressley & Ha, 2021). Teachers with a lower self-efficacy rating are likelier to get burnt out and leave the profession (Pressley & Ha, 2021). Meanwhile, teachers with higher self-efficacy are more likely to maintain high expectations of their students and find ways to support them (Fackler & Malmberg, 2016).

Various factors can impact teacher self-efficacy, including work environment, school connectedness, support from the administration, and individual factors that contribute to a teacher feeling confident in their teaching (Pressley & Ha, 2021; C. Yang et al., 2021). Teachers who can build strong relationships with other teachers have also been known to increase teacher

self-efficacy compared to teachers who struggle to build relationships with their colleagues (C. Yang et al., 2021). During COVID-19, teachers had a high self-efficacy if they were used to digital technologies and had previously been trained in virtual instruction (C. Yang et al., 2021).

Despite all of the factors that could impact a teacher's sense of efficacy, the teaching environment has been proven to be a critical factor in a teacher's self-efficacy (Kraft et al., 2021). During the pandemic, teachers were working from home. They had increased stress levels of worrying about their student's well-being, motivation, and engagement, all while worrying about the safety of their families and personal needs (C. Yang et al., 2021). These conditions played a critical role in teachers' self-efficacy and whether or not their teaching methods were effective for ERT. Though self-efficacy studies are limited for teachers in the United States, they were conducted on teachers in Canada and Europe during the COVID-19 pandemic to measure their self-efficacy. Results showed that teachers who had taken online learning courses or attended conferences on this topic had reported high levels of self-efficacy (Dolighan & Owen, 2021; Rabaglietti et al., 2021). At the same time, the teachers who were unsure of best practices with virtual learning reported lower levels of self-efficacy (Dolighan & Owen, 2021; Rabaglietti et al., 2021).

Ultimately, this information indicates that when teachers are adequately trained in their mode of teaching, teachers will maintain high levels of self-efficacy (Pressley & Ha, 2021). However, when teachers are placed in unfamiliar teaching environments, just as they were in distance learning during the COVID-19 pandemic, their self-efficacy will decrease as they are stressed and unsure of their teaching methods (Pressley & Ha, 2021). In an entirely virtual or hybrid setting where teachers have been adequately trained to teach in a virtual setting, teachers

would most likely maintain high self-efficacy levels as this is their intended teaching environment (Pressley & Ha, 2021; Trust & Whalen, 2020).

Theoretical Frameworks

Appreciative Inquiry

AI is a theoretical framework that manages organizational changes based on what works well (Horn & Govendor, 2019; Bush & Korrapati, 2004). Change within this framework is sustainable as the base of current practices remains the same. Still, after careful analysis of past practices, changes are made based on successes instead of failures (Bush & Korrapati, 2004). AI analyzes how changes are made based on strengths and how organizations can leverage those strengths to make sustainable and effective alterations to current policies or practices. Based on Hall and Hammond (1998), eight assumptions within the AI framework must be considered:

1. In every society, organization, or group, something works.
2. What we focus on becomes our reality.
3. Reality is created now, and there are multiple realities.
4. The act of asking questions about an organization or group influences the group somehow.
5. People have more confidence and comfort in to journey to the future (the unknown) when they carry forward the past (the known).
6. If we carry past parts forward, they should be what is best about the past.
7. It is important to value differences.
8. The language we use creates our reality.

Based on these assumptions, AI honors the past and what is currently working well. Therefore, it is essential to remember that virtual learning has been around since the late 1980s

and has seen growth amongst younger populations in recent years (Korkmaz & Toraman, 2020). Given that this learning mode continues to grow, it is evident that current practices are working well for some young learners. For virtual learning to continue to grow among the K-5 population, an analysis of best practices based on those in the field of virtual learning will allow researchers to understand the required knowledge and practices teachers must be proficient in to succeed in teaching virtually.

Based on AI, virtual educators can appreciate how much virtual learning has grown with technological advances. Computers, tablets, learning management systems, educational technology programs, and virtual curriculums allow virtual learning programs to flourish. These systems enable teachers to engage effectively in synchronous and asynchronous instruction (Korkmaz & Toraman, 2020). Students' needs are being met in ways that may not have been met in a traditional brick-and-mortar classroom (Ferri et al., 2020). Nevertheless, by analyzing the best practices surrounding this field, current virtual and pre-service teachers who teach in highly technological environments can continue improving their practices based on what works well for other virtual teachers.

Technological Pedagogical Content Knowledge TPACK

TPACK is a technological integrative framework that describes the three concepts that teachers need to understand in order to integrate technology into their daily instruction effectively (Mishra & Koehler, 2006). TPACK is originally derived from PCK, which stands for, pedagogical content knowledge. PCK is a theory used to describe teachers' ability to find ways to teach content effectively to their students. However, Mishra and Koehler (2006) found ways to alter this concept and integrate technology as technology usage expanded in K-12 classrooms in the early 2000s.

The understanding of TPACK plays a significant role for virtual educators as virtual learning requires the use of technology daily. Through this theory, educators are able to plan strategically to ensure that technology plays a critical role in the efficacy of their lesson plans. There are three concepts within TPACK that work together to form this theory which includes, technological knowledge, pedagogical knowledge, and content knowledge (Niess, 2011). Technological knowledge highlights the understanding of various technologies that can be utilized to support learning. Pedagogical knowledge is the understanding of how students learn and the practices that educators use to support instruction. Lastly, content knowledge is the understanding of the core subject being taught (Niess, 2011).

Within images that represent TPACK, they often highlight the interconnectedness of technology, content, and teaching and learning (Niess, 2011). However, Mishra and Koehler (2008) transformed this image further to represent the interconnectedness of technological knowledge (TK), content knowledge (CK), and pedagogical knowledge (PK), which forms TPACK. However, there are also connections between technological pedagogical knowledge, pedagogical content knowledge (PCK), and technological content knowledge (TCK). These additions or additional layers of knowledge that Mishra and Koehler (2008) aimed to represent were the complex relationships between pedagogy, content knowledge, and technology that teachers should apply to the instructional design of their classrooms (Niess, 2011).

Within the context of virtual learning, virtual educators need to use digital technologies to support their daily instruction (Wilson, 2021). Virtual educators must have a solid understanding of the ways they can use technology to support and drive instruction with their students. Therefore, TPACK cannot be ignored in pre-service teacher preparation programs as this

framework supports pre-service teachers who plan to go into virtual classrooms as opposed to traditional, brick-and-mortar classrooms (Niess, 2011).

Child Development

Elementary school occurs during a pivotal age range for K-5 students (Eccles, 1999). During this time, students are as young as five years old and can be as old as 11 when they advance toward middle school. Students' experiences during this period will profoundly impact their development going forward in life. Eccles (1999) finds that every effort should be made to optimize their experiences in school and outside activities.

Middle childhood is considered from ages 6-10 and is marked by basic psychological needs “to achieve competence, autonomy, and relatedness” (Eccles, 1999, p. 31). Children experience biological and cognitive changes each period, all while their social surroundings change (Eccles, 1999). Understanding a child’s biological basis and the ways students change throughout the various stages of their lives is paramount for virtual educators, as their instruction must be geared to fit their needs in all stages of life.

The work of Jean Piaget explains what is developmentally appropriate at each phase in a child’s life (Piaget, 2013). Based on his theory of cognitive development, children experience four different stages (Ojose, 2008). These stages consist of the sensorimotor, preoperational, concrete, and formal operational stages (Ojose, 2008). For elementary-aged students, they fall between two stages which are the pre-operational and concrete operational stages (Ojose, 2008). Within the pre-operational stage, children still develop their ability to associate objects with words and pictures. Though they are improving their language and thinking skills, their thought process is still very concrete (Ojose, 2008). Children fall within this stage from ages 2-7, and after seven years, they are in the concrete operational phase, which will last until they are 11

years old (Ojose, 2008). During the concrete operational phase, children begin to think more logically about concrete events (Ojose, 2008).

In contrast to Piaget's theory of cognitive development, Jerome Bruner proposed a theory regarding early childhood development that consists of three different stages. These stages consist of: the enactive, iconic, and symbolic stages (Bruner, 1964). The enactive stage lasts from zero to one year old; babies learn entirely through physical movements. Similar to Piaget's sensorimotor stage, infants learn by doing instead of by thinking (Bruner, 1964; Piaget, 2013). The iconic stage lasts from 1-6 years of age. Throughout this stage, children can learn through imagery which is why pictures and symbols are highly valued when working with this group of children (Bruner, 1964). Lastly, the symbolic stage lasts from seven years old (Bruner, 1964). Within this stage, information begins to be stored in language. Not as many icons or images are necessary for developing new concepts or ideas at this stage, although they may continue to support learning (Bruner, 1964). Based on K-5, students are coming out of their iconic stages and beginning to enter their symbolic stage (Bruner, 1964).

While Piaget and Bruner highlight the various stages of cognitive development (Bruner, 1964; Piaget, 2013), one theorist, Howard Gardner, created the theory of multiple intelligences that highlights the differences between students (Brualdi Timmins, 1996; Gardner & Hatch, 1989). Based on Gardner's view, people have a variety of intelligence that operates synonymously with each other. Although one person may be vital in a particular area, that does not mean they cannot excel in other areas, too (Brualdi Timmins, 1996; Gardner & Hatch, 1989). Gardner proposed eight bits of intelligence visual, linguistic, interpersonal, intrapersonal, logical-mathematical, musical, bodily-kinesthetic, and naturalistic (Brualdi Timmins, 1996). Educators worldwide have adopted this view and have learned how to apply this theory to their teaching

philosophies as they view each student as a unique individual that learns best in their unique way (Brualdi Timmins, 1996). Although there is the backlash against this theory due to various factors that influence child development, the proven effectiveness of having students learn in a way that draws on their intelligence still plays a prominent role in education today (Gardner & Hatch, 1989).

Albert Bandura's social learning theory found that children learn through observing others (Bandura, 1969). Bandura found that all concepts or actions are intentionally taught to others (Bandura, 1969). Sometimes we can learn something just from observing another person's actions. Within Bandura's theory, there are four steps involved in this process: attention, retention, reproduction, and motivation (Bandura, 1969). The first step, attention, involves a specific behavior or scenario capturing a child's attention (Bandura, 1969). Then, retention occurs as the child retains that memory and can recall that scenario or behavior in the future (Bandura, 1969). Through reproduction, the child can reenact that behavior or scenario that captured their attention previously (Bandura, 1969). Lastly, motivation encourages the child to continue that behavior or stop the behavior based on the reactions they have received (Bandura, 1969). Overall, each step within this theory would lead a student to interact and learn from others' actions, which is Bandura's (1969) goal.

Based on the three learning theories discussed above, there are questions about how these lessons are completed in the classroom and how these can be applied in a virtual classroom. As each theory addresses cognitive and behavioral aspects of learning, elementary teachers are taught to consider these theories when constructing their lesson plans for their students. However, something needs to be done to explain if these theories hold within a virtual classroom and how teachers can apply these theories effectively in a virtual lesson.

Parental Involvement

Studies have shown that parental involvement in middle childhood impacts students more than in their schools and communities (Chen & Zhu, 2017; Ma et al., 2016). During this time, parental involvement has been proven to increase academic achievement and social development (Hoover-Dempsey et al., 2005). Given the context of age-appropriate parental involvement, there is a significant impact on elementary and middle school children (Hoover-Dempsey et al., 2005). However, knowing that middle childhood requires parental involvement, it is essential to understand how much parental involvement is effective for students and how much involvement may become detrimental to student achievement (Hoover-Dempsey et al., 2005). For example, when it comes to homework, some studies show how this can be an effective tool to get students and parents working together at home, while some find that this can harm the student-and-parent relationship (Chen & Zhu, 2017). Therefore, parents' beliefs about their role in their education will determine how involved parents are in their students' academic careers during the middle childhood phase (Hoover-Dempsey et al., 2005).

Parental involvement is critical in traditional and virtual instruction (Liu & Cavanaugh, 2011). Whether students are enrolled in public, private, or charter schools, parental involvement is critical throughout middle childhood (Liu & Cavanaugh, 2011). This need for parental involvement increases when students are enrolled in a virtual school (Russell, 2004). Although virtual learning is in the hands of a trained virtual teacher, students may need additional one-on-one support that the teacher cannot provide, whether it is an academic need or a technology support need (Liu & Cavanaugh, 2011). Therefore, virtual learning requires some type of facilitator to be in the room or at home with the child while they are in class virtually.

Parental Involvement is also necessary for students to learn virtually as this supports students' motivation (Liu & Cavanaugh, 2011; Ricker et al., 2021). Studies have found that when students learn virtually, the most critical component is to feel comfortable and have a relationship with their virtual teacher (Liu & Cavanaugh, 2011). Parents can support this bond by engaging and encouraging the student-teacher relationship (Liu & Cavanaugh, 2011). Virtual teachers are encouraged to create lessons and materials that increase parental involvement as parents will reinforce the lessons or concepts taught during the virtual school day (Liu & Cavanaugh, 2011; Ricker et al., 2021).

Children and Technology

Computers are increasingly playing a more significant role in society, and the need to have digital literacy is becoming more critical than ever. According to the 2018 United States Census, over 92% of the households in America have some form of a computer in their home (U.S. Census Bureau, 2021). Computer technology has changed various aspects of our world today, including politics, the economy, the workforce, and education. Children must be active participants in society as they grow older and have digital literacy and competencies associated with computer technology (König et al., 2022; Sefton-Green et al., 2016).

Parents and caretakers have asked many questions about how much screen time for young children is too much and what parameters need to be put in place to support adequate child development. In 2020, the American Association of Child and Adolescent Psychiatry (AACAP) updated its guidelines for children regarding how much screen time is an appropriate daily (The American Academy of Child and Adolescent Psychiatry, 2020). Their guidelines for school-aged children (ages 6-12) include that parents limit the amount of screen time weekly and suggest that children participate in activities that do not involve screens. At the same time, early

childhood-aged children (ages 2-5) were suggested to have only one hour of screen time per day and up to three hours of screen time on the weekends. Any child under the age of two was advised not to use any screen time throughout the day unless it was for video conferencing with an adult (The American Academy of Child and Adolescent Psychiatry, 2020).

Limiting the amount of screen time a child has can considerably impact the child's physical development (Gottschalk, 2019; Lammers, 2022). Most research that supports the limit of screen time amongst children states this information based on the research supporting posture problems, weight gain, and student safety amongst school-aged children (Gottschalk, 2019). However, the literature on the science of the brain and how it is impacted by technology is limited. Though researchers understand the importance of this field, there are limited findings supporting this claim (Gottschalk, 2019).

Studies have found that increased technology use can considerably impact children's physical, behavioral, attentional, and psychological health (Gottschalk, 2019; Rosen et al., 2014). While understanding that children's brains are still developing, some questions surround whether technology could restructure the brain during the sensitive periods that their brains endure (Gottschalk, 2019). According to Colombo et al. (2018), sensitive periods are "Critical or sensitive periods in the life of an organism during which certain experiences or conditions may exert disproportionate influence (either for harm or benefit) on long-term developmental outcomes have been the subject of investigation for over a century" (p. 1). However, given what is known about human development and technology, research cannot definitively state whether or not technology has this impact or not on the brain physically.

While research supporting the adverse effects of technology on a child's brain is limited, there is much information supporting the use of high programming for young children. Not all

television programs are equal, and television shows such as Sesame Street have been proven to positively impact children (Gottschalk, 2019; Minton, 1975). Considering Sesame Street is a high programming show that aims to educate preschool children, this is not considered a passive technology that should be limited in homes (Gottschalk, 2019). However, shows such as Sesame Street allow parents to scaffold and support their children while watching their shows (Gottschalk, 2019). Parents have topics to discuss with their children that can allow them to expand their thoughts and ask questions they may have (Gottschalk, 2019).

Ultimately, virtual learning environments support high programming as teachers lead instruction and facilitate engaging activities that may be digital-based or pencil-paper work (Baydar et al., 2008). Research currently shows that high-programming virtual activities do not have the same effect on child development as gaming or passive television shows that are not teaching young children critical information (Baydar et al., 2008). Although there is not enough empirical evidence to suggest that exposure to high programming impacts child development, much of the research leads to claims that cannot be fully proven and are viewed as unfavorable by experts in the field of educational technology (Baydar et al., 2008).

Advantages of Virtual Learning

Virtual learning for K-5 students continues to expand and grow yearly (Dung, 2020). With the experience of ERT in 2020, some students found that this mode of learning worked best for them and their personal needs (Ferri et al., 2020; Trust & Whalen, 2020). While others who were enrolled in virtual learning classes before the COVID-19 pandemic opted for a virtual learning experience as they found that it supported their individualized needs better than the traditional brick-and-mortar school (Dung, 2020; Ferri et al., 2020). There are various reasons a student may opt for a virtual learning experience instead of a traditional face-to-face learning

experience. Ultimately proving that there is a multitude of advantages that come with virtual learning classes (Dung, 2020).

Social Activities

Based on the social constructivist learning theory (Au, 1998; Vygotsky & Cole, 1978), students learn through their interaction with others through social activities. Through interaction with various cultures and individuals, students can come to common understandings and learn how to work with people who are different from themselves (Au, 1998; Vygotsky & Cole, 1978). In an elementary school environment, there is an increased need to facilitate social interaction among students so that they are introduced to what it means to work with others cooperatively (Au, 1998).

Some students may opt for a virtual learning experience due to the advantages related to the social aspect of virtual learning (Dung, 2020). Students who are introverts or suffer from social anxiety may not feel comfortable socializing with a large group of students (Keskin et al., 2020). Virtual teachers understand the need to facilitate dialogue and discussions amongst their students as the social aspect in brick-and-mortar schools is vital due to face-to-face instruction (Dung, 2020). However, by creating group projects or activities that create more dialogue, teachers can bridge the gap between the ways social aspects can be considered an advantage or disadvantage in a virtual setting (Dung, 2020). Through small group activities, students with social anxiety feel more relieved and comfortable sharing with the group as opposed to sharing their ideas amongst large groups of students (Keskin et al., 2020).

Moreover, in a virtual setting, students can contribute to group discussions when they feel comfortable (Keskin et al., 2020). Rather than feeling the pressure of participating in person, virtual classrooms give students more freedom in when and how they share their thoughts

(Keskin et al., 2020). The barriers that prevent some individuals from participating and sharing their thoughts are mitigated with virtual instruction (Keskin et al., 2020). Students also feel a sense of safety with virtual instruction as they can work at their own pace and not feel the pressure of working at the same pace as other students in the classroom (Ferri et al., 2020; Keshkin et al., 2020; Michinov & Michinov, 2009). Essentially, virtual instruction allows students to experience more freedom and less pressure from a face-to-face classroom (Keshkin et al., 2020; Michinov & Michinov, 2009).

Parents

Virtual learning in the K-5 space requires a parent or facilitator to assist students when necessary (Ricker et al., 2021). With a parent or facilitator present to assist with various tasks, most students would be able to succeed in a virtual classroom (Ricker et al., 2021). Although parents face assisting their children in a virtual learning environment, most parents who have chosen this option find that this mode of instruction works well for them (Ricker et al., 2021).

Based on a study conducted post-ERT in 2020, Bubb and Jones (2020) found that parents enjoyed and appreciated that this experience led them to have a closer relationship with their child's teacher than they had had in previous school years. Parent-teacher connection is one of the top indicators of student achievement as it allows both parties to be on the same page and find solutions and strategies to assist the child the best (Bubb & Jones, 2020). Furthermore, parents also reported that they did not mind assisting their children with their work as it helped them understand what they were learning and how they learned it (Bubb & Jones, 2020). Parents had the opportunity to work closely with their students on the lessons and find how they could further assist their students in understanding the concepts (Currie-Rubin & Smith, 2014).

Lastly, parents feel that in a virtual classroom, parents can monitor and understand their children better (Bubb & Jones, 2020; Ricker et al., 2021). Rather than a teacher reporting their academic or behavioral concerns to the parent, parents can now see what their children are struggling with and if they need more support. Now that parents have the advantage of monitoring and assisting their children, parent-child relationships can also increase and improve if the interactions are healthy and supportive of the child (Currie-Rubin & Smith, 2014; Ricker et al., 2021). Virtual learning allows parents to support their child's education (Currie-Rubin & Smith, 2014). In a traditional face-to-face classroom, teachers can only share what they notice about their students with the parents; parents may not see the same issues at home. In a virtual classroom, that problem is mitigated, and parents can understand the teacher's perspectives of their children's needs more (Currie-Rubin & Smith, 2014).

Students

Students enrolled in a virtual classroom have many advantages, as they can seek a complete education from the comfort of their homes. Though there are various reasons why students and their families opt for virtual learning, some common reasons include flexibility, personalized and individualized instruction, and the ability to avoid the anxiety that may come with face-to-face instruction (Currie-Rubin & Smith, 2014). Students with disabilities also have the advantage of receiving a quality education without the pressure to be around other students working at a different pace (Currie-Rubin & Smith, 2014). Due to the advantages that virtual schools offer, the United States National Education Technology Plan in 2010 recommended that students with disabilities take advantage of virtual learning options under the No Child Left Behind Act (Currie-Rubin & Smith, 2014; Rice, 2006).

Theoretically, students learn differently (Gardner & Hatch, 1989). Based on the theory of multiple intelligences (Gardner & Hatch, 1989), some students learn better through different modalities of instruction. With virtual learning, students can learn in ways that fit their needs the best as opposed to instruction that would occur within a traditional classroom where the ways students learn are limited and dependent upon the teacher's instructional methods (Natale & Cook, 2012). Ultimately, virtual learning classrooms allow students to find what classes and methods of instruction work best for them (Natale & Cook, 2012).

Teachers

Working from home is a famous phrase today as more companies are allowing their employees to work from home due to the COVID-19 pandemic (Siripurapu, 2020). However, before the pandemic, virtual learning still existed, and teachers were still choosing to teach students virtually. Working from home allows qualified teachers to teach in a more convenient format for their life. Hence, Rice (2006) found that online teaching formats increase access to highly qualified teachers. From a teacher's perspective, teachers with proper online instruction training feel that virtual teaching allows them to have reduced teaching duties (Huang & Yin, 2018). Since teachers can work from anywhere that has access to the internet, they can appreciate the flexibility that virtual instruction provides. Furthermore, although it requires more managerial work on the teacher's end, teachers can spend more time building relationships and encouraging students throughout the course (Huang & Yin, 2018). A virtual teacher's role is considerably different from the multiple teachers' roles in a face-to-face setting (Huang & Yin, 2018).

Technology

Examining the history of virtual learning, postal mail service, and televisions played an integral part in distance education (Banas & Emory, 1998; Rees & Downs, 1995; Larreamendy-Joerns & Leinhardt, 2006). However, as technology developed, computers allowed virtual learning to expand worldwide (Larreamendy-Joerns & Leinhardt, 2006). Due to today's technologies, not only do adults have access to virtual courses, but elementary-aged students can also receive a quality education solely online (Han et al., 2022). The internet allows virtual teachers to connect with students virtually via video calls and online programs created to support student interaction and engagement in a class (Han et al., 2022; Natale & Cook, 2012).

Technological advancements have changed how teachers can connect and support student needs. Video conferencing programs such as Zoom and Google Meets allow students to meet face-to-face with their teachers and peers for synchronous instruction (Sweetman, 2020). Small group instruction is also able to continue through the use of video conferencing. If a teacher wants to create a group project, students can interact with their peers and meet face-to-face just as if they were in a traditional classroom. If a student feels uncomfortable talking within the group or cannot unmute due to various reasons, students can also use the chat feature on these virtual programs. That way, they do not have to worry about embarrassment or background noise. Furthermore, as educational technology continues to grow, the number of digital programs that support student learning and engagement increases. Teachers can have students complete traditional pencil and paper lessons, or they can assign assignments on a virtual platform.

Technology in a virtual classroom can be viewed as both beneficial and non-beneficial (Han et al., 2022). Sometimes technology does not work as anticipated, and young learners can

only sometimes solve their technological challenges. However, technology is vital in K-5 virtual instruction (Natale & Cook, 2012).

Socio-Economic Factors

For some parents, school choice and preferences are not an option (Burgess et al., 2015). Traditional brick-and-mortar schools are chosen for students based on their school district's parameters that they have set for them. Therefore, some students are automatically disadvantaged in attending a low-rated school solely because of where they live (Rice, 2006). While some parents can apply for transfers in hopes of having their children attend a different school, transfers are not always guaranteed and are not always the most convenient as they could require parents to travel long distances (Dung, 2020). However, virtual schools do not have this problem because parents can get a quality education without needing their students to travel far distances (Rice, 2006).

The reasons why parents may opt to change their child's home school are vast. Some parents feel that the school does not support their child's needs, while others may believe that the school is located in an unsafe environment (Rice, 2006). Although parents may want to change their child's school, depending on their ability to transfer to a decent school locally will be dependent upon the parent's work schedules (Rice, 2006). Lastly, more advanced students can continue expanding their skills through virtual learning, and where they live does not impact their ability to continue to grow academically (Rice, 2006).

Challenges Associated with Virtual Learning

While there are advantages associated with virtual learning for students, there are still many challenges that instructors, students, and virtual schools must overcome (Han et al., 2022). Despite the studies that have proven to show that virtual learning can be just as effective as

traditional learning, these studies are limited, and some question the validity of these reports (Hasler-Waters et al., 2014). Virtual learning in a K-5 space is still growing, and some of these charter schools or for-profit organizations have yet to be held accountable as a typical public school would be (Rapp et al., 2006). Much of this can be attributed to the lack of accountability systems for virtual schools (Rapp et al., 2006).

Although lack of accountability is a significant factor in the success of virtual schools, there are still various challenges associated with key stakeholders and other external factors. These factors cause virtual schools to be deemed less than traditional learning models (Natale & Cook, 2016; Rapp et al., 2006). Ultimately, it is evident that challenges exist within virtual schools, but information on how virtual schools overcome these challenges needs to be included (Hasler-Waters et al., 2014).

Social Interactions

While there are advantages associated with the social aspect of virtual learning, there are also many disadvantages (Dung, 2020). When social interaction is not facilitated in a virtual setting, students lack a core skill that is easily provided in a traditional classroom (Dung, 2020). Based on Albert Bandura's social learning theory (Bandura, 1969), students thrive in the classroom when they can talk and interact with each other. During ERT, it was apparent that the ability to talk and interact with other students their age was not always available (Cockerham et al., 2021). However, reports on social interactions in an intentional virtual classroom at a fully online school are limited.

Although virtual teachers may try to facilitate social interaction through group assignments and class discussions, online social interactions do not always replace face-to-face interactions (Cockerham et al., 2021). Students in grades K-5 are still learning how to interact

with others and learning critical social skills to help them in the future as adults (Cockerham et al., 2021). Unfortunately, when it comes to virtual learning unless this skill is focused on, it can often be overlooked in terms of how students develop socially while still progressing academically (Cockerham et al., 2021).

Furthermore, in elementary school, students learn how to cope with and conquer social challenges that may arise with themselves and their peers. However, in a virtual classroom, students will not face the same challenges as in traditional classrooms (Cockerham et al., 2021). Within the available literature, it needs to be clarified how teachers can facilitate or overcome this challenge. However, students enrolled in a virtual classroom learn these skills in their classes and at home.

Parents

In elementary school, many students' success relies heavily on parent involvement and parent-teacher connections (Catalano et al., 2021). When parents are not involved in their young children's education, it is clear how this can negatively impact the child (Hasler-Waters et al., 2014). However, when parents are involved in their child's education, they can encourage their children to continue to try their best in the classroom and further support their academic needs at home (Catalano et al., 2021; Hasler-Waters et al., 2014). Nonetheless, in a virtual learning environment, parents must become more involved in their child's education as teachers cannot sit and support students within a classroom (Hasler-Waters et al., 2014). As young learners lack autonomy in their learning, parents must play a vital role in their child's education (Han et al., 2022).

When parents are not involved in their students' virtual education, they struggle more than they would in a traditional classroom (Hasler-Waters et al., 2014). As discussed earlier,

parent involvement is a vital success factor in the ability of a student to thrive in a virtual classroom. Parents are typically involved in supporting their students during the asynchronous time and when they struggle with technology problems. K-5 students are not at the age where they can solve their technological problems. If they cannot access the materials due to technical issues, it can significantly impact their academic success (Hasler-Waters et al., 2014).

In contrast, there are times when parent involvement causes concerns for students in virtual classrooms (Hasler-Waters et al., 2014). Some parents may need to know how much involvement is necessary for students to succeed in their virtual classes (Hasler-Waters et al., 2014; Ricker et al., 2021). Parents are often referred to as learning coaches due to the extensive involvement that is required of them (Hasler-Waters et al., 2014; Ricker et al., 2021). This plays a role in understanding how students are progressing in class and how successful virtual schools are when it comes to student achievement.

Students

Students enrolled in a virtual learning class must have the capability to be independent and self-sufficient learners (Hartnett, 2016). One critical success factor is the ability of students to motivate themselves and complete their work without the need for an adult to be physically present at all times (Hartnett, 2016). Although virtual learning consists of synchronous sessions with the teacher, there are many moments when students work asynchronously and must complete work on their own before the next synchronous session (Hartnett, 2016). Without the ability for students to feel self-sufficient and confident to work independently, it is possible that in this type of learning environment, they could begin to struggle academically.

Moreover, because virtual learning relies heavily on asynchronous learning, student success relies heavily on the student. Theoretically, some students are not at a point where they

can take responsibility for their learning (Hartnett, 2016; Student Autonomy in Online Learning, 2013). Although some students may be at this point in their academic career, this only applies to some students. Students who are enrolled in virtual classes success is dependent upon the type of student they are. For example, when the COVID-19 pandemic broke out and school districts switched to ERT, many reports showed how some students could succeed remotely while others struggled. Though various factors could have contributed to this problem, student self-sufficiency was also a key theme in these reports.

Teachers

Though some virtual instructors may find that virtual teaching is more convenient for them, some report that it can be challenging training and preparing for teaching students online, as only 2% of universities prepare pre-service teachers for remote teaching (Waters & Russell, 2016). As K-12 virtual learning options continue to expand into school districts, the way teachers are being prepared and trained to go into the field of teaching has remained the same (McConnell et al., 2012; Waters & Russell, 2016). It is evident that teaching remotely and in a traditional classroom is not the same and require different pedagogies (Black et al., 2022; Ko & Rossen, 2010).

Within teacher preparation programs, before one becomes a teacher, one must complete observation hours that require observation and fieldwork and student teaching hours (Kennedy & Archambault, 2012; McConnell et al., 2012). This portion of most programs aims to expose teachers to real-life situations and teaching experiences that will result in a better understanding of classroom management, differentiation, motivation, and reflective teaching practices (Kennedy & Archambault, 2012). Traditionally, these practices have been completed in a face-

to-face, brick-and-mortar setting instead of an online or virtual classroom (Kennedy & Archambault, 2012).

Based on the theory of situated learning (Korthagen, 2010), it would be beneficial for teachers to receive some of their observational time or student teaching within an online classroom (Kennedy & Archambault, 2012). Despite the notion that there are more brick-and-mortar classrooms and traditional learning environments than virtual schools, pre-service teachers agree that exposure to online teaching would benefit their future careers (Waters & Russell, 2016). Rather than placing the responsibility of training teachers on virtual instruction in school districts, universities should consider revamping their curriculum to address virtual teaching. More teachers could end up teaching in an online environment instead of teaching in a traditional classroom (Waters & Russell, 2016).

Virtual teachers may also have an increased student load compared to the number of students enrolled in a traditional classroom (Molnar et al., 2019). While some schools have reported having an average of less than one student per teacher, others have reported over 30 students per teacher (Molnar et al., 2019). Therefore, although virtual teaching may be more convenient for some teachers, it could come with an increase in student load and responsibilities associated with having an increase in students (Molnar et al., 2019).

Technology

Computers were not originally designed to carry children through school as they were created to assist adults in the workplace (Plowman & McPake, 2012). However, through the evolution of technology and education, technology plays a pivotal role in executing virtual learning (Singh & Thurman, 2019). Without technology, synchronous and asynchronous instruction would not be achievable in this learning modality (Singh & Thurman, 2019). Online

curriculum and learning management systems (LMS) would also not exist for course instructors (Singh & Thurman, 2019). Therefore, students rely heavily on technology to access course instructors and curriculum (Singh & Thurman, 2019). Despite the role of technology, it is evident that technology only sometimes functions appropriately. For young students, the role of technology could inhibit their ability to learn on a particular day if parental support is unavailable.

Although technology supports young learners, when there are problems, it takes work for a young student to fix them. For example, when the computer or tablet disconnects from WiFi and will no longer connect to the internet by pressing a simple button, students often need to learn how to fix and solve the problem. If an adult is not present or cannot instantly support their child, further issues arise as students are off task and unable to connect to their instructor or learning activities (Aguliera & Nightengale-Lee, 2020). There needs to be more literature on how virtual teachers have overcome this problem in their virtual classes. If students cannot connect for the day due to internet problems the entire day, it is feasible to wonder what the student is and is not responsible for completing that day based on the teacher's expectations (Aguliera & Nightengale-Lee, 2020).

Concerns about increased screen time and how long students are expected to be in front of the computer also concern using technology to deliver instruction (Genimon et al., 2022). Virtual instruction allows students to sit at a desk from the comfort of their homes, and there are no designated recess times as there would be at a traditional brick-and-mortar school. Although teachers may give students brain breaks and lunch breaks, there is no guarantee that students are taking a step away from technology and getting physical exercise (Genimon et al., 2022). Screen time and childhood obesity are often linked together, as children with excessive screen time daily

are more likely to fall into the obesity category (Mineshita et al., 2021). Other health problems include vision and dry eye problems associated with the increased use of technology in young children (Brody, 2021).

Economic Factors

Though there are some economic advantages to having students participate in online courses, such as limiting student transportation costs and student meals and having more options on where students can attend school outside of their district's parameters, there are also economic disadvantages (Barbour, 2011; Zuercher et al., 2022). Due to the high level of parental involvement necessary to make virtual learning a practical educational experience, one parent must have the capacity to work from home or be considered a stay-at-home parent (Singletary et al., 2022). Singletary et al. (2022) found that during emergency remote learning, much of the parenting stress fell on who or how they would support their children who were learning from home. Furthermore, in today's economy, it is more common for both parents to need to work to support the household. However, suppose one parent is unable to work. In that case, it not only causes more stress for the family but could also impact the student behaviorally in the online classroom (Singletary et al., 2022).

Virtual learning could also impact the current educational inequities and further make more problems for the already suffering school districts (Champeaux et al., 2022; White et al., 2021). Since school districts receive money based on student enrollment (Jones et al., 2008), if the number of students enrolled in traditional brick-and-mortar schools declines due to the increase of students attending school from home, then the school districts who already have limited amounts of money for their schools would only continue to have less money for the students who need to attend school physically (Jones et al., 2008). As there are students who will

always need to attend a traditional school due to a lack of child care or at-home support, these students who attend school in a low socioeconomic area will be impacted the worst by the limited amount of funding (Bouck, 2004). Current policies do not protect school districts from taking a dip in funding due to the students enrolling in online classes (Julian, 2009). Therefore, to protect traditional schools from receiving less money, either school districts will need to increase their virtual learning options to become competitive with charter and for-profit virtual schools, or they will need to have protections for their decreasing enrollment due to external schools attracting their students (Julian, 2009).

Student Engagement

Student engagement is a vital factor in students' success in a virtual classroom. Teachers must be able to engage students in meaningful learning and find ways to support the aspects that a traditional classroom naturally offers (Molnar et al., 2019). This includes social-emotional learning, social learning, peer relations, and the necessary amount of physical activity that students need at this age (Christopoulos et al., 2018). Virtual learning engagement differs in how one may engage students in a traditional brick-and-mortar classroom (Molnar et al., 2019). However, teachers have just as high standards for their students as traditional classroom teachers. However, how teachers present or provide the information to the students may look different (Molnar et al., 2019). In order to ensure students are actively engaged in learning and participating in their virtual classes, some states have gone as far as adopting student engagement policies to ensure that virtual schools are held accountable for keeping students engaged and active (Molnar et al., 2019).

Much of this topic centers around student-centered learning instead of teacher-centered instruction (Biernes, 2022; Christopoulos et at., 2018). When students are at the center of their

learning, they are more engaged as it relates to a topic they are personally interested in and want to learn more about (Biernes, 2022; Christopoulos et at., 2018). Teachers take a step back and are responsible for the role of instructional designers and supporters of student needs (Christopoulos et al., 2018). However, the literature on what and how teachers foster this type of learning in these environments is limited. Understanding how teachers are effectively engaging their students and fostering positive relationships amongst their students is crucial to understanding the ways that students can maintain engagement in their virtual classrooms.

Student-Centered Learning

Student-centered learning is an approach to teaching that allows students to have more autonomy over their learning as they are in charge of deciding the purpose, content, progress, and evaluation of their work (Garrett & Shortall, 2002; Lin et al., 2014). The center of student-centered learning is the concept of "student choice" and students' ability to choose what they study and how and why they chose to study that particular topic (Lin et al., 2014). Through student-centered learning, teachers talk less, and students talk more (Garrett & Shortall, 2002). By having the teachers talk less, students are increasing their knowledge of content matter with their peers and finding ways to produce work and evaluate themselves on the work they completed based on the intended learning targets (Garrett & Shortall, 2002).

In a virtual classroom, student-centered learning strategies are highly valued due to their efficacy in the discussion of student engagement (Rayens & Ellis, 2018). With the help of technology, student-centered learning becomes more feasible for teachers to utilize as it increases the possibilities of what student-centered instruction looks like to them (Hannafin & Land, 1997). Through this mode of instruction, students can take ownership of their learning inside and outside the digital classroom. Considering that one success factor of virtual learning is

student autonomy, using these games will only continue to build these skills for young learners. Furthermore, students are building critical thinking skills and retaining information in a way that makes sense (Hannafin & Land, 1997; Rayens & Ellis, 2018).

Game-Based Learning

One method teachers can use to utilize student-centered learning in their virtual classrooms is the use of digital games. Digital-based video games enable students to grow their content knowledge further and build critical thinking skills while having fun (Coleman & Money, 2020). Using digital-based video games with students can increase their motivation, independence, responsibility, and problem-solving skills due to the various aspects of student-centered learning underpinned by these learning activities (Coleman & Money, 2020). These aspects include active learning, autonomy, engagement, teacher and student interdependence, and deeper learning and understanding (Coleman & Money, 2020; Lea et al., 2003). Although students are having fun while learning, they use skills necessary for building lifelong learners (Coleman & Money, 2020). Whether students are in a traditional or virtual classroom, digital-based learning has been proven to be an effective tool to not only engage students on a deeper level but also foster critical life skills (Coleman & Money, 2020; Lea et al., 2003). Ultimately, for teachers, using digital games in the classroom allows them to differentiate instruction, increase the use of technology, and have students be at the center of their learning manageably (Coleman & Money, 2020).

Class Timing

Student engagement in virtual learning classes is further enhanced through the use of time and the increased or decreased amount of time that students need to work on a given topic (Shahabadi & Uplane, 2015; Sweetman, 2020). For more advanced students, this allows them to

focus on other activities they are interested in outside of school (Sweetman, 2020). For some students, this allows them to work at their own pace without feeling the pressure of being inside a traditional brick-and-mortar classroom with students who work faster than them (Shahabadi & Uplane, 2015). Virtual learning provides the benefit of learners working in a self-paced environment that allows them to control their time management and decide what activities fit their needs and time best (Shahabadi & Uplane, 2015).

Differentiating Instruction

Due to the time management component in virtual courses and the flexibility given throughout the school day, differentiating instruction becomes much more doable for the virtual teacher (Rachmawati et al., 2022). Virtual instruction's synchronous and asynchronous component allows teachers to specialize in instruction for specific students (Rachmawati et al., 2022). While instruction is specific to the individual student, there is also less pressure within a virtual classroom which has caused virtual learning to become a popular option among students with disabilities (Vasquez et al., 2015). Students who struggle socially can have limited interactions with others while still learning real-life and social skills (Vasquez et al., 2015). Vasquez et al. (2015) found that when students with autism spectrum disorder, ASD, were placed in a virtual learning environment, students felt comfortable being themselves and openly practiced their social skills in a limited setting, which proves the efficacy of providing instruction to students with disabilities in a virtual environment works. However, there is not much research explaining how virtual teachers implement differentiated instruction for struggling students or students with disabilities. Furthermore, it is still being determined if virtual private and charter schools have the same accountability standards regarding students with individualized education plan (IEP) and ensuring that teachers meet their specific needs outlined within the IEP.

Equity in Virtual Learning

Equitable learning occurs when every student has a sense of belonging and the opportunity to thrive within their educational environment regardless of their race or socioeconomic status (Tate & Warschauer, 2022). The term equity cannot be used synonymously with equality as they have two very different meanings. Equality refers to sameness and equal treatment whereas equity refers to personalized or customized treatment (Wilcox & Lawson, 2022). Inequities have existed within the K-12 education system for years prior to the 2020 pandemic (Pozos et al., 2021; Robinson, 2018; Tate & Warschauer, 2022). Students that live within certain cities across the country do not have the same access to a thriving educational system as other students due to their zip code (Pozos et al., 2021). A thriving educational system does not only have the material resources necessary to support students in the classroom, but the physical resources too, such as qualified teachers, support staff, effective school leaders, parents, and community (Acosta et al., 2021).

Equity within a virtual classroom means all students have access to high-speed internet, up-to-date technological devices, and a calm learning environment to allow them to attend class without distractions (Pozos et al., 2021; Tate & Warschauer, 2022). Students have access to supportive educators, parents, peers, and siblings to rely on for support throughout the day as necessary (Tate & Warschauer, 2022). Further, these students have the human resources necessary to thrive within this learning environment which refers to self-regulated learning that allows them to motivate themselves to get their schoolwork done (Pozos et al., 2021; Tate & Warschauer, 2022). Without these aspects within the virtual classroom, equity does not exist within this learning environment.

History of Equity in Educational System

History has shown that states have repeatedly neglected the needs of low socioeconomic students (Robinson, 2018). The location of a student's home determines the quality of education that they will receive throughout grades K-12. Irwin et al. (2022) finds that only 8% of federal funds are contributed to the public education system while states account for 47% and local communities account for 45% of school funds.

Due to the allocation of resources and how they are distributed, disparities begin to emerge as students that reside within low-income areas do not have access to the same resources as students that reside in higher socioeconomic locations (Ponzini, 2022). When analyzing the per pupil expenditure within each state, Ponzini (2022) found that the northeastern states had the highest pupil expenditures as those are predominately high-income regions. Whereas lower income regions such as states within the Southern or Western regions had the lowest per pupil expenditure. While per pupil expenditure is based on various factors such as teacher salary, transportation costs, support staff, state size, geography, and administrative expenses, it is evident that the differences in expenditure only contribute towards the inequities within the school system (Ponzini, 2022).

Equity in Emergency Remote Teaching

The pre-existing inequities within the educational system only flowed into the 2020 pandemic as teachers and students transitioned into emergency remote teaching, ERT (Acosta et al., 2021; Miller et al., 2021; Pozos et al., 2021). Students who resided in lower-income socioeconomic regions during the pandemic did not have the same access to resources as students who resided in higher socioeconomic regions (Tate & Warshauer, 2022). Further, the schools within these lower socioeconomic regions did not have the required resources and tools

to support their students learning from home (Tate & Warschauer, 2022). Emergency remote teaching showed inequities for students, teachers, and parents.

Inequities Affecting Teachers. The teachers that served lower socioeconomic students could not adequately support their students virtually as these educators were not properly trained to support students virtually. Although this was the case for many teachers across the United States, despite the region or state they work in, it impacted the number of digital programs that they could use on a daily basis with their students (Miller et al., 2021). Inequitable pedagogies caused some teachers to have the necessary resources to carry on daily instruction, whereas others had to change their instructional practices (Miller et al., 2021). Pozos et al. (2021) found that only 5% of teachers teaching in lower socioeconomic regions had experience assigning online homework. Whereas 27% of teachers who support higher-income families had experience with assigning online homework (Pozos et al., 2021). Ultimately, there was and continues to be an inequitable quantity of resources available to teachers that support lower-income families which affected the students and their ability to access a quality education during distance learning in 2020.

Inequities Affecting Students. Schools primarily serving income, students of color had a lower chance of getting students to log on for instruction daily in comparison to the wealthier students (Tate & Warschauer, 2022). Statistically, only 60% of low-income students logged into instruction daily in comparison to the 90% of wealthier students who logged in every day. The inequities did not only show up in the ability to access instruction, but students also struggled with basic technological resources such as technological devices to access instruction and internet access. Of the 51 million public schools K-12 students, about 1 million students did not have access to the resources that were required to access school during the pandemic (Tate &

Warschauer, 2022). Furthermore, schools that served more students of color and low-income students were more likely to stay remote longer than other school districts due to these regions having the highest active COVID-19 infections (Tate & Warschauer, 2022).

Inequities Affecting Parents. Parent involvement in virtual learning is a requirement for K-12 students and more specifically, K-5 students as these students have not developed the autonomy to hold themselves accountable for their school work, and they cannot fix their own technological issues (Tate & Warschauer, 2022). However, there were many parents who were considered "essential workers" who could not stay home with their children. Most essential worker positions were not high-income positions which means that low-income families could not afford to support their students from home (Capasso et al., 2022). Many parents and caregivers did not always have the social or physical resources to support their children. Only one in three families reported having a consistent place for learning that was distraction free for their children (Aguilar et al., 2020).

The inequities surrounding virtual learning during the COVID-19 pandemic caused educators, parents, and students around the nation to have a negative perception of virtual learning (Pozos et al., 2021). Due to the number of inequities that came with students learning from home and the reported learning loss that occurred because of the pandemic, virtual learning is deemed ineffective by many educational stakeholders (Acosta et al., 2021). However, these stakeholders have not realized that ERT is different from a virtual learning program or class that was intended to be a virtual class (Miller et al., 2021).

Equity in Established Virtual Classrooms

As virtual learning programs for K-12 students are still in their beginning stages of immersion across various states throughout the US, the question of whether or not these

programs promote equity is still in question (Mann, 2019). Due to the nature of virtual learning programs in comparison to the traditional classroom, students do not have the opportunity to be with other students who may have a different race or ethnicity than themselves (Mann, 2019; Mann et al., 2021). Due to this reality, the students are limited in their ability to embrace and surround themselves with students that are different from them (Mann, 2019; Mann et al., 2021). Further, Mann (2019) found that most online school enrollment is among white students. In some states, there are a decent number of low-income students but also white students. Therefore, to promote more equity and diversity in online learning programs, Mann (2019) recommends that online schools evaluate their current practices and find ways to incorporate more equity and diversity within their enrollment patterns and meet the demands of diverse learners.

Student Outcomes

Public perception of virtual learning has been relatively low in comparison to the perceptions surrounding face-to-face learning (Barbour & Harrison, 2016; DiFrancesca & Spencer, 2022; Tate & Warschauer, 2022). After the COVID-19 pandemic caused school closures worldwide, the public perception of virtual learning decreased even further (DiFrancesca & Spencer, 2022). Yet, there is evidence that virtual learning can be just as effective as in-person learning under the right conditions (Mann et al., 2021; Tate & Warschauer, 2022). These conditions include an equitable learning experience where the learner has a calm learning environment and parent or guardian support as necessary. Along with the proper learning conditions, the learner needs access to the required technology to succeed in class. It is evident that the more technology grows, the better the learning outcomes are for virtual learners due to the increased ability to emulate a brick-and-mortar classroom (DiFrancesca & Spencer, 2022).

When studying virtual learning, it is important to consider the types of learners enrolled in the virtual learning program (Tate & Warschauer, 2022). While online learning has shown to be just as effective as in-person learning in some contexts, there are also studies that show that online learning classrooms are inferior to the traditional face-to-face classroom (DiFrancesca & Spencer, 2022; Mann et al., 2021). In a global pandemic, students may be forced to learn online whether they have the tools to learn from home or not. Under this context, some students may not perform as well as they would in person given their lack of internet access, suitable learning environment, or various needs that cannot be met without the assistance of an adult physically present (Mann et al., 2021). Therefore, these students would not be expected to perform as well as those intentionally placed in a virtual learning environment. However, there are students who have a suitable learning environment and intrinsic factors that allow them to succeed in this learning environment (Chiu, 2021). Some students have the capability to be intrinsically motivated to perform well in school. Not only are these students motivated to perform well, but they also have the ability to seek help when necessary and push themselves to complete their assignments (Chiu, 2021).

Student outcomes in a virtual environment are reliant upon the context of the learner and the environment in that they are given to learn (Chiu, 2021; Tate & Warschauer, 2022). Virtual learning is not suitable for all K-12 learners as some students have particular needs that need to be addressed within a face-to-face setting. While some learners may have intrinsic factors that would contribute to a successful virtual learning experience, their home setting may not be suitable for this particular learning environment (Mann, 2019). Ultimately, it is important to consider the factors contributing to a successful learning experience while also understanding how student success is measured within a virtual classroom.

Student Success Factors

Student success factors can be defined by the specific factors that are going to make students successful in their learning environment (Chiu, 2021). There are various factors that can make a learner success in a traditional or virtual environment including internal and external factors that can promote student success (Chiu, 2021). By understanding these various factors, education stakeholders can determine what is required for the student to succeed academically.

Student Factors

A student's success in a virtual classroom relies on their ability to take ownership of their learning (Chiu, 2021). As has been discussed previously, it is evident that virtual classrooms do not fit all learners. In a K-5 context, this population of students not only requires much parental involvement to excel in a virtual learning environment, but they also need to be intrinsically motivated to perform well in school (Hasler-Waters et al., 2014). Self-determination and autonomy are skills that K-12 students need for long-term success within school. Self-determination in relation to education can be described as one's ability to take control of their own learning. Within virtual learning environments, self-determination is a critical success factor for K-12 students (Ryan & Deci, 2017).

Self-Determination Theory

Self-determination theory (SDT; Ryan & Deci, 2017) suggests that all individuals have three basic psychological needs that move them to act or not to act: autonomy, relatedness, and competence. Autonomy is "the freedom or choice over one's actions" (Chiu, 2021, p. 3). In relation to virtual learning, this psychological need can assist students with their motivation and persistence to engage in virtual lessons and complete their assignments during asynchronous instruction (Chiu, 2021; Ryan & Deci, 2017). Relatedness is the ability to feel connected to other

people (Chiu, 2021; Ryan & Deci, 2017). For virtual learners, this is their ability to feel comfortable and connected to their teacher and peers despite learning online. Students with a sense of relatedness are also more encouraged to participate in learning (Chiu, 2021). Lastly, competence refers to an individual's efforts to seek mastery (Chiu, 2021). Through positive feedback and engagement from the virtual teacher, students will feel motivated to continue to seek mastery and improvement in their virtual classes. SDT explains why and how students are able to motivate themselves in virtual classrooms (Ryan & Deci, 2017). Given the increased student responsibility in virtual learning classes, it would be challenging for students to succeed in this learning environment without motivation.

School Factors

Students who have a relationship with their teachers and understand the learning management system (LMS) are the students that have a greater chance of succeeding in a virtual classroom as they have a solid foundation to access their instructional materials and necessary support (Liu & Cavanaugh, 2011; Tate & Warschauer, 2022). LMS's that are user-friendly for both the teacher and student have proven to impact the success of students enrolled in a virtual class (Liu & Cavanaugh, 2011). Further, student-teacher relationships are often considered a benchmark for online learning as students feel comfortable asking questions and seeking support when they need clarification on assignments or instruction (Tate & Warschauer, 2022). Therefore, open communication between students and teachers is critical in establishing a successful learning foundation. Students feel more comfortable asking their teacher for help and support, whereas students that do not have a relationship with their teachers are more likely not to complete assignments and assess instructional materials when necessary (Tate & Warschauer, 2022). Virtual educators also have the ability to bridge gaps between students with disabilities

and students without disabilities due to their individualized learning capabilities (Vasquez et al., 2015). Students with disabilities can receive personalized instruction from the teacher without disruption during asynchronous instructional time. Further, the available technology has the capability to support their learning gaps and individualized needs further (Vasquez et al., 2015).

Home Factors

Students with an available learning coach can seek further support during asynchronous instruction so that they can complete their assignments in a timely manner while also having the opportunity to understand the material taught during synchronous instruction (Hasler-Waters et al., 2014; Ricker et al., 2021). The learning coaches consist of parents or guardians who can assist students with their assignments or technology problems (Hasler-Waters et al., 2014). The student's parents or guardians also create a safe and calm learning environment for their student to attend class and complete assignments (Hasler-Waters et al., 2014; Ricker et al., 2021). Like the learning environment, teachers create within their traditional classrooms, parents and guardians create for their students to learn from home. Students can focus on their learning, not extrinsic factors they cannot control. Young students who do not have access to a safe and calming environment have been proven to struggle in virtual classes regardless of the intrinsic factors they may contain to succeed in school (Ricker et al., 2021).

Measuring Student Success in a Virtual Format

Although there has been much conversation about how student success is measured in a virtual context, based on current practices and research, student assessment can occur within a synchronous or asynchronous context (DiFrancesca & Spencer, 2022). Virtual educators can monitor student progress in various ways, and due to the flexible nature of virtual learning, students can be assessed in various ways (DiFrancesca & Spencer, 2022). Rather than the

traditional paper-pencil lessons, teachers can have students create a video, picture, or live quiz that will give them direct insight into what the student has learned from the lesson that was taught.

Through the flexible ways that assessment can be done in a virtual classroom, there is not an increase in concern for virtual educators regarding cheating or parent involvement. Although this is always possible, the cheating rate of students in a virtual setting is nearly the same as students enrolled in the traditional classroom (Lockee et al., 2021). Within a virtual setting, the assessment does not only occur during asynchronous instruction. Virtual teachers can assess students using the chat box or live polls during synchronous instruction. This allows teachers to understand what students understand well and what concepts they need more support in, similar to how students are assessed within a traditional classroom (DiFrancesca & Spencer, 2022). Further, students can take assessments while on camera with their teachers to ensure they are not receiving help from a sibling, peer, or adult (DiFrancesca & Spencer, 2022).

Similar to a traditional brick-and-mortar school, virtual schools that are attached through public school districts are still expected to participate in state testing to measure the success of their students in these virtual programs (Rice et al., 2008). Despite the question of accountability for virtual schools to show proof of academic success, these virtual institutions are held to the same accountability standard as any other traditional school. Results have proven that students enrolled in synchronous virtual classes show the same academic growth as their traditional school counterparts (Moorhouse & Wong, 2022). Therefore, the test scores of these virtual schools help dispel any misconceptions society has surrounding virtual learning.

Critiques and Recommendations for K-12 Virtual Schools

Despite the evidence that virtual school works for some students, critics of virtual school options believe it is insufficient to meet the whole child's needs (Noddings, 2005). As discussed previously, the whole child refers to a student's academic and social aspects (Noddings, 2005). Critics believe that due to the development of young children and the theories that support child development, students should be learning in a brick-and-mortar classroom with their peers beside them. However, similarly to the idea that virtual school does not fit the needs of all learners, brick-and-mortar schools do not fit the needs of all students (McFarlane, 2011). Therefore, it is important to highlight the common critiques of the topic and explore the experts' recommendations for the future of virtual learning that addresses these concerns.

Critiques

Common critiques in virtual learning include too large class sizes, impersonal classes and teachers, untrained educators, and limited social development opportunities (McFarlane, 2011).

Large Class Sizes. These virtual classrooms are often larger in size due to the idea that the teacher does not need to be physically present with the students. Virtual classrooms have open enrollment and expect new students to join their classes anytime. Whereas in a brick-and-mortar school, teachers can expect the possibility of a couple of new students joining their class as opposed to the potential of five to ten new students (McFarlane, 2011).

Impersonal Learning Experience. When teachers are physically present with the students, they are able to get to know the students easily and adapt their teaching methods to their needs fairly quickly. This becomes a challenge in a virtual setting for various reasons, such as large class sizes or students not participating in class often (Farmer & West, 2019).

Unprepared Educators. Teachers with experience teaching in a traditional classroom continue transitioning to a virtual classroom. However, teachers often feel that the institutions are not preparing them adequately for virtual instruction. An influx of virtual tools needs to be utilized, and unique teaching methods are required to assist the students. The lack of training on how to best meet the needs of these learners is a common critique from teachers in virtual learning (Farmer & West, 2019).

Limited Social Development. Based on parent and teacher perspectives, not all virtual schools prioritize the social development of students virtually. Despite teachers putting activities and practices in place to foster social interaction, not all virtual schools are finding other solutions to bring students together to foster their social development (Farmer & West, 2019).

With these common critiques within the field of K-5 virtual education, there are many misconceptions surrounding virtual schools. However, these critiques should not be considered critiques of every virtual school within the United States (Farmer & West, 2019). Instead, individuals interested in these programs should do research surrounding these programs and determine which virtual school's practices fit their individual needs the best.

Recommendations

To improve the common critiques surrounding virtual learning for young learners, researchers suggest that more research must be done to understand how educators can mitigate these potential challenges. Virtual educators understand that virtual learning is not perfect and does not fit the needs of all learners, however, with more research, educators can find what has been proven successful in terms of limiting the challenges (Torres Martin et al., 2021).

Some virtual schools have found ways to mitigate the challenges surrounding class sizes and social development by expanding the number of virtual classes the more their programs

grow and holding social outings in their student's various regions. This allows students to come together and see their peers in person and their teachers, administrators, and other support staff. Further, the increase in virtual programs means that more teachers need to be prepared in their teacher preparation programs for teaching in this particular learning environment. Although the practices of in-person teaching and virtual teaching transfer over, there are still challenges that virtual educators face that may not appear in a traditional learning environment (Larson & Archambault, 2019; Torres Martin et al., 2021).

Conclusion

Due to the expansion of technology and online learning programs or schools, the number of students enrolled in full-time or part-time virtual classes will continue to increase in the coming years. Before the pandemic, online programs were expanded as more K-12 students, and their parents or guardians began to choose online classes. However, post-pandemic, there was an even greater increase in the number of students enrolled in online classes. Due to this increase in demand for virtual classes, there is an even greater emphasis for current and pre-service educators to understand theories surrounding child development and TPACK. This chapter highlights how effective synchronous instruction can benefit students who require more flexibility in their learning and can have adequate support from learning coaches at home. This learning mode does not fit all learners, but some learners can perform better in this learning environment than in a traditional classroom. Given the benefits of virtual instruction, it is apparent that more research needs to be conducted on how educators can make this mode of learning even more effective for their students.

Chapter 3: Research Design and Methodology

Introduction

This qualitative research study is grounded in understanding how young learners can receive an education with virtual or online learning. Despite critics stating that students at this age cannot learn and grow socially with virtual learning (Hasler-Waters et al., 2014), there is clear evidence that this learning mode can support some students (Barbour, 2011; Snow & Coker, 2020). By understanding teachers' best practices with experience in teaching young learners virtually, we can understand how these educators can create effective and engaging learning experiences. Qualitative research is rooted in understanding problems or experiences through the lived experiences of the individual (Creswell, 2013). Therefore, this research study will serve to understand what has been deemed effective and ineffective practices through the experiences of K-5 virtual educators.

This chapter discusses the methodology of the research study. The chapter will outline the research questions and approach to the study, the phenomenological approach, and the rationale for choosing this approach. After that, the chapter will also take a deeper look into the method of sampling, the Institutional Review Board (IRB) process, the consideration of human subjects in the study, and the validity and reliability of the study. Lastly, there will be a brief discussion of data analysis.

Re-Statement of Research Questions

The following research questions will be used in this study:

- RQ1: What strategies and best practices are employed by K-5 teachers to teach students virtually?

- RQ2: What challenges are faced by K-5 teachers when teaching students virtually?
- RQ3: How do teachers define, measure, and track the success of students that are learning virtually?
- RQ4: What recommendations do teachers have for pre-service teachers in advanced technological environments?

Nature of the Study

This descriptive study will utilize a qualitative research approach to elicit information on the best practices of K-5 virtual learning. There are several distinct characteristics of qualitative research that Creswell (2013) described that align with this study:

1. The study will be conducted in a natural setting. Creswell (2013) defines a natural setting as the site where individuals experience the issue or problem of the study. The location is not manipulated, allowing the subjects to feel comfortable within their environment (Chesebro & Borisoff, 2007). Therefore, interviews will be conducted within school sites or on a virtual platform teachers use to hold synchronous class sessions.
2. To fully understand the phenomenon being studied, the researcher will be the sole instrument to collect and analyze data (Hathaway, 1995). Within qualitative research, the key researcher may observe body language, analyze documents, and have conversations with participants as opposed to analyzing questionnaires as one would do with quantitative research (Creswell, 2013). The researcher will solely create interview questions to elicit open-ended responses from the participants who understand best practices when teaching young learners virtually.

3. Rather than gathering data based on one teacher's perspective, the researcher will speak with 15 participants to gather the most data possible on virtual teaching. This will allow the researcher to use multiple perspectives to get a full picture of the phenomena being investigated (Hathaway, 1995). Participants will come from various K-5 grade levels to understand the best practices used by teachers for various age ranges.
4. After collecting the data, the researcher will work to break apart the data and use an inductive reasoning process to establish a comprehensive set of themes (Creswell, 2013). These themes will then allow the researcher to review the data and use deductive reasoning to determine how virtual teachers can best meet their students' needs. Ultimately, it highlights how qualitative research uses inductive and deductive reasoning within the research process.
5. Qualitative research refrains from including the researcher's biases and perspectives on a topic or issue. The researcher will avoid including their perspective or opinions when interviewing the participants as the researcher intends to understand the participants' problems or experiences with the phenomena being studied (Hathaway, 1995). Information provided by the participants will be their perspectives and thoughts on teaching virtually.
6. This is an emergent study that could shift in design based on the needs of the participants. According to Creswell (2013), "The research process for qualitative researchers is emergent" (p. 235). To get the most information from the participants, interview questions or the setting of the interviews may need to shift to allow participants to feel comfortable in their natural setting. Further, interview questions

could change to further engage in conversation with the participants or receive more information necessary for the study.

7. The study is reflexive, and the researcher will share her background in K-5 teaching with the reader. Qualitative research is reflexive as the researcher must reflect on their role within the research process and how their background shapes their interpretations of the data. By doing this, the researcher increases the credibility of the findings and improves our understanding of the work (Dodgson, 2019).
8. Qualitative research attempts to create a bigger picture of the phenomena being studied (Creswell, 2013). The researcher will aim to give a holistic account of the best practices for teaching K-5 students based on the multiple perspectives reported in the interview process.

Strengths of Qualitative Research

Qualitative research allows researchers to understand a phenomenon based on the real-life experiences of individuals who experienced the event (Choy, 2014; Creswell, 2013; Hathaway, 1995). With this particular study, qualitative research allows the researcher to understand a phenomenon based on the real-life experiences of teachers who either teach or have taught young learners virtually. During the interview, the researcher can ask clarifying questions and redirect the participants as needed (Creswell, 2013; Hathaway, 1995). Further, as new information emerges from the interviews, questions can be altered or revised in real-time (Choy, 2014).

Weaknesses of Qualitative Research

Despite the strengths of qualitative studies, some weaknesses cause challenges for the researcher when interpreting the data (Creswell, 2013). The researcher must have the capability

not to include her own biases when interpreting the data despite being a teacher who has experience teaching young learners virtually. Moreover, due to qualitative studies comprising non-numerical data results, verifying the information provided in interviews can challenge the researcher. The participants can often overlook important information as they have control of their responses within the interviews (Creswell, 2013).

Assumptions of Qualitative Research

There are four philosophical assumptions within qualitative research:

1. Ontological assumptions: This assumption relates to the nature of the study and how the researcher must be able to accept "multiple realities" (Ahmed, 2008; Creswell, 2013). The researcher will interview several participants, and the researcher must report the various perspectives and unique experiences of the participants, even if their experiences are different than what has been deemed typical or normal.
2. Epistemological assumptions: The particular assumption refers to the participants and the researcher aiming to get as close to the participant as possible. Given that the participants' experience is subjective, it is vital for them to feel close to the researcher. They can build more firsthand information (Creswell, 2013; Hathaway, 1995).
3. Axiological assumptions: The researcher makes their values and biases known within the study (Teddlie & Tashakkori, 2012). The researcher recognizes and reports their biases and values as they work in early childhood education and has experience teaching students virtually. When interpreting participant interviews, the researcher will recognize how their biases shape her perspective of the findings and report the findings solely based on participant responses.

4. Methodology assumption: This refers to the research process and, more specifically, the interview protocols (Ahmed, 2008). The researcher will revise the interview protocol and data collection process as necessary.

Methodology

Creswell highlights five approaches to qualitative research: grounded theory, ethnography, narrative research, phenomenology, and case study (Creswell, 2013). Phenomenology is the study of a lived experience centered around a specific phenomenon from the point of view of an individual or individuals who have experienced the phenomena (Wojnar & Swanson, 2007). This study is phenomenological. The semi-structured interview questions aim to understand the experiences of K-5 teachers who have experience teaching students virtually. The questions for the interviews are designed to elicit stories of their unique experiences so that the researcher can use inductive reasoning to generate best practices for teaching students virtually, given the multiple perspectives heard throughout the interviews (Creswell, 2013).

Structured Process of Phenomenology

Phenomenology has particular features that cause it to differ from the other approaches to qualitative research that Creswell (2013) noted in his research. These features include: an emphasis on a phenomenon, individuals who have experienced the phenomenon, personal biases are noted by the researcher, interviews with individuals who have experienced the phenomenon, data analysis of the interviews, and a synthesis of all interviews that were conducted within the study (Creswell, 2013). The phenomenon in question is the lived experiences of K-5 virtual teachers. According to Moustakas (1994), the following steps should be followed when conducting a phenomenological study:

1. The researcher should determine whether or not phenomenological methodology is appropriate for the research problem.
2. The researcher will choose phenomena worth studying based on the research problem.
3. The researcher will recognize and describe the assumptions of the study.
4. Conduct interviews using participants who have experienced the phenomena.
5. Based on the interviews, the researcher will analyze the data and generate common themes in the participants' responses.
6. The researcher will create a description of the experiences with the help of the themes found in the study.
7. The researcher will write a composite description describing the phenomenon's studied essence.

Appropriateness of Phenomenology Methodology

The collection of data on these experiences is through open-ended interview questions that aim to understand the best practices of teaching young learners virtually. Based on the data collected, it is possible that conclusions can be made on what practices pre-service and current virtual teachers should utilize in their teaching practices. According to Moustakas (1994), "The empirical phenomenological approach involves a return to experience to obtain comprehensive descriptions that provide the basis for a reflective structural analysis that portrays the essences of the experience" (p. 8). For the researcher to not include their own experiences within the analysis of the experiences, the practice of epoche, or bracketing, will be utilized so that the researcher can take her experience of teaching virtually out of their perspectives of the phenomena being studied. By the researcher not including their views and experiences when examining the

phenomena, a transcendental phenomenological approach is used when studying K-5 virtual teachers.

Strengths of Phenomenology

One of the core strengths of phenomenological research is the ability to explore a specific experience from individuals who experienced the phenomenon (Mayoh & Onwuegbuzie, 2015). Through this methodology, the researcher will have the opportunity to explore the best teaching practices from individuals who have or currently work in the field. This exploration could lead to a more practical understanding of the phenomenon and conclusions that are useful for both teachers and pre-service teachers in the field of virtual learning.

Weaknesses of Phenomenology

While there are strengths with this particular methodology, there are also weaknesses that must be considered. The three challenges that Creswell (2013) highlights for phenomenological research includes:

1. Researchers must identify any assumptions present within their study.
2. The researchers must ensure that the participants have all experienced the same phenomenon to create logical conclusions and themes based on the participant's responses.
3. The researcher must be able to "bracket" their personal experiences from the study.

To overcome these challenges, the researcher first addressed any assumptions surrounding this study's topic. Second, the researcher will ensure that each participant has experienced the same phenomenon before interviewing them. Lastly, the researcher will address any biases she may have on the topic of K-5 virtual learning.

Research Design

According to Creswell and Creswell (2013), research design includes the entire process, from conceptualizing the problem to reporting the study's findings. The design connects the literature surrounding the phenomena to the study's conclusions. The research process involves stating the analysis unit, sample population, sample size, and sampling technique.

Analysis Unit

The unit of analysis is one K-5 teacher who currently teaches students virtually in a public, charter, or private school setting. The teachers must have met the following qualifications:

1. A minimum of five years of teaching experience in K-5 education (virtual or non-virtual).
2. A minimum of one year of experience teaching K-5 students virtually.

Population

Interviews are the primary data source in phenomenology (Tomaszewski et al., 2020). Hence, the need for participants as phenomenology aims to understand the lived experiences of individuals who experienced the phenomenon. The population will be all teachers from the United States who teach virtually in a K-5 setting. This includes teachers who currently teach in a virtual public, private, or charter school setting.

Sample Size

In qualitative research, the researcher can use a small sample pool to receive rich and high-quality data (Creswell & Creswell, 2018). In qualitative research, the intent is to reach data saturation, where no new information or themes can emerge from the interviews (Sandelowski, 1995). Dukes (1984) finds that a phenomenological study's ideal sample size ranges from three

to ten participants. Yet, Dworkin (2012) finds that five to 50 participants is the ideal number of participants in qualitative research. For the sake of this study, the researcher needs rich data from her participants to make conclusions on the best practices for teaching young learners virtually. Hence the goal of the study, the researcher will find 15 K-5 educators to interview. This particular sample size will allow the researcher to reach data saturation and find clear and consistent themes amongst the participants.

Purposive Sampling

Purposive sampling allows the researcher to purposely choose individuals who are knowledgeable about the study's focus (Creswell & Creswell, 2018). This sampling technique does not require underlying theories or a set number of participants as other sampling techniques may require (Etikan et al., 2016). Purposive sampling, sometimes known as judgment sampling, will allow the researcher to purposely choose individuals who can best inform the researcher about the research problem (Creswell & Creswell, 2018; Etikan et al., 2016). The researcher will use this sampling technique to ensure that individuals who have experienced the phenomenon are chosen for this study.

Participant Selection

To identify qualifying participants for the study, the researcher will curate a list of potential participants she will reach out to for an interview. The researcher will create and use her inclusion and exclusion criteria to reduce the list to the number of participants needed for the study. By developing the inclusion and exclusion criteria, the researcher can reduce the number of potential participants eligible to participate in this study. The researcher will receive approval from the committee before completing this process.

Sampling Frame

Within qualitative research, a sampling frame is a list of participants potentially used in the study (Acharya et al., 2013). A master list of participants was used to create a pool of eligible participants in this study in a two-step process. First, the researcher utilized their membership in the United States Distance Learning Association (USDLA) to obtain a list of potential participants. The USDLA is an association representing K-12 education, higher education, continuing education, military and government training, homeschooling, and telemedicine. According to their website, USDLA's mission is to advocate, research, and share best distance learning practices (USDLA, 2023). As a member of USDLA, the researcher was able to secure a list of 480 USDLA members, which included names, phone numbers, e-mail addresses, and addresses if the member chose to disclose that information. The researcher obtained this information by logging into their member profile and going to the reports section of the website. As the list did not include members' professions, the researcher used Linkedin (http://linkedin.com) to identify the members' occupations by searching their names and companies/school according to their e-mail addresses. Due to the high number of members apart of the association, the researcher focused on the ".edu" and ".org" e-mail domains to know which members had the highest possibility of being K-12 educators. Not all ".com" and ".net" e-mail addresses were ignored, as those were used once the researcher went through the first set of domains. After the Linkedin search to understand each member's profession, the researcher found 25 individuals with a K-12 background. Of those members, 10 represented K-5 virtual or distance education educators who met the inclusion criteria of virtual teaching experience in a public, charter, or private school classroom and had a minimum of five years of teaching

experience. Educators with less than five years of teaching experience were excluded from the final count of potential participants.

Next, the researcher referred to Linkedin (http://linkedin.com) to find potential participants to add to the master list. On Linkedin, the researcher searched the terms *virtual teacher* and *virtual educator* using the website's search engine to search for potential participants. There were a total of 800 teachers that appeared in the initial search. Once the researcher evaluated the first 300 profiles, the researcher could find 50 K-5 educators that fit the inclusion criteria. Throughout the search for K-5 educators, the researcher noticed that many of the potential participants worked for virtual academies such as Proximity Learning, Edmentum, and Imagine Learning throughout various states within the United States. Therefore, the researcher used the *Company* filter option to enter the names of the virtual academies to find more K-5 virtual educators. Once that filter was applied, a total of 800 educators appeared, and within the first 150 profiles viewed, the researcher found an additional 27 educators to add to the master list. The educators who had virtual teaching experience in a classroom setting but did not have a minimum of five years of teaching experience were not considered potential participants. By the end of the search for potential participants, the researcher had 87 individuals who fit the inclusion criteria, meaning that a total of 87 educators from USDLA and Linkedin were added to the researcher's master list.

Criteria for Inclusion. The criteria for inclusion in this study were as follows:

1. Teacher has a minimum of five years of teaching experience in a K-5 setting.
2. The teacher has experience teaching virtually in a classroom setting.
3. The teacher works at a public, charter, or private school within the United States.

Criteria for Exclusion. The following criteria will be used to help minimize the number of potential teachers used in the study:

1. The participants did not sign and return the informed consent.
2. The teacher has less than five years of teaching experience.
3. Participants were unwilling to be recorded on Zoom or in person for the interview.
4. Participants are not available for an interview until after March 2023.

Criteria for Maximum Variation. Creswell and Creswell (2018) describe maximum variation as the ability to choose criteria that will result in a diverse sample population. When the researcher has a diverse population for the study, it will help facilitate a greater understanding of the phenomenon (Creswell & Creswell, 2018). Therefore, when choosing teachers, the goal will be to select a variety of K-5 educators who work in the public, charter, or private schools in various states throughout the United States. Further, the researcher will aim to choose individuals based on their diverse background, geographic locations, and gender. As a result, the researcher expects to narrow down the list of prospective participants to a total of 15 participants.

Protection of Human Subjects

The Pepperdine University Institutional Review Board (IRB) aims to protect the rights and welfare of human research subjects and promote valuable research (Morris & Morris, 2016). Since this study includes human subjects, adhering to the IRB's standards and protocols will be a critical task to follow. Based on the Pepperdine University IRB website (Pepperdine University, n.d.) IRB aims to:

a. Protect the rights, welfare, and dignity of human subjects who will participate in the study.

b. Ensure compliance with federal, state, and university regulations and policies on using human subjects within a study.
c. Provide high-quality education, review, and monitoring for human research subjects.
d. Assist researchers in conducting high-quality, sound research that complies with state, federal, and university regulations.

The IRB approval is attached to the appendices (see Appendix A). The IRB application contained an informed consent form with all the recruitment scripts. Before each interview that was held, the researcher reviewed the form with the potential participants. Potential participants were informed that the study was voluntary and that they should provide written consent if they approved of going forward with the interview.

Data Collection

This study followed Pepperdine's Internal Review Board (IRB), which mandates that consent is obtained when conducting research with human subjects. Before beginning the interview process, the researcher obtained IRB approval by applying to the review board (see Appendix A). A recruitment script was attached (see Appendix B) to explain what was stated in the e-mails or phone calls to the potential participants should participants meet the criteria for inclusion and exclusion and agree to participate in the study. The recruitment script outlined the method of holding the interviews and the purpose of the discussion for the potential participant to understand the intent of the interview. In that case, a consent form (see Appendix C) was sent to the participant, and an interview date and time was scheduled.

Contact between each participant and the researcher occurred via e-mail correspondence. Before the interviews, the researcher checked if the participants signed the informed consent. If the consent forms were not obtained, the researcher had a digital copy of the form prepared so

the participants could sign them before the beginning of the interview. Before the interview, participants were assigned a pseudonym (P1 through P15) to help protect their identities. Interviews took place on Zoom (http://www.zoom.us) using the researcher's personal account. The interviews were recorded on a separate device using Otter.AI. Data collected from the interviews was only stored on a password-protected computer by the researcher. Once the recordings had been transcribed, the researcher destroyed the recordings along with any other identifying information. The data that were not destroyed, including transcripts and non-identifiable, will be destroyed after one year.

Interview Techniques

There are various interview techniques used in qualitative research, which include informal or unstructured, semi-structured, and structured interviews. Informal or unstructured interviews do not contain a list of predetermined questions that the researcher will ask the participants. Instead, "The interviewer asks a few broad questions to engage the respondent in an open, informal, and spontaneous discussion" (Easwaramoorthy & Zarinpoush, 2006, p. 1). In semi-structured interviews, the interviewer uses a set of predetermined questions and allows the participants to answer in their own words. Although there are predetermined questions, the interviewer can ask follow-up questions or probe further into the participant's responses if necessary. Lastly, structured interviews are formatted like surveys, as the interviewer has predetermined questions, and the participants can answer based on a list of options. Within structured interviews, the researcher is allowed to provide clarification on some questions (Easwaramoorthy & Zarinpoush, 2006).

For this study, the researcher used a semi-structured interview format to probe further into participants' responses if necessary. Interviews were conducted face-to-face or via Zoom,

depending on the participant's location. Before the interview, the researcher familiarized herself with the interview questions so that the questioning felt natural for both the interviewer and the participant. Creswell (2013) suggests that the interviewer is well-prepared and relaxed for the interview to create a comfortable environment for the participant. The interviewer had a double-spaced interview script to assist with readability and a list of potential responses so that she is not repeating responses such as "I see" multiple times after the participants answer a question.

Interview Protocol

The following interview questions (IQ) corresponded to the research questions (RQ):

- RQ1: What strategies and best practices are employed by K-5 teachers to teach students virtually?
- IQ 1: How do you structure synchronous instruction to maximize student learning?
- IQ 2: How do you structure asynchronous instruction to maximize student learning?
- IQ3: What teaching strategies are most helpful in capturing student engagement during synchronous instruction?
- IQ4: How do you support students' social development in a virtual setting?
- IQ5: What tools, techniques, or strategies do you use to engage your learners in synchronous instruction?
- RQ2: What challenges are faced by K-5 teachers when teaching students virtually?
- IQ 6: Describe your largest challenges in maintaining student engagement in a virtual setting. How do you overcome them?

- IQ 7: How does your school administration support you with the challenges associated with virtual teaching?
- IQ 8: What challenges does parent involvement present in your lesson planning?
- RQ3: How do teachers define, measure, and track the success of students that are learning virtually?
- IQ 9: What does academic success look like in a virtual setting?
- IQ 10: In what ways are students' academic progress tracked and monitored differently than in a traditional school setting?
- RQ4: What recommendations do teachers have for pre-service teachers in advanced technological environments?
- IQ 11: If you could design a pre-service course that aims to prepare students for virtual teaching, what would the most important topic of the course be and why?

Relationship Between Research and Interview Questions

For the researcher to gain valuable data from the interviews, the researcher needs to create strong interview questions that relate to the research questions (Roberts, 2020). The interview questions allow the researcher to gain further insight into the phenomenon being studied and adequately answer the research questions (Roberts, 2020). The interview questions asked of each participant relate to the four research questions. Table 1 shows the relationship between the research and interview questions.

Table 1

Research Questions and Corresponding Interview Questions

Research Questions	Corresponding Interview Questions
RQ1: What strategies and best practices are employed by K-5 teachers to teach students virtually?	IQ 1: How do you structure synchronous instruction to maximize student learning? IQ 2: How do you structure asynchronous instruction to maximize student learning? IQ3: What teaching strategies are most helpful in capturing student engagement during synchronous instruction? IQ4: How do you support students' social development in a virtual setting?
RQ2: What challenges are faced by K-5 teachers when teaching students virtually?	IQ 5: Describe your largest challenges in maintaining student engagement in a virtual setting. How do you overcome them? IQ 6: How does your school administration support you with the challenges associated with virtual teaching? IQ 7: How does parent involvement play a role in your teaching practices?
RQ3: How do teachers define, measure, and track the success of students that are learning virtually?	IQ 8: What does academic success look like in a virtual setting? IQ 9: In what ways are students' academic progress tracked and monitored differently than in a traditional school setting?
RQ4: What recommendations do teachers have for pre-service teachers in advanced technological environments?	IQ 10: If you could design a pre-service course that aims to prepare students for virtual teaching, what would the most important topic of the course be and why?

Note. The table identifies four research questions and corresponding interview questions as developed by the researcher.

Validity of the Study

When conducting a research study, it is imperative for the researcher to ensure its validity. In qualitative research, validity is checking the accuracy of the findings by using various techniques and strategies (Creswell & Creswell, 2018). The interview protocol was checked for

validity along with the research questions to ensure that the questions asked would allow the participants to answer the questions with detail. This was completed in three steps:

1. Prima-facie and content validity
2. Peer review validity
3. Expert review validity

Prima-Facie and Content Validity

The researcher began by developing ten questions that she will ask the participants. Prima-facie or face validity "judges whether a measure appears valid on the face of it" (Patten & Newhart, 2018, p. 127). While content validity refers to whether or not the responses would address the construct in question (Patten & Newhart, 2018). To develop accurate questions that align with the research questions, the researcher used Chapter 2 to help inform what needed to be addressed in the interview questions, which can be seen in Table 1.

Peer-Review Validity

Creswell and Creswell (2018) suggest that the researcher seeks an external source to check the study's validity. After the interview questions were initially created, the researcher sent the questions in a Google Document to two Pepperdine doctoral cohort members. The cohort members were asked if (a) keep the questions the same, (b) delete questions, or (c) revise questions as suggested (see Appendix D). Based on the recommendations of cohort members, the following changes were made, as shown in Table 2.

Table 2

Research Questions and Corresponding Interview Questions (Revised)

Research Questions	Corresponding Interview Questions	Revised Questions
RQ1: What strategies and best practices are employed by K-5 teachers to teach students virtually?	IQ 1: How do you structure synchronous instruction to maximize student learning? IQ 2: How do you structure asynchronous instruction to maximize student learning? IQ3: What teaching strategies are most helpful in capturing student engagement during synchronous instruction? IQ4: How do you support students' social development in a virtual setting?	IQ 1: How do you structure synchronous instruction to maximize student learning? IQ 2: How do you structure asynchronous instruction to maximize student learning? IQ3: What teaching strategies are most helpful in capturing student engagement during synchronous instruction? IQ4: How do you support students' social development in a virtual setting? IQ5: What tools, techniques, or strategies do you use to engage your learners in synchronous instruction?
RQ2: What challenges are faced by K-5 teachers when teaching students virtually?	IQ 5: Describe your largest challenges in maintaining student engagement in a virtual setting. How do you overcome them? IQ 6: How does your school administration support you with the challenges associated with virtual teaching? IQ 7: How does parent involvement play a role in your teaching practices?	IQ 6: Describe your largest challenges in maintaining student engagement in a virtual setting. How do you overcome them? IQ 7: How does your school administration support you with the challenges associated with virtual teaching? IQ 8: What challenges does parent involvement present in your lesson planning?
RQ3: How do teachers define, measure, and track the success of students that are learning virtually?	IQ 8: What does academic success look like in a virtual setting? IQ 9: In what ways are students' academic progress tracked and monitored differently than in a traditional school setting?	IQ 9: What does academic success look like in a virtual setting? IQ 10: In what ways are students' academic progress tracked and monitored differently than in a traditional school setting?
RQ4: What recommendations do teachers have for pre-service	IQ 10: If you could design a pre-service course that aims to	IQ 11: If you could design a pre-service course that aims to

Research Questions	Corresponding Interview Questions	Revised Questions
teachers in advanced technological environments?	prepare students for virtual teaching, what would the most important topic of the course be and why?	prepare students for virtual teaching, what would the most important topic of the course be and why?

Note. The table identifies four research questions and corresponding interview questions with revisions based on feedback from peer reviewers. Subsequent changes were made to the order and phrasing of questions within the interview protocol.

Expert Review Validity

The last step in the validity review process is expert review. This refers to having outside authority increase the credibility of the study. This process was completed as part of the preliminary defense presentation with the researcher's dissertation committee. Changes are reflected in Table 3. The committee made changes to both the interview questions (IQ) and follow up (FU) questions.

Table 3

Research Questions and Corresponding Interview Questions (Expert Review)

Research Questions	Revised Questions
RQ1: What strategies and best practices are employed by K-5 teachers to teach students virtually?	IQ 1: How do you structure synchronous instruction to maximize student learning? FU 1: How do you structure synchronous instruction to maximize student learning? FU 2: How do you structure asynchronous instruction to maximize student learning? FU 3: What other teaching strategies are most helpful in capturing student engagement during synchronous instruction? FU 4: How did you support students' social development in a virtual setting? FU 5: What tools, techniques, or strategies do you use to engage your learners in synchronous instruction? FU 6: What strategies for grading and feedback did you use?

Research Questions	Revised Questions
	IQ 2: How do you structure asynchronous instruction to maximize student learning?
RQ2: What challenges are faced by K-5 teachers when teaching students virtually?	IQ 3: When teaching that course and using the strategies and best practices you shared with me, what challenges did you face, and how did you overcome them (FUs as needed)? FU 1:Did you face any challenges in maintaining student engagement in a virtual setting? How do you overcome them? FU 2: Did you have any challenges with your school administration support associated with virtual teaching? How did you overcome them? FU 3: Did you have any challenges with parent involvement? How did you overcome them? IQ 4: Are there any other challenges you have faced in this or other situations we have not covered so far? How did you overcome them?
RQ3: How do teachers define, measure, and track the success of students that are learning virtually?	IQ 5: What does academic success look like in a virtual setting? Can you define it for me? IQ 6: In what ways are students' academic success tracked and monitored? Are they different from those in a traditional school setting?
RQ4: What recommendations do teachers have for pre-service teachers in advanced technological environments?	IQ 7: If you could design a pre-service course that aims to prepare students for virtual teaching, what would the most important topic of the course be and why? IQ 8: What is the biggest lesson you have learned in teaching virtually?

Note. The table identifies four research questions and corresponding interview questions with revisions based on feedback from the expert reviewers (committee). Subsequent changes were made to the order and phrasing of questions within the interview protocol.

Reliability of the Study

Tests are proven reliable if they yield consistent results (Patten & Newhart, 2018). Creswell (2013) finds that the reliability of the study can be enhanced in various ways in qualitative research, such as by obtaining "detailed field notes by employing a good-quality tape for recording and by transcribing the tape" (Creswell, 2013, p. 253). To ensure the reliability of

the study, interview questions will be provided to two test experts who agree to be a part of the study who meet the criteria for inclusion. Adjustments were made based on the feedback regarding how well the interview questions corresponded to the research questions.

Statement of Personal Bias

The goal of qualitative research is to minimize personal biases and present findings that accurately represent the phenomenon being investigated (Patten & Newhart, 2018). This study will examine what works well with teaching virtually and how we can prepare teachers for potential experiences they may encounter while teaching virtually. This study's personal biases are as follows:

1. The researcher is a K-5 teacher with six years of teaching experience and one year of experience teaching virtually.
2. The researcher has examined the inequities within virtual classrooms.
3. The researcher has an undergraduate degree in Liberal Studies with an emphasis in Elementary Education and a multiple-subject teaching credential.
4. The researcher has her master's degree in Educational Technology and understands the affordances that technology provides elementary teachers.

Bracketing and Epoche

Within qualitative research, the researcher must suspend any preconceived judgments until they are based on the study's findings in a practice known as epoche (Creswell, 2013; Moustakas, 1994). Data from the study's interviews must be collected and observed from an unbiased viewpoint (Moustakas, 1994). Bracketing is the ability to hold one's biases throughout the research process (Moustakas, 1994). During the study, the researcher will refrain from allowing her biases to guide the study. For example, during the interview process, the researcher

will refrain from using her own knowledge of virtual learning to support or guide the interviews. The researcher will also synthesize the data without judgement of what they felt were some of the best practices she found while teaching students virtually.

Data Analysis

Once the data were collected from the participants, the researcher worked toward transcribing, coding the data, and analyzing the data. The coding process is used to identify the themes from the interviews, which will then be analyzed and used in the data analysis portion of the study. Data analysis consists of organizing the data, reading and memoing the database, coding the data, and interpreting the data based on what was found in the database and through the data collected in the interview process (Creswell, 2013).

Coding

Organizing the data into chunks and assigning a name to represent the category it belongs to is a process known as coding (Creswell & Creswell, 2018). The purpose of coding is to make sense of the data collected in the interview process in relation to the research questions (Elliott, 2018). Each recording was uploaded to a password-protected computer using pseudonyms for the names of the participants so that their identities are protected. Interviews were then transcribed prior to the coding process. Then, the researcher hand coded the data of each interview using an Excel spreadsheet. Once this process was completed, the researcher found common themes among the participants' responses.

The researcher used Creswell's (2013) data analysis and representation method when analyzing the data. The researcher organized the data, read through and took notes on each interview, and began forming initial codes. Then, the researcher described personal experiences

through epoche and the phenomenon's essence. Lastly, the researcher grouped statements into meaningful statements after developing significant statements.

Interrater Reliability and Validity

Interrater reliability and validity is the process of having a peer who plays devil's advocate and "keeps the researcher honest; asks hard questions about methods, meanings, and interpretations; and provides the researcher with the opportunity for catharsis by sympathetically listening to the researcher's feelings" (Creswell, 2013, p. 251). Once the interview and coding process was complete, the researcher proceeded with the interrater reliability and validity. To establish interrater reliability and validity, a four-step process was followed:

1. Baseline Themes: Interviews were conducted with the first three participants and data from the interviews were used to identify major themes amongst the participants' responses.
2. Interrater Review Consensus: Two peer review experts with experience in research and coding from Pepperdine University assisted with reviewing the transcripts and themes.
3. Baseline Themes for Remaining Interview: The remaining interviews were conducted and coded into major themes. This information was then sent to the peer reviews once again for review.
4. Interrater Review Consensus: If the peer reviewers and the researcher reach a consensus during the reflective process, then no expert review was necessary and the study continued. However, if not, then codes were sent to the expert review team for review.

5. No Consensus > Expert Review: If consensus was not met with the peer review team on 80% of the codes, then the expert review team was consulted for expert review validity. Once codes were finalized, they were explained in detail in Chapter 4.

Data Presentation

Creswell and Creswell (2018) state that reporting results from a qualitative study includes developing description and themes from the data collected in the interview process. Once this process is complete, the researcher is able to provide a rich description of the experiences of the participants within the study (Ningi, 2022). The data will be presented using charts, tables, narrative text, and participant quotes. The themes that emerged within each interview question will be visually represented using charts. Lastly, there will be an analysis of how the data corresponds with each research question in Chapter 4.

Chapter Summary

This chapter examined the research questions and interview questions that coincide further to understand what and why the participants will be asked those particular questions. Furthermore, the nature of the study, methodology, research design, interview protocol, personal biases, and data analysis procedures were all described in this chapter. Chapter 4 will present data collected from the interview and coding process.

Chapter 4: Data Analysis and Results

As K-5 virtual schools continue to grow in popularity, the research surrounding how virtual educators meet the needs of young students is still lacking (Korkmaz & Toraman, 2020; Moore et al., 2011). There was steady growth in virtual schools before the COVID-19 pandemic, and post-pandemic, there is an even larger growth period happening in virtual learning. Current research shows synchronous instruction can be just as effective as traditional classroom instruction for some learners (Pozos et al., 2021; Rehn et al., 2018). Virtual instruction does not fit the needs of all students, but there is a niche of students that work best in a virtual environment. Whether students need flexibility, individualized instruction, or better school choice option, then virtual instruction can address these students' needs in a myriad of ways (Pozos et al., 2021; Tate & Warschauer, 2022).

This qualitative phenomenological study aimed to identify the best practices of K-5 virtual learning. The researcher aimed to identify the following objectives: (a) the strategies or practices that K-5 educators use to teach students virtually, (b) challenges that K-5 educators face teaching K-5 students virtually, (c) how teachers can define, track, and measure the success of students that are learning virtually, and (d) recommendations that teachers have for pre-service teachers in advanced technological environments. The following research questions (RQ) were used to develop the interview questions that were used to identify and establish best practices when teaching K-5 students virtually:

- RQ1: What strategies and best practices are employed by K-5 teachers to teach students virtually?
- RQ2: What challenges are faced by K-5 teachers when teaching students virtually?
- RQ3: How do teachers define, measure, and track the success of students that are learning

virtually?

- RQ4: What recommendations do teachers have for pre-service teachers in advanced technological environments?

The interview questions (IQ) below were designed based on the research questions. There was a total of eight interview questions that allowed the researcher to understand the specific practices used by K-5 virtual educators to support their students. Some interview questions also had follow-up (FU) questions to gain more insight into the specific practices used as they pertained to various areas relevant to K-5 education. The following interview questions were asked to the participants who met the eligibility criteria outlined in Chapter 3:

- Think of a course that stands out as the best virtual course you have ever taught virtually. Tell me about that course:
- IQ1: What were the strategies and best practices you used that made the course so successful? (Follow Ups as needed)
- FU1: How do you structure synchronous instruction to maximize student learning?
- FU2: How do you structure asynchronous instruction to maximize student learning?
- FU3: What other teaching strategies are most helpful in capturing student engagement during synchronous instruction?
- FU4: How did you support students' social development in a virtual setting?
- FU5: What tools, techniques, or strategies do you use to engage your learners in synchronous instruction?
- FU6: What strategies for grading and feedback did you use?
- IQ2: Are there other best practices you can think of that you have not shared with me so far?

- IQ 3: When teaching that course and using the strategies and best practices you shared with me, what challenges did you face, and how did you overcome them (FUs as needed)?
- FU1: Did you face any challenges in maintaining student engagement in a virtual setting? How do you overcome them?
- FU 2: Did you have any challenges with your school administration support associated with virtual teaching? How did you overcome them?
- FU3: Did you have any challenges with parent involvement? How did you overcome them?
- IQ4: Are there any other challenges you have faced in this or other situations we have not covered so far? How did you overcome them?
- IQ 5: What does academic success look like in a virtual setting? Can you define it for me?
- IQ 6: In what ways are students' academic success tracked and monitored? Are they different from those in a traditional school setting?
- IQ 7: If you could design a pre-service course that aims to prepare students for virtual teaching, what would the most important topic of the course be and why?
- IQ 8: What is the biggest lesson you have learned in teaching virtually?

The participants shared their responses to the interview questions, which led the researcher to better understand the specific practices K-5 virtual teachers employ to support their students in a virtual classroom. The interviews were conversational in nature, and the interviews were recorded and transcribed using Otter.AI. Participant responses were the primary source of data coded for the study. This chapter will further explore background information about each

participant and the data collection and analysis process. Graphs were created to demonstrate the emerging themes of each interview question, and each theme will be summarized.

Participants

The participants were chosen using a purposeful sampling approach based on the criteria of inclusion and exclusion. The researcher initially identified 87 potential participants from members of USDLA and Linkedin with the intent to interview 15 participants or until saturation was reached. The researcher had reached saturation with seven participants; however, the researcher wanted to ensure complete saturation and continued to interview five more participants for a total of 12 participants. Almost all participants met the inclusion criteria of (a) the teacher has a minimum of five years of teaching experience in a K-5 setting, (b) the teacher has experience teaching virtually in a classroom setting, and (c) the teacher works at a public, charter, or private school within the United States. Two participants recently left the classroom within the past two years for administrative roles working with virtual educators. Due to their expertise in the field, they were still included in the study. The rationale for including these participants was that they had demonstrated five years or over of working with K-5 students and assisting them virtually, so given that they are trusted to support and train K-5 virtual educators proves that they were exceptional virtual educators in the classroom.

The researcher had experienced difficulty interviewing K-5 virtual educators as many potential participants from the master list were unwilling to meet or failed to report to the scheduled interview date. This could have been due to various reasons that were personal to each participant, including the burnout that educators often face toward the end of the school year. However, with the participants that the researcher could interview, the data was recorded and

transcribed through Otter.AI. The researcher then found common words and phrases to create themes coded as part of the data analysis process.

Data Collection

After the researcher obtained IRB approval on March 1, 2023, participants were recruited beginning on March 5, 2023, through Linkedin (http://linkedin.com) and the USDLA messaging system used by association members. One USDLA member responded to the recruitment script; however, they were not willing to participate in the interview. To gain the ability to message the potential participants on Linkedin, the researcher connected with the 87 members on the master list. On March 7, 2023, the researcher initially sent out the recruitment script to the 10 USDLA members on the master list and 12 potential participants on Linkedin as the researcher awaited more individuals to accept the connection request due to the limited InMail messages the researcher was able to send. One potential participant responded within the same day, and the informed consent was e-mailed to the potential participant. After a few days of not hearing back from the participant once the informed consent was sent, the participant informed the researcher they could no longer participate due to their demanding work schedule. The researcher then proceeded to send follow-up messages to all previous potential participants and new connections. The following week, the researcher received two more potential participants who agreed to participate in the study, and the informed consent was sent via e-mail. The participants scheduled a time to meet with the researcher and returned the signed informed consent. After the two interviews, each participant offered to send their colleague(s) the researcher's contact information in order for the researcher to obtain more potential participants. Two potential participants e-mailed the researcher, and recruitment scripts were sent. However, only one of the potential participants qualified for the study based on the criteria for inclusion, and an interview

was scheduled. The potential participant who did not qualify was informed that they did not qualify, but the researcher would reach out, if necessary, towards the end of the recruitment process.

Once the researcher gained more connections by the second week of recruitment, the researcher sent 40 potential participants the recruitment script via messages on Linkedin. Based on those 40 messages, the researcher gained three more potential participants. Informed consent forms were sent via e-mail, and interview dates and times were scheduled. Two interviews occurred without conflict, while one participant did not attend the meeting. The researcher attempted multiple times to reschedule, but the participant was not responsive. Follow-up e-mails were then sent to the other 37 participants to whom the researcher initially reached out. Two more potential participants agreed to participate, and the informed consent forms were e-mailed. Both potential participants became unresponsive once the researcher sent the informed consent form. Follow-up e-mails were sent after two days, and only one participant became responsive again but never scheduled an interview, nor did the participant return the informed consent. The researcher then made more connections on Linkedin, and 20 more messages were sent. Of those 20 messages, the researcher received two more potential participants who agreed to participate in the study, the informed consent form was sent via e-mail, and interviews were scheduled.

Towards the end of March, the researcher reached out to the committee for support with finding more participants. The committee allowed the researcher to adjust the amount of experience a teacher had to participate from five years to three years based on the initial criteria for inclusion. The potential participant whom the researcher was unable to interview initially was sent the recruitment script again with an explanation that the criteria changed due to finding a limited number of participants. The potential participant agreed, the informed consent was sent

via e-mail, and the interview was scheduled. The researcher proceeded to make a post with a flier attached asking for more participants on Linkedin, which allowed participants to enter their e-mail addresses if they met the criteria on the flier that was posted. The researcher received one participant who was interested in the study. The recruitment script was sent via e-mail and once the participant agreed to participate, the researcher sent the informed consent and scheduled an interview with the participant. The same flier that was posted on Linkedin was also sent out to the USDLA members that had not responded to the researcher. During this time period, two more potential participants responded to the initial message of the researcher on Linkedin and informed consent forms were sent, and interviews were scheduled. However, the researcher did not hear back from the members of USDLA.

After a week of following up with potential participants, the researcher decided to add more potential participants to the master list by connecting with more K-5 virtual educators on Linkedin. After reaching out to 20 more potential participants, one participant offered to participate, the informed consent form was sent via e-mail, and the interview was scheduled. By the end of the second week of April, the researcher obtained 12 participants to participate in the study. Table 4 specifies the dates of when each interview took place.

All interviews took place via Zoom, and the researcher did not begin the interview without ensuring that the informed consent form was obtained. Each participant was informed that Otter.AI would join the Zoom meeting to record and transcribe the interview. None of the participants had questions regarding the informed consent form, and each participant was well prepared for the interview as they had previewed the questions in advance. The researcher reassured each participant that no identifiable data would be listed in the study and that all interviews will be kept confidential, and that the recordings and transcriptions will be stored on

the researcher's password-protected laptop. Participants were also informed that all recordings and transcriptions would be deleted after the study was complete. Each interview lasted 30-50 minutes on average, with the shortest interview taking 27 minutes and the longest interview lasting 55 minutes. One participant needed to meet during their lunch break, so one interview only lasted 27 minutes. However, the other interviews were typically 44 minutes in length. The interviews were conversational in nature, and the researcher was able to ask clarifying questions as necessary.

Table 4 identifies each participant's current job title and interview date. Each participant was assigned a pseudonym to help protect their anonymity. Company names were purposely left out of the table to support the confidentiality of the study.

Table 4

Dates of the Participant Interviews

Participant	Title/Role	Interview Date
P1	K-5 Virtual Educator	March 16, 2023
P2	K-5 Virtual Educator	March 18, 2023
P3	K-5 Virtual Educator	March 25, 2023
P4	K-5 Virtual Educator	March 25, 2023
P5	Director of Student Engagement	March 26, 2023
P6	K-5 Virtual Educator	March 29, 2023
P7	K-5 Virtual Educator	March 31, 2023
P8	Professional Development Specialist	March 31, 2023
P9	K-5 Virtual Educator	April 2, 2023
P10	K-5 Virtual Educator	April 3, 2023
P11	Academic Support Teacher	April 5, 2023
P12	LAP Teacher	April 12, 2023

Data Analysis

The participant's responses to the interview questions was the primary source of data for the study. Each interview was analyzed and coded to identify common themes amongst each interview. When analyzing the data, the researcher refrained from including their own thoughts and feelings on the topic through a practice called bracketing. The researcher took notes of keywords and phrases during the interviews to assist with the analysis process. Each interview took place on the web-conferencing app, Zoom, and a separate web-based program known as Otter.AI joined each interview to record and transcribe the interviews. After each interview, the researcher reviewed each audio file and transcription to ensure the audio matched the transcriptions. Once the transcriptions were verified to match the audio, the researcher exported the transcriptions to create Word documents that the researcher could annotate and highlight the key phrases found within each interview. The documents were read over several times to ensure that the researcher did not miss any potential keywords or phrases that could support the findings. Once that process was completed with each interview, the researcher created an Excel sheet to list the codes and find common themes in each interview. The Excel sheet was split into eight pages to represent each interview question. The researcher could find common themes for each interview question by highlighting and grouping the codes.

Inter-Rater Review Process

The researcher coded and found common themes in the first three interviews. Once this process was complete, the researcher paused the data analysis portion and followed the inter-rater review process. This process consisted of two doctoral candidates at Pepperdine University who have experience with qualitative research and analysis.

The researcher and the two doctoral candidates began the process by sharing the Excel spreadsheet used to complete the coding process and the first three interview transcripts the researcher annotated. The group analyzed each code the researcher listed for each participant under the corresponding interview questions and then referred back to the annotated transcripts to ensure the validity of the codes. The doctoral candidates provided feedback and recommendations on the codes and theme names. The group agreed with the codes listed. However, they both suggested changing two themes for interview question one. The researcher initially listed "Creating a Sense of Community" and "Extra Support from Teacher." However, the committee recommended that they are shortened to "Community Building" and "Additional Support" for conciseness. The researcher agreed with the feedback and changed the themes on the Excel spreadsheet. After completing this process, the researcher created codes and themes for the remaining interviews. After the data analysis portion was completed for the remaining nine interviews by the researcher, the researcher and two doctoral candidates completed the inter-rater process again for the remaining codes and themes.

Data Display

The data displayed in this chapter are organized according to the research questions and subsequent interview questions. Data are displayed using a frequency chart according to the themes the researcher found for each interview question. Each chart is organized by the frequency of the answers provided by the participants according to each interview question. Below the frequency charts, the researcher included an explanation of the theme with participant quotes to support the themes. The researcher labeled each participant accordingly, as shown in Table 4 (P1 through P12). By labeling the participants this way, the researcher could ensure that

the themes are clearly identified with supporting quotes from the participants while maintaining the participant's anonymity.

Research Question 1

The first research question (RQ1) asked, "What strategies and best practices are employed by K-5 teachers to teach students virtually?" The researcher asked a total of two interview questions that related to this research question. The corresponding interview questions are as follows:

- Think of a course that stands out as the best virtual course you have ever taught virtually. Tell me about that course.
- What were the strategies and best practices you used that made the course so successful?
- Are there other best practices you can think of that you have not shared with me so far?

Interview Question 1 (IQ1) had follow-up questions to ask as necessary that pertained to how participants maximize synchronous and asynchronous instruction, capture student engagement, support social development, tools or techniques used during synchronous instruction, and strategies for feedback and grading. The last interview question allowed the researcher to gain more insight into what K-5 teachers do to support their students in various aspects that may not have been mentioned previously. The researcher analyzed each participant's responses and identified the recurring themes below.

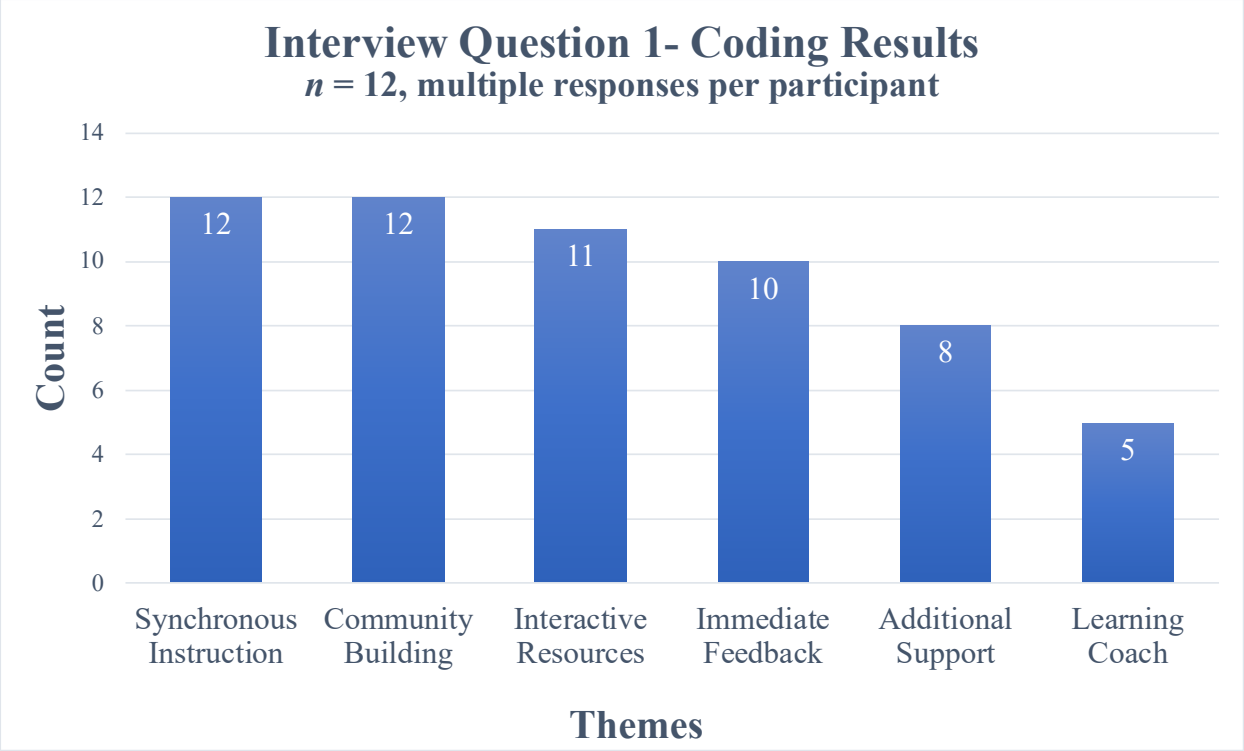
Interview Question 1

Interview Question 1 began with eliciting context from the participants by stating, "Think of a course that stands out as the best virtual course you have ever taught virtually. Tell me about that course." Then the researcher asked, "What were the strategies and best practices you used that made the course so successful?" After a total of 12 responses, the following themes

emerged: (a) synchronous instruction, (b) community building, (c) interactive resources, (d) immediate feedback, (e) additional support, (f) learning coach. Figure 1 shows a graph with the themes and the count.

Figure 1

The Most Commonly Used Strategies and Practices That Made the Virtual Course Successful



Note. This figure demonstrates the emerging themes from the participant's interviews for IQ1. The data are in descending order of frequency, and each number represents the number of times a participant made a statement that corresponded to the respective theme.

Synchronous Instruction. Synchronous instruction consists of the teacher teaching live instruction while the students are present (Rehn et al., 2018). Research has shown that synchronous instruction is the most effective form of virtual instruction (DiFrancesca & Spencer, 2022; Hasler-Waters et al., 2014; Moorhouse & Wong, 2022; Rehn et al., 2018). Of the 12 participants, 12 (100%) stated that synchronous instruction was one of their most effective practices when teaching K-5 learners. The responses that related to synchronous instruction

included: whole group instruction, similar to brick-and-mortar instruction, scaffolded support, modeling, and synchronous instruction for engagement. To illustrate further, Participant 2 stated:

> This is sort of an unpopular opinion. I think but again, this is like a what teachers should do thing. Teachers should put kids in breakout rooms so kids are working together and it's like is the work kids are doing high quality? Is it actually pointing towards the thing that I know that they should be working on? I'm actually the expert in math, which doesn't mean that I know everything but it means that like, I know all the errors because I've made them all multiple times, yesterday too. And it's like so I don't need them to go sit in a room together and talk about low level things so that I can click this box, so I do a lot of stuff in whole group or small group work.

To illustrate further, Participant 9 stated:

> To maximize the student, the student maximize the student learning it would be similar to a brick-and-mortar school as well. We begin the day at 8:10 in the morning in just like a brick-and-mortar school. We start by reviewing our schedule every morning, just like we're sitting down for circle time at a carpet.

Community Building. The theme of community building, appeared in 12 out of 12 participant responses (100%). Community building was often stated regarding how teachers support social development in the classroom. Common phrases included: classroom discussions, social time, check-ins with students, virtual clubs, in-person outings to local restaurants and parks for students living in specific regions, student connection, and strong relationships. For example, Participant 3 stated:

> But just if you can establish early on that students' sense of belonging that that's huge in creating a safe space for them to know that they're not going to be ridiculed that they're not going to be mocked that they're actually going to that their thoughts are going to be embraced and that they are appreciated and valued in that in this school, you know, so I don't know if that was too long winded but for me, that's what goes into much more so than academics.

Further, Participant 5 also stated:

> So again, you can do quite a bit of collaboration, where students are talking, they are working with Scooby Doo, Google Classrooms, a lot where they can collaborate on documents, ClassDojo, all kinds of Padlets all kinds of other programs where they can collaborate on documents, but they are also talking. We do have in our school, a lot of virtual clubs that they like they do cooking club, we do robotics, any Lego on and on and

> on. We have tons of clubs that they can get involved in. But we also actually do a lot of in person events just because if it's 100% virtual and they never get a chance to come together in person.

Interactive Resources. The third theme, interactive resources, appeared in 11 out of the 12 responses (91%). Common phrases included: Nearpod, digital resources, interactive resources, hands-on lessons, getting students involved in learning, game-based learning, and interactive lessons. For example, Participant 1 stated:

> So, what I try to do is some type of like, interactive resource at least once or twice throughout the lesson because what I find is, if I'm just presenting a PowerPoint up on the screen especially in like, first grade, then it is a challenge because their attention span is so short. So, I like to use resources like Nearpod because it allows kids to get directly into whatever I am going over in class.

Immediate Feedback. The fourth most common theme was immediate feedback. This theme appeared in 10 out of 12 (83%) of the participant's responses. This appeared in phrases such as immediate feedback, exit tickets, and polls. For example, Participant 3 stated, "The most important for me is doing it as quickly as I can, and getting it back to them so it's still fresh in their minds and you know that their work was okay." While Participant 8 stated, "Sorry, that's the last thing for asynchronous instruction is timely feedback because if they didn't think I was looking at, they weren't doing it."

Additional Support. The fifth most common theme that appeared was additional support. This theme appeared in 8 out of the 12 (66%) participant's responses. Common phrases included: small group work, breakout rooms, targeted sessions, office hours, and individualization. Participant 2 stated:

> You know, we do circle time. It's all it's all built into the day, as is like the push and pull for support services, special education, you know, any kind of intervention services, those are all built in. So, like a student who has who has reading intervention happening through an IEP, for example, might get pulled out for resource room instead of coming to see me for lab. So, they're not missing core content. They're not missing core instruction. They're still getting their grade level instruction they, but they're getting their specialized

practice when I might be doing specialized practice more on grade level or above grade level.

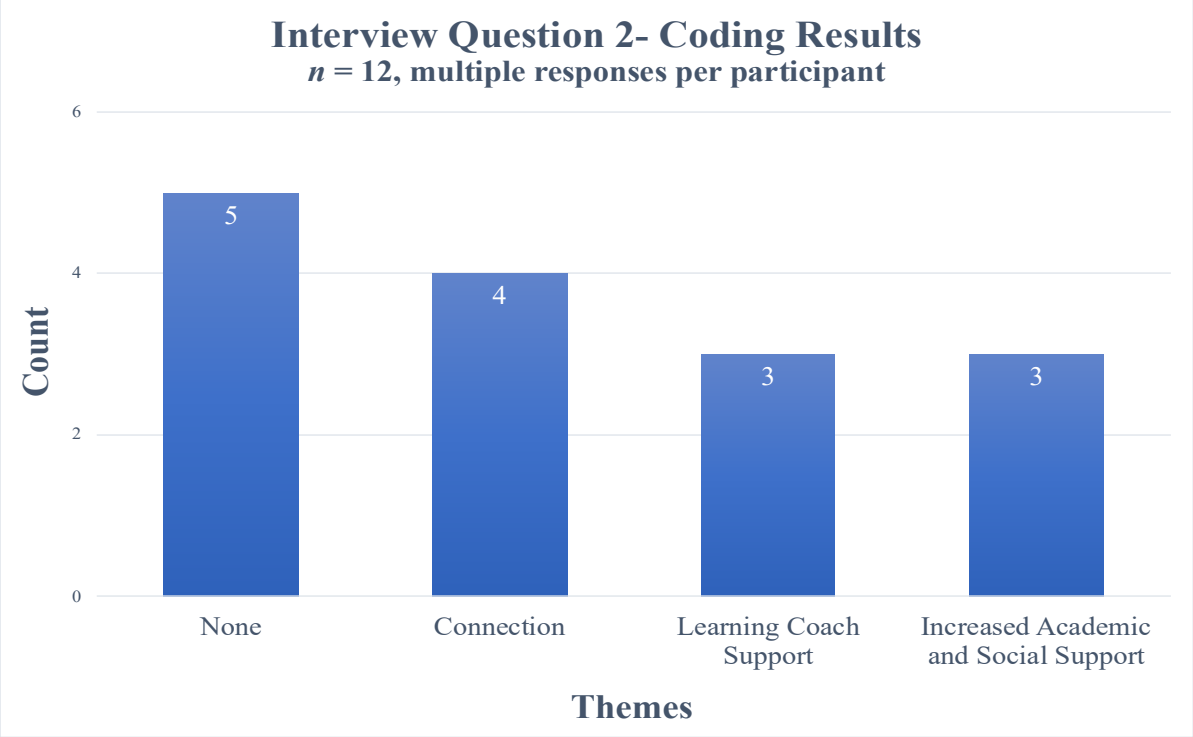
Learning Coach. The last theme that appeared in IQ1 was learning coach. There were five out of the 12 (41%) participants mentioned the use of a learning coach for additional student support. Learning coaches can be considered parents, guardians, or other adults who can support the student throughout the school day since the teacher is not physically present with the students (Ricker et al., 2021). Keywords that created this theme included learning coach, parent support, parent communication, and parent involvement. For example, Participant 7 stated, "A couple of them, I can't get on camera, so I end up calling or texting the learning coaches as students will walk away, be in their beds, or doing something else."

Interview Question 2

Interview Question 2 asked, "Are there other best practices you can think of that you have not shared with me so far?" The researcher found three common themes within this interview question: (a) connection, (b) learning coach support, and (c) increased academic and social support. Figure 2 shows the visual graph with the themes and count of each response.

Figure 2

Other Commonly Used Strategies and Practices That Made the Virtual Course Successful



Note. This figure demonstrates the emerging themes from the participant's interviews for IQ2. The data are in descending order of frequency, and each number represents the number of times a participant made a statement that corresponded to the respective theme.

None. None refers to the individuals who had nothing to add to their previous response. This theme emerged in five out of the 12 (41%) participants' responses. Keywords or phrases that participants stated were: no, nothing to add, and stated all practices in the first response.

Connection. Connection refers to student and teacher connections and student and student connections. This theme emerged in four out of the 12 (33%) participants' responses. Keywords or phrases that participants stated were: frequent check-ins, making connections, reducing transactional distance, and student buy-in. To illustrate this theme, Participant 3 stated:

> In the role is just a really truck the goal I should say the goal is to really tried to reduce that transactional distance. And I do that through just personal try to try to be human with I'm trying to be personal, you know, just say, hey, what interests you what if somebody said, Hey, I went to see this new movie, whatever. Okay, great, and it just comes back to

> that. And if you can make them feel safe, then they're more likely to participate academically.

Learning Coach Support. Another theme that emerged in IQ2 was learning coach support. This theme emerged in three out of 12 (25%) participant responses. Common words or phrases mentioned were: learning coach support, parent buy-in, and how-to videos for learning coaches. For example, Participant 2 stated:

> And a lot of times that means getting that parent buy in. So I spend a lot of time especially at the beginning of the year. Calling parents texting parents e-mailing parents. I'm making videos for parents like I have a library of how tos that the parents have access to like of how to videos so they can they are not sure how to do something or they themselves need to see it again. They can go to my bank and watch and those are more meant for just this is how we navigate this. This is where you find this if I say this, this is what I actually mean. What are your expectations? How am I grading your student like all of those things like that teachers normally go over on like a back to school night.

In addition, Participant 5 stated:

> So going back to communication with families at home. That's huge, huge. You have to have that constant kind of teamwork. It's a partnership really, in virtual education, where the credential teacher is really closely partnered with what we call the Learning Coach could be anybody. It could be the parent. It could be grandparent, it could be an older sibling, like an adult or sibling. Anybody who's assigned to work with the child at home that and keeping that relationship solid, keeping that communication open and productive is huge.

Increased Academic and Social Support. The last theme that emerged within IQ2 was increased academic and social support. This theme emerged from three out of 12 (25%) participant responses. Common words or phrases were: high support for struggling learners, manipulatives and puppets, and additional support in classrooms. For example, Participant 11 stated, “It is always you and another teacher, and you can take students into breakout rooms.”

Summary of RQ1

Research Question 1 sought to identify the best practices that K-5 virtual educators use within their classrooms. A total of nine themes emerged when analyzing participant responses to the first two interview questions. Responses to this research question illuminated the practices or

strategies that K-5 teachers use to engage or support their students in a virtual setting. The ten themes that emerged from the data were (a) synchronous instruction, (b) community building, (c) interactive resources, (d) immediate feedback, (e) additional support, (f) learning coach, (g) connection, (h) learning coach support, (i) increased academic and social support, and (j) none.

Research Question 2

The second research question (RQ2) asked, "What challenges are faced by K-5 teachers when teaching students virtually?" Participants were asked a total of two interview questions that correspond with RQ2, which are:

- When teaching that course and using the strategies and best practices you shared with me, what challenges did you face, and how did you overcome them?
- Are there any other challenges you have faced in this or other situations we have not covered so far? How did you overcome them?

Similar to IQ1, IQ3 had follow-up questions to ask as necessary that pertained to potential challenges and how they could overcome maintaining student engagement, administration challenges, and parent involvement. The last interview question allowed the researcher to gain more insight into other potential challenges K-5 virtual educators face and the ways they overcome those challenges. The researcher analyzed each participant's responses and identified the following recurring themes.

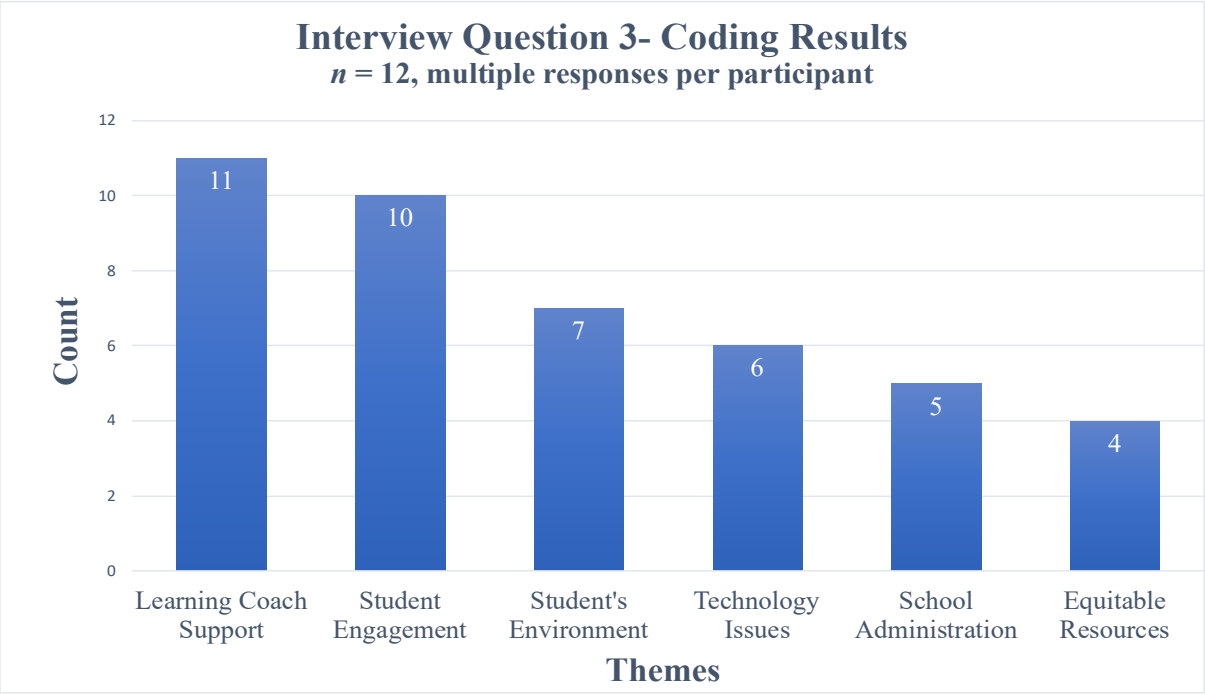
Interview Question 3

Interview Question 3 asked, "When teaching that course and using the strategies and best practices you shared with me, what challenges did you face, and how did you overcome them?" After a total of 12 responses, the following themes emerged: (a) learning coach support, (b) student engagement, (c) student environment, (d) technology issues, (e) school administration,

and (f) equitable resources (see Figure 3).

Figure 3

Common Challenges that K-5 Virtual Educators Face When Teaching Young Learners Virtually



Note. This figure demonstrates the emerging themes from the participant's interviews for IQ3. The data are in descending order of frequency, and each number represents the number of times a participant made a statement that corresponded to the respective theme.

Learning Coach Support. Learning coach support was one of the largest challenges K-5 virtual educators faced when teaching students virtually. This theme emerged from 11 out of 12 (93%) participants. Common phrases that led to these themes include lack of parent involvement, learning coaches, "over-involvement" from parents, many parent/guardian phone calls, parent orientation, parent-teacher conferences, office hours for parents, cultural differences, and parent ambassador support. To illustrate these struggles further, Participant 4 stated:

> Over involvement! Like if the kid is, like, at home and the mom is like right next to him. That's how I overcome it? You don't because they're not going anywhere. It depends. Again, it's like, you try to tell people, hey, we can't have you there all the time because XYZ, you know? You don't want your kid to be dependent on you. Hey, you know, if they want to listen, they will listen. If they don't want to listen, they won't listen. So you

sometimes just need to roll with it.

Participant 6 highlights other challenges when working with learning coaches by stating:

> So, the kids come to a general ed teacher like me, but they have a learning coach, which is typically their parent or whoever signs up to be their learning coach, and really, they're the primary teachers but a lot of parents didn't understand what the structure was. So I have a lot of learning coaches that don't help or are not around. I mean, obviously, like parents not helping, you know, I mean, I e-mailed them, I tried calling them and things like that, but obviously that doesn't always work. Yeah, so you just have to adapt, just like any classroom teacher.

Student Engagement. Student engagement was another common challenge faced by virtual educators. This theme emerged from 10 out of the 12 participant responses (83%). Keywords and phrases that led to this theme include student engagement, crash and burn, locked websites, incentives, breakout rooms, getting students on camera, and students checked out. Participant 3 shared their struggles with student engagement and explained how they are able to capture the student's attention again by stating:

> Really, all the students have to do is say my mic isn't working today. And then I'll give them the number for the tech department, and I'll say, "Hey, call this number and they will get you a new mic. And let's make sure we get that as soon as possible." But, you know, there are some students who come in and they never have the cameras on and they don't want to talk on the mic. So about three or four times during each class. We have different emojis and different things, and I'll just put up there's a smiley face kind of face and a sad face. And I'll just say, "Hey, give me a smiley face. If you're still with me, right? Give me a smiley face for paying attention. Give me a smiley face if you know whatever might you know just it can be something silly. Give me a smiley face if you like pie." You know, it can be something like that. And then if you do something like that, then it really engages with them personally. Further, Participant 1 mentioned student engagement struggles and shared how they are able to overcome them by stating, "So yeah, just having that interactive piece where they can all be interacting and engaging in the lesson at the same time is really helpful."

Student's Environment. The third major theme that appeared in IQ3 is the student's environment. Out of 12 participant responses, seven stated that this was a challenge for them (58%). Common words or phrases that created this theme were student environment, inability to check in with students, student support coordinator, Child Protective Services (CPS) phone calls,

and unable to physically see students. To illustrate this challenge, Participant 7 shared their challenges with the student's environment and the steps they have had to take to protect their students. However, one way they were able to overcome this challenge was, "But again, I think the biggest piece that has helped me over the years is getting that parent buy-in and walking them through what I'm doing." Further, Participant 9 shared, "It also comes with seeing what happens in houses sometimes you're not physically able to help them if there is a scary situation. So that is kind of one of the big challenges of us that we do face."

Technology Issues. Technology issues are the fourth theme that has emerged from the data, with six out of 12 (50%) participants sharing their experience with these specific challenges. When creating the theme, the phrases considered were technology issues, poor tech skills, technology, and lack of high-speed internet connection. Participant 11 shared, "...at the same time, it's just the biggest problem we face is high-speed internet in some rural areas that we serve." Further, Participant 10 shared, "Their [student's] area was a rural area, so their internet was very spotty." They then said, "But you know we did what we had to do. You know, when they didn't have internet, we rescheduled, or they used a cell phone."

School Administration. The next emerging theme was school administration, with five out of 12 (41%) participants sharing this as a challenge in virtual education. Common phrases include: school administration support, busy administrators, going around administration, limited access to administration, and administrators not understanding the mental stance of educators. Participant 12 shared, "But I think the administrators are not as aware of the emotional and psychological needs of their teachers as maybe they could be." While Participant 5 stated:

> Like a big challenge, I've had administrators that are just too busy and too overwhelmed to support you right? So, they're just M.I.A. And when I have students that really kind of fall off the rails with attendance or just not even doing any work, and they're just basically truant or I mean, I had students for two, three weeks, I couldn't reach anybody.

> Nobody's returning my phone call. They're not coming to school. And those are the times when a teacher needs an administrator to help right? Like, what do we do? And there have been times in my career with certain administrators that are just overworked where I couldn't even get a hold of an administrator for a week. So how did you overcome it? How did you get past it? The answer to that is not great, but I would go around them and find somebody who would help me. That's not a great answer, but that's the truth. You have to do it a lot.

Equitable Resources. The last theme that emerged from IQ3 is equitable supplies. Four out of the 12 participants shared their struggles with students having adequate resources (33%). Common phrases included lack of materials, equitable access to technology and WiFi, and equity of supplies. Participant 2 shared:

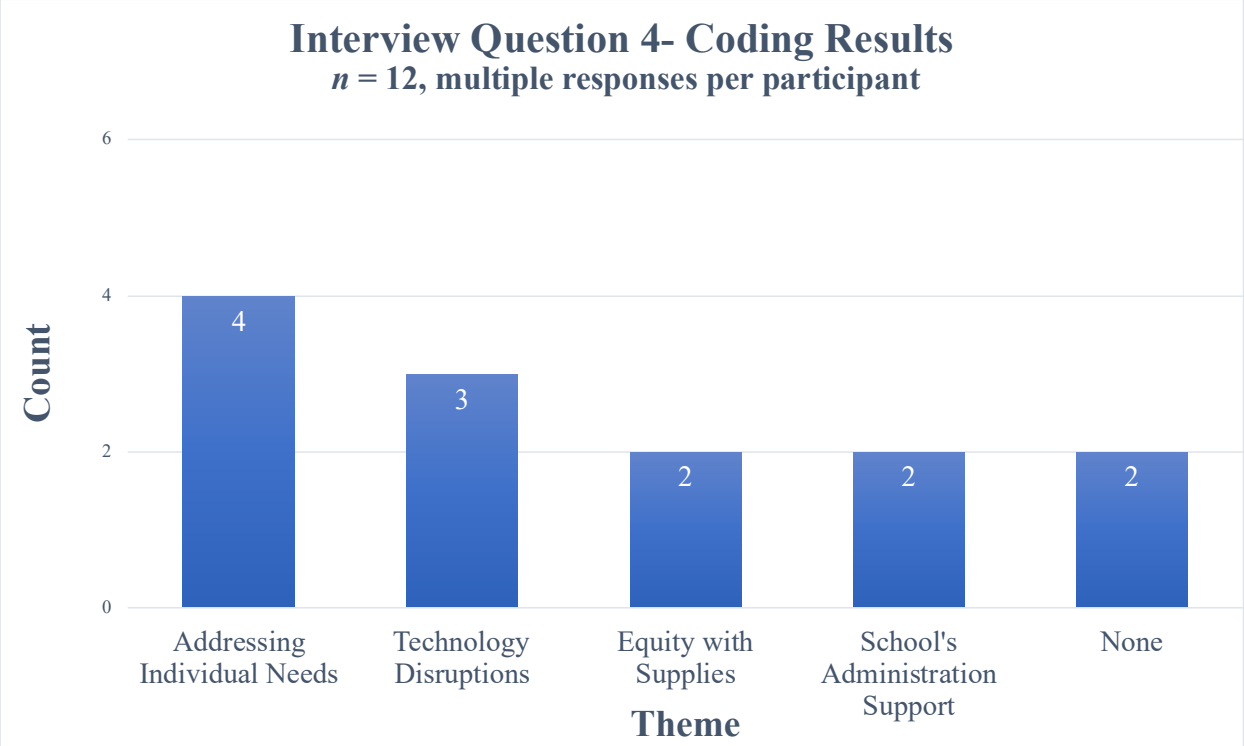
> Um, there's there's a lot of difficulty with equity and parity of supplies. So, we did send the students out like a canned curriculum and some basic materials. But the consumables are assumed that the parents are going to supply paper pencils, erasers, scissors, markers, like a markers or crayons. And that's not always available. Sometimes the family is making ends meet by having the parents stay home and the other ones working but so that means that sometimes those things aren't, aren't always there. So, there's definitely that.

Interview Question 4

Interview Question 4 asked, “Are there any other challenges you have faced in this or other situations we have not covered so far? How did you overcome them?” After 12 responses, the following themes emerged: (a) technology disruptions and (b) addressing individual needs. Not many participants could share additional challenges as they felt that their primary challenges were addressed in IQ3 (see Figure 4).

Figure 4

Additional Challenges or Situations That Were Not Covered in IQ3



Note. This figure demonstrates the emerging themes from the participant's interviews for IQ4. The data are in descending order of frequency, and each number represents the number of times a participant made a statement that corresponded to the respective theme.

Addressing Individual Needs. The last theme that emerged through the participant's responses was their ability to address individual needs. There were three out of 12 participants (25%) that viewed this as a challenge that was not addressed in IQ3. Common phrases included checking in on students to ensure they were okay, virtual accommodations for SPED students, and learning how to build relationships with each student. For example, Participant 5 stated:

> I would say too, though, that because when I think about our population, we get a lot of students with special needs and a lot of IEPs so knowing how to and being really good at applying accommodations in a virtual environment would be big, too. So, I have two answers to both of those. Sometimes. It's difficult to know how to apply accommodations in a virtual environment.

Further, Participant 7 stated:

> Um, I'm thinking of one [challenge] specifically that I faced this year and even a little bit when I first went virtual from a brick-and-mortar, is not knowing how the kids are actually doing.

They continued on to say:

> Um, we I currently have a student whose mother is in like a domestic violence situation. And he's missing a lot of school and it's like, is he okay, what's going on? Like, what, what can I do to protect the student. It's like that helpless feeling. With brick-and-mortar, I could be like, okay, I'm gonna drive by their house. You know, can you [school administration] come with me? But like, some of these kids are three or four hours away from me and I'm like, I can't do that. So with that specific student, I'm trying to work with administration and the family service coordinator. They've done a CYS report on him. They've sent certified letters. And they have even suggested if we haven't seen him for a couple of days, calling the local authorities to do like a wellness check on him.

Technology Disruptions. When asked about additional challenges educators face, technology disruptions appeared as a common theme. Of the 12 participants, three (25%) responded with technology disruptions and shared how they are able to overcome these challenges. Common phrases included technology issues, WiFi issues, and equipment issues. Participant 1 stated, "But I always just try to have some type of like backup plan like most of the time, the issue resolves within a few minutes, but there have been times where, like, I can't get back into the classroom, or students can't get back into the classroom. And with that, I just tried to have a backup plan." Similarly, Participant 4 stated, "Like we didn't talk about the obvious problems like WiFi issues for the students."

Equity. For two out of the 12 participants (16%) equity within virtual classrooms is deemed a challenge. Common phrases included, equity of supplies, lack of resources, and student access to materials. Participant 2 stated:

> Um, there's there's a lot of difficulty with with equity and parity of of supplies. So we did send the students out like a canned curriculum and some basic materials. But the consumables are assumed that the parents are going to supply paper pencils, erasers, scissors, markers, like a markers or crayons. And that's not always available. Sometimes the family is making ends meet by having the parents stay home and the other ones working but so that means that sometimes those things aren't, aren't always there.

School's Administration Support. Challenges revolving around school administration support also emerged from the data. Two out of the 12 participants (16%) expressed some form of challenges with their school administration. Common phrases included, lack of communication with administration, lack of access to administration, emotionally responsive administration. Participant 12 stated, "But I think the administrators are not as aware of the emotional and psychological needs of their teachers as maybe they could be." They then continued to say, "So, I think that communication and clarity is crazy important, and maintaining consistency."

None. None refers to the individuals who had nothing to add to their previous response. This theme emerged in two out of the 12 (16%) participants' responses. Keywords or phrases that participants stated were, I stated the ones I can think of, and nothing else.

Summary of RQ2

Research Question 2 aimed to identify the primary challenges that virtual educators face when teaching K-5 students virtually. A total of eleven themes emerged when analyzing participant responses to interview questions 3 and 4. The eleven themes that emerged from the data were (a) learning coach support, (b) student engagement, (c) student's environment, (d) technology issues, (e) school administration, (f) equitable resources, (g) technology disruptions, (h) addressing individual needs, (i) school's administration support, (j) equity with supplies, and (k) none.

Research Question 3

Research Question 3 (RQ3) was designed to understand the student success expectations of students enrolled in virtual schools. The research question asked, "How do teachers define, measure, and track the success of students that are learning virtually?" Participants were asked

two interview questions in relation to the research question, which was:

- What does academic success look like in a virtual setting? Can you define it for me?
- In what ways are students' academic success tracked and monitored? Are they different from those in a traditional school setting?

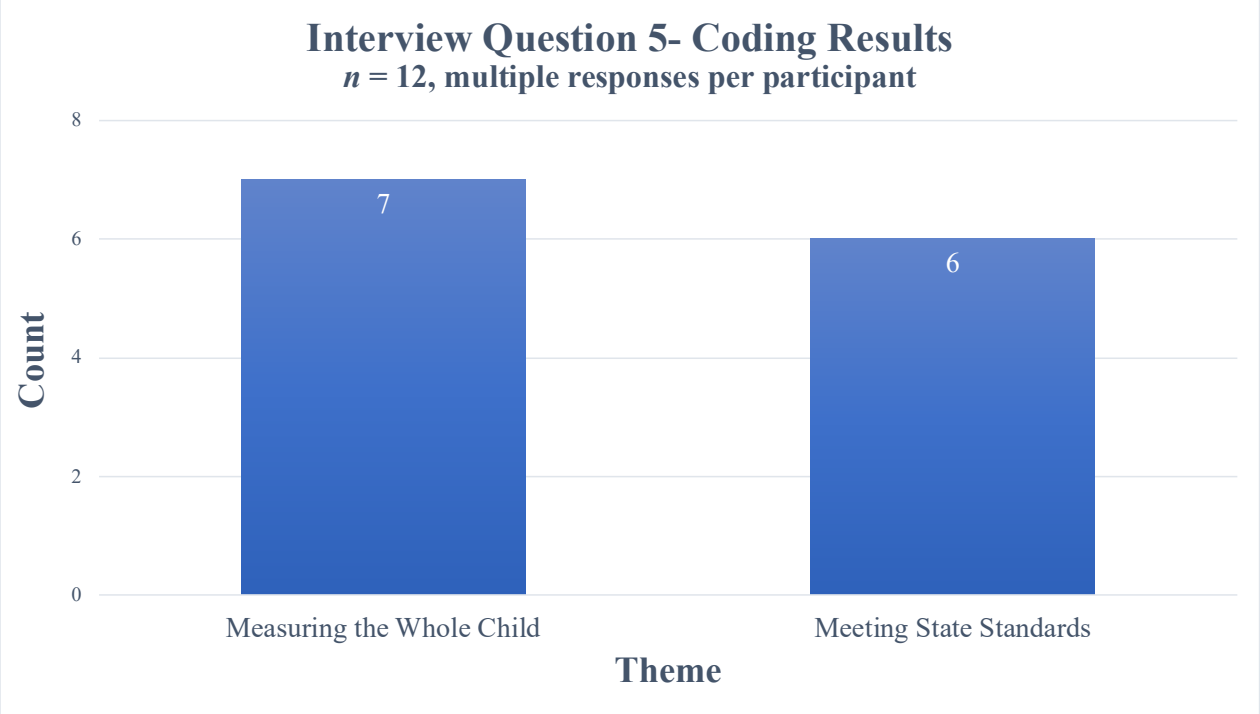
The responses from the participants were analyzed to understand the commonalities of the responses as they pertained to academic success, defining success, tracking and monitoring success, and whether or not these practices appear differently in a virtual setting.

Interview Question 5

Interview Question 5 asked, "What does academic success look like in a virtual setting? Can you define it for me?" Based on the data collected, two themes emerged from the participant's responses. The two themes that emerged are (a) measuring the whole child and (b) meeting state standards (see Figure 5).

Figure 5

The Ways Virtual Teachers View and Define Academic Success



Note. This figure demonstrates the emerging themes from the participant's interviews for IQ5. The data are in descending order of frequency, and each number represents the number of times a participant made a statement that corresponded to the respective theme.

Measuring the Whole Child. Measuring the whole child refers to not just measuring the student's academic success but their personal development as well (Noddings, 2005). In a traditional classroom, teachers measure the whole child as they can view not only their academic success but success in peer relations, life skills, etc. The whole child was the predominant theme that emerged during the interviews, with seven out of 12 (58%) participants mentioning this theme in their responses. Common phrases included developing as a human, skills that will translate in life, learning how to deal with their mistakes, and the same as brick-and-mortar. Participant 11 stated, "So success to me is giving them a skill and having them master the skill. So even in a virtual school, they have those skills that will be sufficient in the real world." While

this quote addresses the student's life skills, Participant 4 explained student success in a way that allows assessment to meet students where they are at and measure them accordingly by stating:

> I mean, it's, it's sort of the same as in in person, you know, you know, you're delivering material, then you're assessing. I don't really see any difference. Between that being in a virtual setting. And then in person setting, that you provide the material you use, the only differences maybe the way you assess because now you know, maybe instead of handing them out pencil and paper, they're typing on a keyboard, or, you know, they're selecting multiple choice using the buttons on a computer. Or maybe they're given a Flipgrid. And that's their presentation instead of standing up in front of the class and presenting but it really that doesn't seem that assessment portion doesn't seem to be that much different.

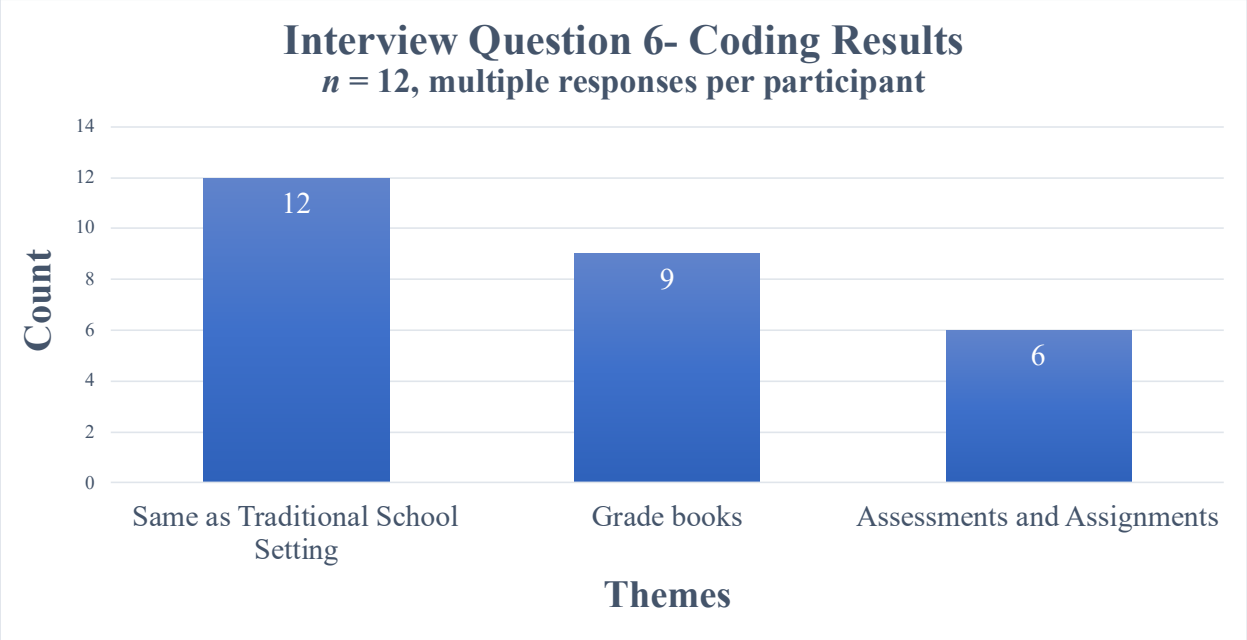
Meeting State Standards. The second theme that emerged is meeting state standards. Six out of the 12 (50%) participants stated something in relation to student success as meeting state standards. Common phrases included: standards drive instruction, meeting academic goals, meeting state standards, assessments, showcasing their work in more than one way, and mastery of standards. To explain this theme further, Participant 2 stated, "The same as at a brick and mortar. Like for me, it's minimally meeting the state standards in more than like they're showcasing each standard in more than one way with independence. So, with minimal or without any adult support at all." Further, Participant 9 explained, "So, I think academics, success looks different for all students, but to define it in a virtual setting. I would say it's when students are achieving their personal and academic goals, as well as working toward their first grade or their standard grade level goals."

Interview Question 6

Interview Question 6 asked, "In what ways are student's academic success tracked and monitored? Are they different from those in a traditional school setting?" After the participant's responses were coded and analyzed, the researcher found three common themes. These themes included: (a) the same as a traditional school setting, (b) grade books, and (c) assessments and assignments (see Figure 6).

Figure 6

The Ways Students' Academic Success is Tracked and Monitored



Note. This figure demonstrates the emerging themes from the participant's interviews for IQ6. The data are in descending order of frequency, and each number represents the number of times a participant made a statement that corresponded to the respective theme.

Same as Traditional School Setting. The most common theme was that academic success is not tracked differently than in a traditional school setting. All participants (100%) were able to agree with this theme. Common phrases were not much different, similar to brick-and-mortar, numerical grades, and state testing. Participant 7 stated, "They are very similar." Participant 2 mentioned, "They have to abide by all the state rules no different than any public school does. So yes, our students third through eighth and have to take the state standardized." While Participant 1 explained what they found that was similar to a traditional setting and what was different by stating:

> But I also think there's another piece of like success in the sense of like, seeing how students interact and, like behave. And engage with other classmates in a physical setting. And that's not something that I feel like I can measure as well in a virtual setting. You know, we have the microphone and webcam tools. If a kid is coming on microphone and

> not listening, we can just like mute their microphones but in a brick and mortar setting. If you have a student who is continuously being disruptive and they're not stopping, you can just mute them like so. I think that piece is a little hard like to measure success and like achievement, because I'm not like in a physical classroom with them as I would be in a brick and mortar setting. So, but I think when I'm thinking about like, like just you know, first grade standards and academic aspects, I think we measure it the same way in a virtual setting.

GradeBooks. GradeBooks refer to the ways in which students' academic success is tracked in a virtual classroom. GradeBooks allow teachers to grade student work and keep track of current grades. There were nine out of 12 (75%) participants who highlighted this common practice in their responses. Participant 3 explained their grade book as:

> We do have a weighted grade book that puts a lot of weight on daily work and not as much on the big end of unit assessments, which I think is nice because it's not putting, you know, so much weight into one assessment. It's all it's like, well, how did you understand this whole unit? Okay, great. Well, here's the assessment at the end.

While Participant 6 stated, “We have a grade book that we can track grades with.”

Assessments and Assignments. The last theme that emerged from IQ6 was assessments and assignments. Teachers described this as a method to track the student's academic success. Six out of 12 (50%) mentioned this theme in their response. Common phrases included quizzes, exit tickets, benchmarks, and digital assignments. Participant 2 illustrates the assessments used with their students:

> So, for us, we do numerical grades. But we also do scale screenings through some standardized benchmark. We use Fast Bridge which is similar to Dibbles or Acadiens, depending on which version you know, um, but there are basic early literacy and early math screenings that just kind of show where how the students are progressing. And by using the same diagnostic of the same benchmark, you're able to compare apples to apples to apples as they go throughout the year. So you're able to kind of look at hard data that is consistent with what other first graders would be doing in a boat or, you know, just other first graders, whether in your school or not, you can compare.

While Participant 4 explained:

> Yeah, no, I mean, one thing that could be different is maybe that you're delivering it through Zoom. So those sessions are recorded. So if you want to go back and look at that

> as an assessment, you can measure the student's understanding of something, you know, you can look back at your recording, and that could be like an informal assessment.

Summary of RQ3

Research Question 3 (RQ3) attempts to explain what academic success looks like in a virtual setting and how virtual educators define, measure, and track the academic success of their students in comparison to a traditional classroom. A total of five themes emerged when analyzing participant responses to IQ5 and IQ6. The five themes that emerged from the data were (a) measuring the whole child, (b) meeting state standards, (c) the same as a traditional school setting, (d) grade books, and (e) assessments and assignments.

Research Question 4

Research Question 4 (RQ4) asked, "What recommendations do teachers have for pre-service teachers in advanced technological environments?" Two interview questions allowed the researcher to discover the suggestions from a virtual educator's perspective. These questions included:

- If you could design a pre-service course that aims to prepare students for virtual teaching, what would the most important topic of the course be and why?
- What is the biggest lesson you have learned in teaching virtually?

The responses to these questions yielded five themes: (a) engaging students in virtual instruction, (b) tools and resources, (c) social-emotional support, (d) challenges, and (e) student connection.

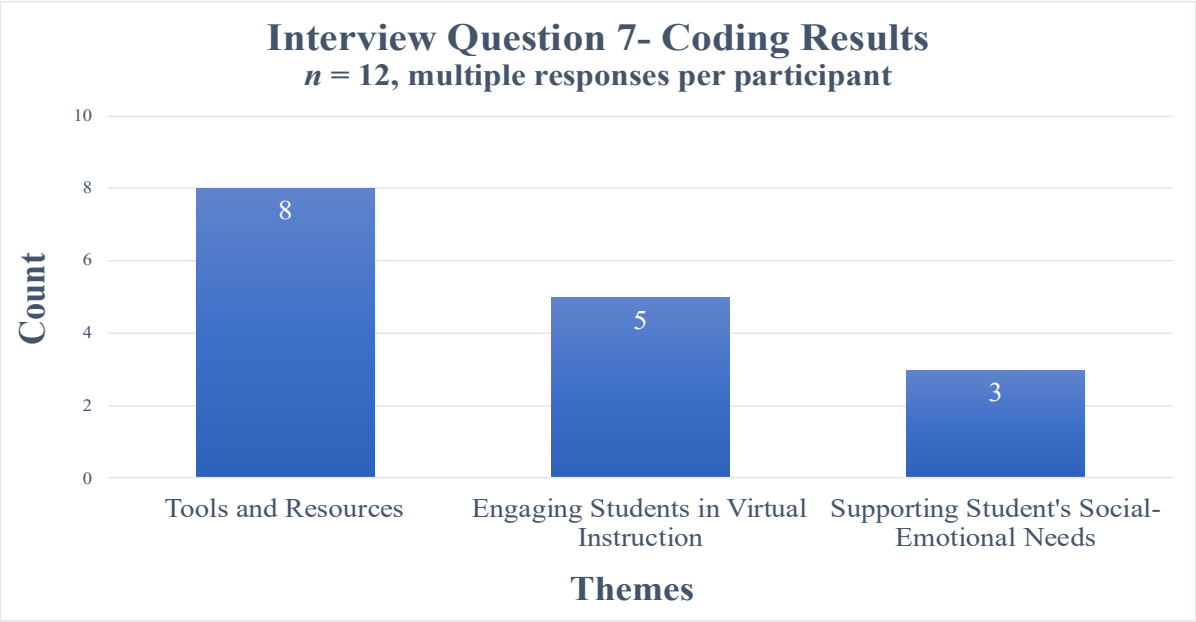
Interview Question 7

Interview Question 7 inquired, "If you could design a pre-service course that aims to prepare students for virtual teaching, what would the most important topic of the course be and why?" Based on the keywords and phrases shared by participants, the researcher found three clear themes in the data. The themes include: (a) engaging students in virtual learning, (b) tools

and resources, and (c) social-emotional support (see Figure 7).

Figure 7

Course That Virtual Educators Would Create for Pre-Service Educators' Virtual Teaching



Note. This figure demonstrates the emerging themes from the participant's interviews for IQ7. The data represented are in descending order of frequency, and each number represents the number of times a participant made a statement that corresponded to the respective theme.

Tools and Resources. The predominant theme in IQ7 was tools and resources. Eight out of 12 (66%) virtual educators found that this would be a beneficial course topic for pre-service educators in the virtual education field. Common phrases include *tools*, interactive resources, tools for success, Google support, and virtual tools.

To illustrate this theme further, Participant 9 stated:

> If I was able to set up a course to teach teachers the basics, it would probably be one of the courses that kind of teaches like the Google basics of how to create documents share documents, how to attach things to e-mails, communication and sharing things is probably one of the biggest things that we do here. And something as simple as downloading a document renaming the document sending it to somebody else. Is hard for a lot of people. It may come super easy to like one of us because we do them. But some new teachers, it's not easy for them to do things like that. So maybe, of course are just like the basics of how to download, upload, send communication, e-mails, things like that.

While Participant 10 shared why they would design a course that supports pre-service educators with tools such as learning management systems (LMS's) by stating:

> There in each program or each school or whatever, there's going to be a variety of LMS and different assignments and just helping the teachers so comfortable to take the risks and learn and try and use those different LMSs and to ask for help when needed and not to be afraid to ask for help.

To expand further, Participant 11 stated the following when discussing a class centered on resources:

> Just strategies and learning applications and just keeping up to date with those. I think that would probably be the biggest thing, because if you're going to try to use like a PowerPoint, it's just not as feasible anymore. In the virtual world, there's just so much out there, you know, there's hundreds of them.

Engaging Students in Virtual Instruction. The second most common theme from the data was engaging students in virtual instruction. Common phrases included student engagement, parent engagement, understanding teaching pedagogy, and practical application. Five out of 12 (41%) participants agreed this course was beneficial for pre-service educators. To demonstrate this theme further, Participant 1 stated:

> So, I think the most important topic of the course would be engagement, like providing those areas of engagement for both students and parents because just like I think in a physical setting, having the involvement of both the student and the parent is what's going to help the student succeed. So, I think, knowing how to engage students and parents in a virtual setting, whether that be you know, stuff to send out the first week of school, any type of sessions that you can hold for students or parents, kind of just going over your virtual classroom.

While Participant 8 shared:

> So pedagogy and making sure you're incorporating different modalities of learning and assessment. Just because of you know, how monotonous being online can really start to feel and look.

Supporting Student's Social-Emotional Needs. Lastly, the last theme in the data was the need for educators to understand how to support students socially-emotionally in a virtual setting. Although there were only three out of 12 (25%) educators expressed a need for this

course, social-emotional support, and social development are large concerns and cause pushback from educational stakeholders (Noddings, 2005). Common phrases included trauma-informed practices, teacher social presence, and supporting students socially and emotionally. To explain this theme further, Participant 3 stated:

> The most important thing to me is again, the teacher social presence, over academics over anything, that that teacher social presence, letting the students know that you care, that they're you're creating a safe space that they are a part of the team. They have that sense of belonging that you are going to work with their educational community, whoever that is. Letting them know those things right away that you there, and that you want to create this relationship with them. That's, that's gold.

While Participant 5 shared:

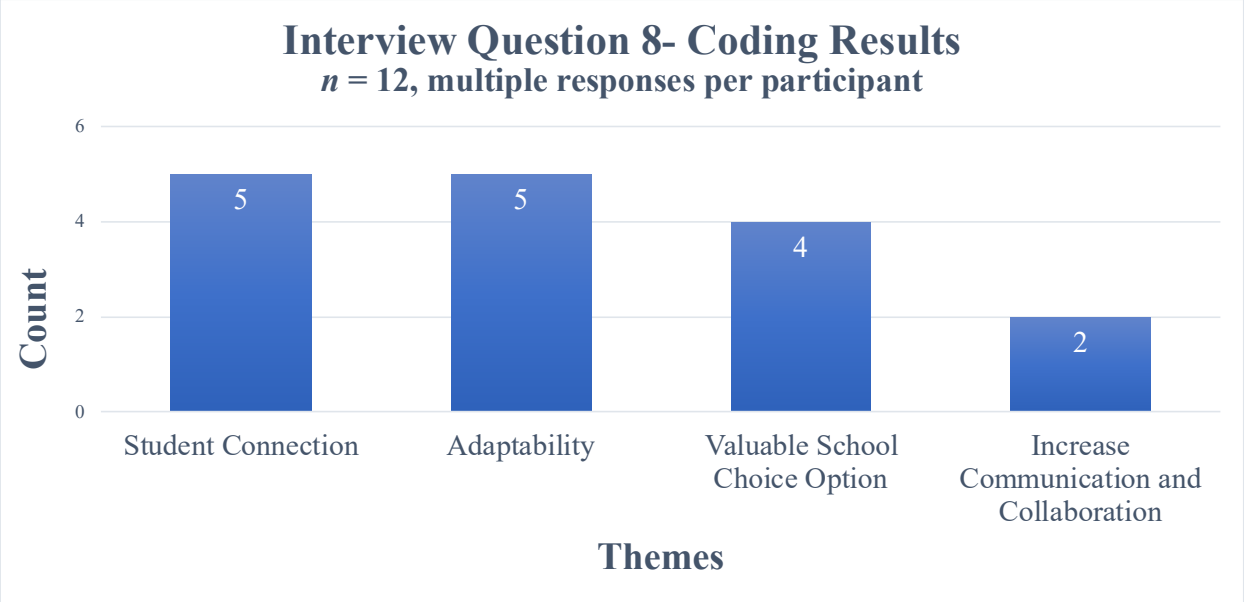
> Oh, I think this is going to be completely different than what we've talked about so far, but it's because it's based on that population that typically, we get in virtual education. I would say the most important piece would be social emotional learning trauma informed practices. That area would be the most important topic.

Interview Question 8

Interview Question 8 asked, "What is the biggest lesson you have learned in teaching virtually?" While responses to this question were broad, the researcher found two common themes within this question. The themes were (a) challenges and (b) student connection (see Figure 8).

Figure 8

The Biggest Lesson That Virtual Educators Have Learned When Teaching Virtually



Note. This figure demonstrates the emerging themes from the participant's interviews for IQ8. The data represented are in descending order of frequency, and each number represents the number of times a participant made a statement that corresponded to the respective theme.

Student Connection. Understanding the importance of student connection is the first theme that emerged from the data. Based on the responses provided, five out of 12 participants (41%) stated this as their largest lesson learned from teaching virtually. Keywords and phrases that created this theme include still need to connect with students even if you are virtual, student connection is still possible, and students meet you as far as you set the bar. Participant 3 stated, "That you can build those relationships. I think that it's possible." While Participant 4 stated, "Oh, biggest lesson is that you can still have a connection with the kids. Even though my kids are in Texas, I feel like they know I'm their teacher. I can tell when they're having a bad day or a good day." Participant 4 then continued to say, "You still do have like a personal connection with them even though it's, it's through a screen."

Adaptability. The second theme that emerged from the data was the need for educators

to be adaptable when teaching students virtually. There were five out of 12 (41%) responses alluded to adaptability. Common phrases included adaptability, knowing when to move on, avoid second guessing yourself, accepting that you cannot see it all like an in-person classroom, and instant gratification not necessary in this learning environment. Participant 1 stated:

> Um, honestly, the biggest lesson that I've learned is, you think it would be easier teaching, well, I don't know, I thought it would be easier to teach virtually than in a brick-and-mortar setting, but there are new challenges and things that arise in a virtual setting that you didn't have in a physical setting. So I think the biggest lesson that I've learned is, you're always going to have those challenges and those issues no matter you know, whether you're in brick-and-mortar or virtual, I think it's just learning how to adapt and being able to adapt to meet those challenges and figure out you know, where you need to go so that students are still learning and succeeding just like they would in a physical classroom.

While Participant 3 explained:

> So, the most important thing I've learned is that for some of these students, it's not about our ego. It's not about us saying I will teach you this, and then you will know it and I'll sit back and be proud and happy that no you know it.

They further explained:

> That student might not see success until two years from now. But if you're setting them up for those things to fall into place for it to happen later, that's okay. And that's been a big lesson to learn. It doesn't all have to happen [instantly]. The instant gratification isn't necessary.

Valuable School Choice Option. The third theme to emerge from the data included four out of 12 responses (33%). Valuable school choice option refers to participant responses that alluded to the misconceptions that exists surrounding virtual learning for K-5 students. Common phrases included misconceptions, teaching a niche, and not what people think it is. Participant 2 explained this theme further by stating:

> I don't feel like it is a perfect fit for every child. 100% Hands down, not a perfect fit for every child. And it may not even be a perfect fit for a child for the duration of their education. Right but it teaches things that another learning scenario may not like it teaches time management and it teaches some of those executive functioning skills that you can't necessarily learn in a large group.

Increase Communication and Collaboration. The last theme that emerged from the data was increase communication and collaboration with two out of twelve (16%) participants stating that this was their biggest lesson learned while teaching virtually. The increase in communication and collaboration refers to the ways in which educators needed to increase their communication and collaboration with parents, students, teachers, and administrators to make teaching more effective in this learning environment. Common phrases included increase communication and follow through with parents and students and the amount of necessary communication. Participant 11 stated, "So I think collaboration is the toughest part and something that you that you have to consistently work on here in virtual environment." While Participant 7 stated, "Communicate with those parents and follow through on what you're saying in class because if you don't, you'll get an email for it."

Summary of RQ4

The purpose of RQ4 was to identify the recommendations that K-5 virtual educators had to train or support pre-service teachers going into high technological teaching environments such as virtual classrooms. This research question also aimed to understand the biggest lesson that virtual educators have learned from teaching this population of learners virtually. Responses to these questions led to the emergence of seven themes that include: (a) engaging students in virtual instruction, (b) tools and resources, (c) supporting students' social-emotional needs, (d) student connection, (e) adaptability, (f) valuable school choice option, and (g) increase communication and collaboration.

Chapter Summary

The main purpose of the qualitative phenomenological study was to understand the best practices that K-5 virtual educators employ when teaching young learners virtually. The

researcher interviewed 12 current or former K-5 virtual educators to understand the following research questions:

- RQ1: What strategies and best practices are employed by K-5 teachers to teach students virtually?
- RQ2: What challenges are faced by K-5 teachers when teaching students virtually?
- RQ3: How do teachers define, measure, and track the success of students that are learning virtually?
- RQ4: What recommendations do teachers have for pre-service teachers in advanced technological environments?

Each interview consisted of eight open-ended interview questions (IQ), while IQ1 and IQ3 contained follow-up questions to elicit more information from the participants as necessary. The data were then coded and analyzed for common themes by the researcher. The researcher employed the inter-rater review protocol to ensure accurate coding and analysis with the support of two other doctoral candidates from Pepperdine University. The analysis of the data resulted in 26 themes which are illustrated in Table 5. Chapter 5 will discuss the findings, results, proposed model, implications, recommendations for further research, and the researcher's final thoughts.

Table 5

Summary of Themes for Four Research Questions

RQ1. What strategies and best practices are employed by K-5 teachers to teach students virtually?	RQ2. What challenges are faced by K-5 teachers when teaching students virtually?	RQ3. How do teachers define, measure, and track the success of students that are learning virtually?	RQ4. What recommendations do teachers have for pre-service teachers in advanced technological environments?
Synchronous Instruction	Learning Coach Support	Measuring the Whole Child	Engaging Students in Virtual Instruction
Community Building	Student Engagement	Meeting State Standards	Supporting Student's Social-Emotional Needs
Interactive Resources	Student's Environment	Same as Traditional School	Student Connection
Immediate Feedback	Technology Issues	Gradebooks	Adaptability
Additional Support	School Administration	Assessments and Assignments	Valuable School Choice Option
Learning Coach	Equitable Resources		Increase Communication and Collaboration
Connection	Technology Disruptions		
Learning Coach Support	Addressing Individual Needs		
Increased Academic and Social Support	None		
None			

Note. This table summarizes the themes of each research question found through the data analysis process. Each theme represents the responses provided by the participants that led the researcher to create these themes.

Chapter 5: Findings, Implications, Application, and Recommendations

Although virtual education options are increasing in popularity within the United States, much of the research surrounding best teaching practices that make this a practical learning experience is still lacking (J. L. Moore et al., 2011; Korkmaz & Toraman, 2020; Ogodo et al., 2021). More specifically, K-12 students worldwide emerged into distance learning options during the COVID-19 pandemic, which caused even more families to opt their students into this school option (Trust & Whalen, 2020). Despite the numerous misconceptions surrounding virtual learning, such as being an ineffective school option for young learners, research proves synchronous virtual instruction can be just as effective as traditional in-person learning (Rehn et al., 2018). Critics of virtual learning options often need to understand that this learning option fits a particular niche of students. While some students may perform better in a physical classroom, others feel they perform better virtually. Moreover, it has become a school choice option for students who need help accessing well-developed public schools (Rice, 2014). Nonetheless, even though this learning option may only fit some learners, it is beneficial to continue research on virtual learning for young students as these options expand and become some families' preferred learning options (Korkmaz & Toraman, 2020).

This phenomenological study aimed to identify the best teaching practices of K-5 virtual educators to demonstrate teaching strategies and solutions to potential challenges that can be beneficial for pre-service educators planning to teach in a virtual setting instead of the traditional brick-and-mortar classroom. The findings of this study showed the best practices that make virtual learning successful, challenges that arise when teaching virtually and how educators overcome these challenges, how academic success is tracked and monitored, and recommendations that current or past virtual educators have for pre-service educators planning to

teach in high technological environments. The researcher anticipates that this research will guide future virtual educators and contribute to the existing literature regarding virtual learning for K-5 or K-12 students.

Summary of the Study

This qualitative study aimed to understand the best teaching practices of K-5 educators, the ways they overcome challenges, measures of success, and recommendations for pre-service educators planning to teach in this teaching environment. The researcher formed the following research questions based on the existing literature to accomplish the study's goal:

- RQ1: What strategies and best practices are employed by K-5 teachers to teach students virtually?
- RQ2: What challenges are faced by K-5 teachers when teaching students virtually?
- RQ3: How do teachers define, measure, and track the success of students that are learning virtually?
- RQ4: What recommendations do teachers have for pre-service teachers in advanced technological environments?

After the research questions were formed, the researcher developed the interview questions that corresponded with the research questions. The interview questions were validated in a three-step process that included prima facie validity, peer review validity, and expert review. After the expert review process, the researcher had eight interview questions, with two questions containing follow-up questions to ask if necessary.

Initially, the researcher searched for current K-5 virtual educators with at least five years of teaching experience within a public, charter, or private school in the United States. Through

purposive sampling, the researcher created a master list based on these criteria using the USDLA member list and Linkedin (http://linkedin.com). After the researcher could not reach the initial goal of 15 participants before the end of March 2023, the number of years of experience for the teacher decreased to three. Educators who recently transitioned to administrative roles were also considered for the study. After altering the experience requirements, the researcher could interview 12 participants successfully or until saturation.

Interviews were conducted via the Zoom web-conferencing system and recorded and transcribed through Otter.AI. Once the interviews were completed, the researcher analyzed the first three interviews by listening to the audio recordings and reading the transcripts a few times to ensure that key points or phrases were understood correctly and appeared correctly on the transcriptions. The researcher began the inter-rater review process by coding and creating themes for the first three interviews. The researcher asked two Pepperdine University doctoral candidates to participate in the interrater review process. The interrater committee supplied feedback to the researcher, their suggestions were considered, and changes to the theme names were made. Once the interrater review process was complete, the researcher coded and grouped the rest of the interviews. The interrater review process was initiated again with the same inter-rater committee to ensure that codes were accurately and concisely grouped to form common themes amongst participants' responses. After the codes and themes were finalized, the researcher displayed the data in Chapter 4 with graphs and charts highlighting the themes that emerged from the interview questions. Participant quotes were also used in Chapter 4 to further support the themes the researcher created.

Discussion of Findings

The purpose of this study was to identify the best teaching practices of K-5 virtual learning by understanding the strategies or practices that made the class successful, the challenges that arise and how educators can overcome these challenges, the ways virtual educators measure and track success, and lastly, recommendations that virtual educators have for pre-service teachers interested in teaching young learners virtually. Based on the data collected, the findings answer each research question and can support and expand the literature findings from Chapter 2. The researcher anticipates that the findings will not only support current literature but add to what exists from the perspectives of individuals who have experienced this form of learning firsthand.

Results for RQ1

RQ1 asked, "What strategies and best practices are employed by K-5 teachers to teach students virtually?" After carefully analyzing the themes that emerged from IQ1 and IQ2, the researcher found that the following practices and strategies support virtual instruction the most:

- holding instruction synchronously just as if teachers were in a class with students
- building a community within the classroom despite being behind a computer screen
- interactive resources so that students are actively engaged in instruction
- provide immediate feedback, whether it is informal or formal feedback
- having schools or classroom models where additional support and small group work is built into the school day
- using learning coaches to support students during asynchronous instruction or technology challenges.

Discussion of RQ1

After a close analysis of the participant's responses, live synchronous instruction is one of the most common strategies used to support students in a virtual classroom. Synchronous instruction consists of live instruction between the teacher and the students (Rehn et al., 2018). K-12 students enrolled in a synchronous class are proven to have the same academic success rate as the students enrolled in a brick-and-mortar classroom (Rehn et al., 2018; Shamir-Inbal & Blau, 2021). Participants often noted that their virtual classes are similar to a brick-and-mortar classroom in that students are expected to come to class at a particular time and are in class until the end of the school day. Students are given breaks and may have asynchronous assignments corresponding to what they learned during the synchronous portion of the school day during small group instruction. Nonetheless, most of the school day occurs online with a certified teacher guiding them through targeted instruction.

Building a community in the classroom was another effective practice used by virtual educators to support student success. Social development tends to be a common concern among critics of virtual learning (Cockerham et al., 2021; Dung, 2020). This mindset is often due to a misconception that because students are online, there is no way for students to connect and build relationships with other peers (Dung, 2020). However, that misconception is proven false in that virtual teachers often dedicate time within the school day for their students to talk and connect with their classmates. Based on participant responses, some schools schedule Monday through Thursday for their typical synchronous classes. Fridays are used for small group instruction or "Fun Fridays" for the students to come to class and enjoy fun activities with their peers. Participants also shared that their virtual schools put together social events outside of the typical school hours for students to come together and connect with students and their school staff

members. Other notable strategies included building teacher and student connections to support students' buy-in in these programs. These strategies included providing student choice in lessons, coming to class early to connect with the students, or simply incorporating student interests into the lessons. In sum, the more students can connect and feel like they are part of a community within the classroom, the better they perform academically (Ferri et al., 2020; Keshkin et al., 2020; Michinov & Michinov, 2009).

Due to the nature of virtual classrooms, using technology-based instruction is a common practice for virtual educators. However, virtual educators often shift away from basic PowerPoint and utilize web-based programs such as Nearpod (http://nearpod.com) to guide students through a lesson. Programs such as Nearpod allow the students to interact with the lesson in real-time and give the teacher quick feedback on how the students grasp the material. Participants often noted that the students enjoy Nearpod lessons or other interactive tools used for instruction. The participants also mentioned game-based learning programs that support students' motivation and engagement in the lessons. The responses correspond with the research that has proven that classroom learning activities increase student motivation, engagement, and performance (Coleman & Money, 2020). Whether students are working with whiteboards or a digital interactive tool, it helps teachers keep the students engaged in the lesson. Digital programs are proven to be effective learning tools in the classrooms, and research supports using these programs no matter the learning environment (Coleman & Money, 2020).

In a virtual setting, teachers cannot walk around the classroom and provide informal feedback on assignments that the students are working on. However, using digital programs, teachers can quickly view student assignments and performance on a given standard. Therefore, participants often noted that they prefer to provide immediate feedback to their students to

motivate them to continue doing well on their assignments. Further, some also noted that it supports their ability to pull students for small group instruction as they can see and view the learning gaps quicker than they would in an in-person classroom. The use of feedback on student performance is proven to support students' motivation and allows them to feel more confident in their learning (Han et al., 2022).

A common practice within virtual and brick-and-mortar schools is offering intervention assistance for struggling students (Natale & Cook, 2012). These intervention programs aim to mitigate the gap between below- and on- or above-grade students. However, within a virtual classroom, virtual schools can utilize co-teachers that will often take students into a breakout room for additional instruction on the primary lesson. During this time, the teacher will work on independent practice or enrichment activities for the students who mastered the lesson. Students pulled into the breakout room do not have to worry about missing instruction, nor do they need to worry about missing out on assignments that they will have to catch up on later. Nonetheless, by integrating these practices into the classroom, virtual educators can ensure that students are prepared to move on to the next lesson the following day, or they have the comfort of knowing that their students will have the opportunity to continue receiving extra support the following day.

Lastly, participants expressed that using active learning coaches was proven to benefit students in a virtual classroom. In a virtual learning environment, younger students may need more assistance than older students (Ricker et al., 2021). Since the teacher is not physically present with the students, learning coaches must assist students with asynchronous instruction, technology challenges, and accountability. Participants expressed that by having an active learning coach at home, they could rely on them to support the students as necessary. Although

the teachers can assist the students with synchronous instruction and academic-related questions, they can only support them if the student can locate the required materials for a lesson or when students need further support with an asynchronous assignment.

Results for RQ2

RQ2 asked, "What challenges are faced by K-5 teachers when teaching students virtually?" By analyzing the themes that emerged from IQ3 and IQ4, the researcher found that the following challenges can arise when teaching young learners virtually:

- experiencing insufficient learning coach support from parents or caregivers
- maintaining student engagement in a virtual learning environment
- having limited or no control over the student's learning environment
- inequitable supply of resources
- technology issues or disruptions that prevent pre-planned lessons or students from learning
- the inability to always address the individual needs of the student.

Discussion of RQ2

The predominant challenge that virtual educators often face is insufficient support from the learning coaches. Learning coaches can be parents, guardians, grandparents, or other adults who plan to support the student in their learning environment (Bubb & Jones, 2020; Ricker et al., 2021). Learning coaches play a prominent role in virtual education with young learners due to the students being unable to solve their problems when dealing with technology or assignments (Bubb & Jones, 2020). Participants previously mentioned that when learning coaches are supportive, there is a positive impact on the student's education. However, participants noted that they experience challenges with getting in contact with learning coaches, learning coaches

leaving students at home by themselves during the school day, and over-involved learning coaches that complete the student's work for them. To overcome these challenges, participants suggested that the teacher hold parent-teacher conferences, create videos to help them understand classroom procedures and assignments, reach out to administrators or parent ambassadors for support, and find what method of contact works best for the parents. Virtual educators find various ways to connect and create parent partnerships to understand that virtual education requires a team effort for their students to succeed when learning virtually.

Maintaining student engagement is another challenge faced by virtual educators. Although student engagement can be a challenge in both traditional and virtual environments (Molnar et al., 2019), it becomes more of a problem in a virtual setting since students are at home and have more distractions around them (Biernes, 2022; Christopoulos et at., 2018). Some participants said they had experienced students riding bikes in their bedrooms during class, sleeping in bed, and playing video games. However, the participants shared that they can overcome these challenges by sending students into breakout rooms with a slide that asks, "Are you there?" Participants have also placed locks on particular websites with the support of the school's technology department, created engaging lessons incorporating personal interests or game-based learning, and reached out to learning coaches for support.

In addition to the challenge of student engagement, the student learning environment is another challenge faced by virtual educators. Since students are typically at home when learning, they only sometimes have the best environment for them to learn (Pozos et al., 2021; Tate & Warschauer, 2022). The student's learning environment is often a common struggle throughout the research as there are few answers to how to overcome this challenge. Some participants shared their experiences making child protective service calls due to words they have heard or

actions they have seen, calling the police when suggested by administrators, and reaching out to learning coaches to help them understand what an optimal learning environment looks like. Though the participants have felt that they have limited control over their student's learning environment, they stated that in these situations, they get administrators involved, have conferences with learning coaches, or since they are mandated reporters, they make the necessary phone calls to ensure that students are in a safe environment.

Inequitable resources concern virtual educators because they need help to give students the necessary supplies easily. Research shows that much of the debate surrounding virtual learning is the equity within virtual schools (Tate & Warschauer, 2022). During Emergency Remote Teaching (ERT) pre-existing inequities within the school system are why students were unable to access curriculum and instruction during the 2020-2021 school year (Acosta et al., 2021; Miller et al., 2021; Pozos et al., 2021). However, virtual schools have attempted to prevent these issues by providing the required technology to the students in advance. Nevertheless, participants noted that they still need help with students having access to WiFi, new school supplies, and equipment required to learn virtually, such as headphones. Virtual educators have attempted to mitigate these issues by using their school budget to send the student's supplies in the mail. They also reach out to administrators to see how the school can further support the families who do not have the means to access some of the required class materials.

Meanwhile, although virtual schools will often supply students with the technology required to access the curriculum and class meetings, that does not prevent the technology disruptions or issues teachers and students experience. A challenge with virtual learning that often appears in the literature is the technical issues that can arise at any given moment (Aguliera & Nightengale-Lee, 2020; Brody, 2021; Singh & Thurman, 2019). Virtual classrooms rely on a

secure and robust internet connection, but that is only sometimes possible. Participants noted that they have experienced being kicked out of their virtual class meetings due to insecure WiFi connections or problems with their learning management system (LMS). Participants also reported that some students naturally have poor internet connection due to their home location if they live in rural areas. To overcome these challenges, the participants shared that they always have a backup lesson or assignment that students can do if they cannot access the class meeting or work out their technology issues. Virtual educators also rely on the learning coaches to support them with any technical problems students may have as they can figure out how to fix the problem better than the student.

Lastly, virtual educators can experience problems with addressing individual student needs adequately in a virtual classroom. Differentiating instruction is a required practice in education because students have Individualized Education Plans (IEPs) that legally require the teacher to put accommodations and modifications in place for the students to access the curriculum (Vasquez et al., 2015). Participants shared their concerns or challenges with this practice since they cannot assist the students with certain modifications. Despite having a high population of learners on IEPs in a virtual school setting, virtual educators need experts who know how to optimize instruction for these learners in their virtual classrooms. Small group instruction is often built into a virtual school day, but if a virtual teacher does not have the tools or resources to support certain needs, they cannot optimize their time with the students (Rachmawati et al., 2022).

Further, some participants also shared their concerns about supporting students' social-emotional needs when they are online. Participants shared that connecting with some students can be hard if they are shy and introverted. To overcome this challenge, participants suggested

not pushing students to share with the class out loud and instead allow students to use the chatbox to answer questions or encourage private messages between them and the teacher so that they do not feel embarrassed to ask questions or answer questions.

Results for RQ3

RQ3 asked, "How do teachers define, measure, and track the success of students that are learning virtually?" By analyzing the themes that emerged from IQ5 and IQ6, the researcher found that virtual educators measure success by:

- measuring the whole child
- meeting state standards
- expecting the same success as a student in a traditional school setting
- utilizing grade books for parents and students to view
- assigning assignments and assessments for the students to complete at the end of a lesson or unit.

Discussion of RQ3

Measuring the whole child consists of evaluating the student's academic perception and understanding and evaluating their personal and physical development (Noddings, 2005). Critics have struggled to understand how virtual educators can understand a student's social development if they are not physically present with that student during the school day (McFarlane, 2011; Rehn et al., 2018; Reuge et al., 2021). Yet, participants conveyed that they put practices in place to allow the student to learn and demonstrate life skills while also allowing them to demonstrate their knowledge on a given topic in a way that fits their needs. Participants shared that they appreciate the flexibility of virtual learning environments since the students have more freedom to express themselves and what they have learned in the most comfortable way.

Some strategies that the participants used to put these practices into action include using video-sharing websites such as Flipgrid for students to demonstrate their knowledge on a topic, having students share their knowledge in the Chatbox or private messages, and also having personal check-ins with the students so that they are able to express themselves or their needs without feeling judged by other students.

Whether charter or public, virtual schools still have state standards that students are expected to meet (Mann et al., 2021). Virtual educators create lessons that will guide the students in meeting their state's academic expectations. Participants shared that although the students are not in a traditional classroom, the academic expectations remain the same. Public perceptions of virtual learning are low in comparison to face-to-face instruction due to the notion that instruction and student expectations are lower in a virtual classroom (DiFrancesca & Spencer; 2022; Tate & Warschauer, 2022). However, participants have debunked that myth by explaining that they are still delivering material, assigning and grading assignments, and having students take assessments and benchmarks with the expectation that they will perform proficiently. Despite being in a virtual setting, students can still measure up against their peers enrolled in a traditional learning environment (Mann et al., 2021).

Finally, participants stated that they assign digital assignments and informal or formal assessments with the expectation that students will perform proficiently. Participants also shared that their schools use various digital programs for benchmark assessments to see where students are performing at given points in the school year. For the students that perform poorly on assessments or benchmarks, they are able to have small group instruction or offer office hours to those students who struggle to grasp the concepts. Nonetheless, grades are still tracked and monitored through online grade books that parents can easily view and access at any time. The

assessment strategies are similar to what occurs in a traditional school setting, except the only difference is that in a virtual classroom, more digital assignments and programs are used to track student progress (DiFrancesca & Spencer, 2022).

Results for RQ4

RQ4 asked, "What recommendations do teachers have for pre-service teachers in advanced technological environments?" By analyzing the themes that emerged from IQ7 and IQ8, the researcher found that virtual educators have the following recommendations for pre-service educators interested in virtual education:

- understanding how to engage students in virtual instruction
- learning the various tools and resources available
- learning and applying techniques to support student's social-emotional needs in a virtual environment
- understanding that student connection is still possible in a virtual environment
- learning how to be adaptable in this learning environment
- understanding that why virtual learning is a valuable school choice option
- learning how to increase communication and collaboration with various stakeholders.

Discussion of RQ4

To adequately prepare pre-service educators for teaching students virtually, participants shared a high demand to understand how to engage students in virtual instruction. Despite synchronous, virtual instruction capable of mimicking in-person learning, engaging students online requires more effort since the teachers have no control over the student's learning environment and potential distractions around them (Pozos et al., 2021; Tate & Warschauer,

2022). Participants shared that teachers in virtual classrooms cannot use basic PowerPoint with young learners in the classroom. Instruction needs to be interactive and planned strategically to fit their needs. Some suggestions from participants included videos, games-based learning programs, Nearpod, and activities that incorporate movement throughout the day. Further, participants expressed the need for pre-service educators to have experience in student teaching in a virtual environment so that pre-service educators can understand the differences and similarities between traditional classroom instruction and virtual instruction. Research shows that universities are not providing optimal experiences for pre-service teachers going into the virtual education field (Niess, 2011; Wilson, 2021; Yeh et al., 2021). Further, this finding corresponds with the need for universities to expand their teaching of TPACK and how technological-based pedagogy can support them in their classroom (Niess, 2011; Wilson, 2021; Yeh et al., 2021). However, if pre-service teachers have the practical application experience of engaging young learners in virtual classrooms, they would be able to learn and understand engagement strategies.

Similar to engagement strategies, participants stated that they would design a course for pre-service educators that focused on tools and resources. When explained by the participants, this course would go beyond tools for engagement. It would allow pre-service educators to understand various programs, learning management systems, virtual classroom management tools, how to address learning coaches, and Google support. Participants expressed the stress of being a first-year teacher and not understanding every resource they had to support their teaching in a virtual classroom despite having experience in a traditional brick-and-mortar classroom. Yet, research has proven that only 2% of universities prepare teachers for distance learning options (Waters & Russell, 2016). Based on how participants felt about their experience beginning

virtual teaching, and the statistics of universities preparing these students for virtual learning, it could be beneficial to include a course on virtual tools and resources for educators.

The social development of students in a virtual setting is a significant concern for parents, educators, and other stakeholders (Dung, 2020). An advantage of in-person learning is that teachers can see the students daily and understand their feelings that day (Cockerham et al., 2021; Dung, 2020). However, participants shared that this can be a challenge in a virtual setting because it is not always possible to know how each student feels mentally. Participants shared that students will come to class with cameras off and claim that their cameras do not work despite school policies stating that cameras need to be turned on. Further, participants also shared that virtual classrooms often receive students with traumatic school experiences such as severe bullying. Therefore, it was recommended that pre-service teachers are trained on social-emotional learning and trauma-informed practices.

Although social development is a deep concern for critics of virtual learning, participants shared that they learned that it is possible to connect with students virtually just as it is possible to connect with students in person. Student connection is critical in getting student buy-in in virtual classrooms (Chiu, 2021; Tate & Warschauer, 2022). Therefore, participants suggested that pre-service educators understand that connection with students is still possible if they put the time and effort into getting to know their students.

In order to effectively support students in a virtual environment, educators need to be adaptable as many challenges can arise while teaching students virtually. Whether the challenges involve technology, engaging young learners, class timing, or finding ways to support the struggling students virtually, educators must be flexible and have the ability to adapt quickly to their student's needs (DiFrancesca & Spencer, 2022). By being adaptable, participants shared

that it makes their role as an educator much easier because they can solve problems quickly and adapt to adversity.

Just like any teaching environment, virtual instruction is not perfect and does not fit all learners' needs (Huang & Yin, 2018; McFarlane, 2011; Musgrove & Musgrove, 2004). Popular rhetoric suggests that traditional in-person education is significationaly more effective than virtual learing environments for K-5 students (McFarlane, 2011; Shamir-Inbal & Blau, 2021). Despite the misconceptions that exists surrounding virtual instruction for young learners, participants found that this is a valuable school option for some students. Virtual learning works for a particular niche of learners (McFarlane, 2011; Shamir-Inbal & Blau, 2021). Students have various reasons as to why they enroll in a virtual course, however, the increasing enrollment proves to critics that this school option is beneficial for some students.

Lastly, participants shared that virtual learning requires the support of various entities to make it an effective mode of instruction for young learners. This means increased communication and collaboration with parents, guardians, teachers, students, administrators, and other school personnel. Although only two participants stated that increased communication and collaboration was their biggest lesson learned while teaching virtually, existing literature illustrates how communication is a critical factor in the success of K-5 virtual courses (Catalano et al., 2021; Hasler-Waters et al., 2014; Tate & Warschauer, 2022). While this is a vital component of virtual instruction, one participant deemed this aspect challenging as it creates additional communication points for teachers to be accountable for.

Implications of the Study

This study aimed to identify the strategies and practices that make virtual learning successful for K-5 students. The findings of this study provide tangible strategies that virtual

educators utilize within their classrooms daily to ensure that they are working to address the needs of the whole child and not just the academic needs of their students. Moreover, the findings explore the challenges that virtual educators face and the ways that are able to overcome some of these challenges. The following entities can benefit from the findings of this study:

- *Pre-Service Educators:* Pre-service educators can benefit from the study's findings to understand the various aspects of virtual education and how they can engage students and parents effectively in virtual education.
- *Brick-and-Mortar Educators:* Current brick-and-mortar educators can benefit from these findings if they are interested in going into virtual teaching. Despite having experience teaching students in person, there are challenges and practices that virtual educators utilize that are unique to virtual education.
- *District and School Leaders:* The demand for virtual learning continues to increase nationwide. School districts can benefit from understanding both the advantages of virtual instruction and the specific practices that make it successful if they create a virtual school connected to their school district. Further, during a national pandemic, district and school leaders can create practical training courses for their teachers to understand how instruction differs in-person and virtually.
- *Parents:* Parents can benefit from the study's findings to understand what to expect from virtual learning. Many misconceptions about virtual learning have been debunked within this study. Further, parents must understand that they must actively participate in their student's learning when they enroll their children in virtual classes.
- *Teacher Preparation Program Leaders:* Teacher preparation programs should highly consider implementing a virtual learning course or student teaching experience within

a virtual classroom. As explained previously, enrollment in virtual schools continues to grow for K-5 students, and pre-service teachers could teach virtually one day. It would be necessary to train these educators on this particular mode of instruction as it does differ from traditional, in-person learning.

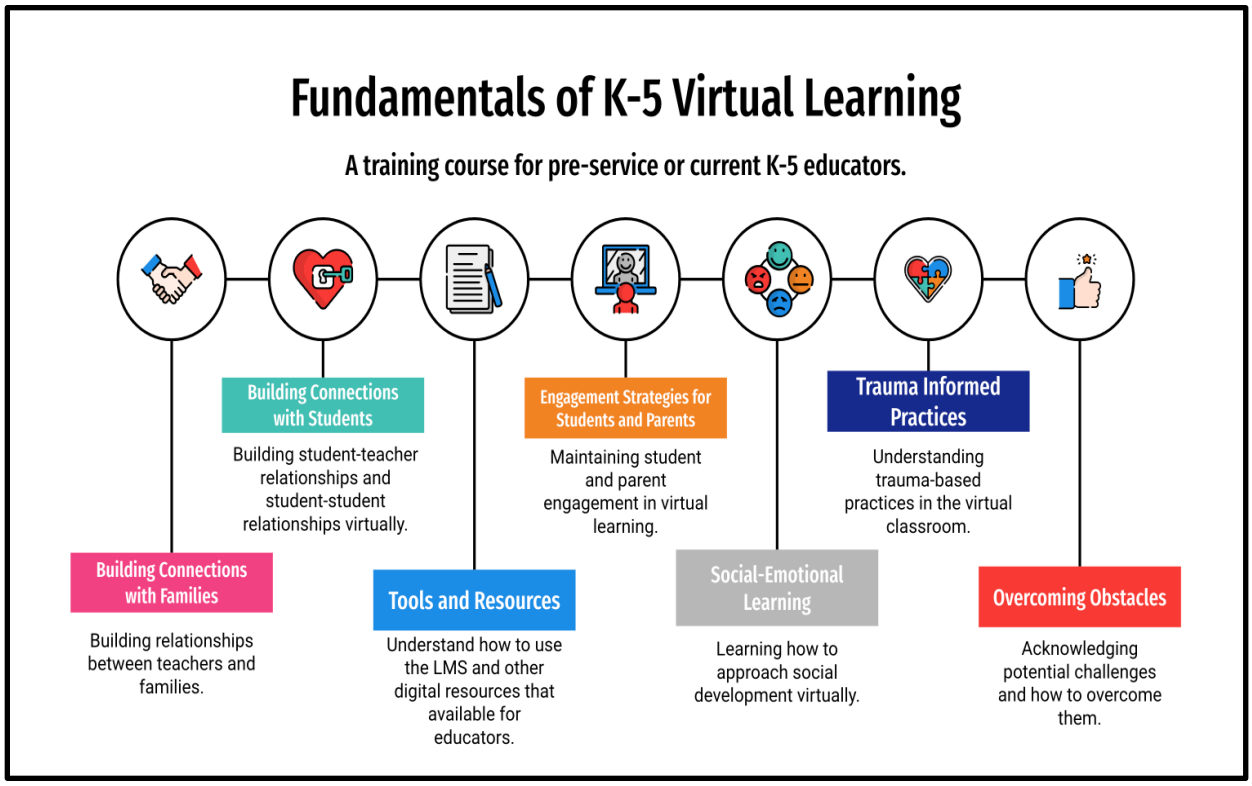
Application

Based on the findings of this research, it is evident that there is a need for multiple training areas for pre-service educators. Not all teacher preparation programs within universities currently consist of a class centered on transitioning into virtual teaching (Korkmaz & Toraman, 2020; Wilson, 2021). Based on the growth rates of K-5 virtual education, more teachers will be needed in virtual instruction, and there needs to be some form of education or training geared towards this type of instruction (de Brey et al., 2021).

The researcher created *The Fundamentals of K-5 Virtual Learning* as a training guide for pre-service education programs or current brick-and-mortar K-5 educators. The training intends to develop pre-service or current teachers to understand the critical areas of virtual instruction often overlooked in teacher education programs. Each module would consist of a three-hour class session that would support the development of aspiring virtual educators based in a university program or as a seven-session professional development. The class modules can also be split in half to consist of 14 1.5-hour sessions for university use for virtual educators during the duration of their student-teaching experience. The description of the various modules can be seen in Figure 9.

Figure 9

The Fundamentals of K-5 Virtual Learning



Note. This training teaches aspiring virtual educators the fundamentals of virtual teaching and learning.

The seven-course training is described below:

1. *Building Connections with Families:* This course centers around building relationships between teachers and families. The researcher would provide an overview of why parent buy-in is vital in this school setting, provide tips and tricks for getting parents on board, and set the standard for learning coach expectations and the support available for families.
2. *Building Connections with Students:* Student connection is still possible through a computer screen, so the researcher would provide educators the opportunity to

understand how strong relationships are built and how to grow those connections throughout the school year virtually continually.

3. *Tools and Resources:* The researcher would allow this to be the day educators emerge into the learning management system and understand how to access meetings, post assignments, grade books, and other available digital programs for them to use with their students throughout the school year.
4. *Engagement Strategies for Students and Parents:* Virtual instruction mimics traditional learning. However, maintaining student engagement can be a challenge in this mode of instruction. Therefore, the researcher would demonstrate strategies for maintaining student engagement both in the classroom and at home with the support of their parents/guardians, or learning coach.
5. *Social-Emotional Learning:* Understanding how to support students social-emotionally requires educators who have a connection with the students and understand how to support their needs virtually. This course aims to accomplish this goal and provide teaching strategies to support learners struggling mentally.
6. *Trauma-Informed Practices:* Based on the previous course, educators would learn how to support students academically and emotionally when traumatic experiences occur and discuss the support that should be available in virtual schools for these students.
7. *Overcoming Obstacles:* Not all teaching experiences are the same, and challenges can occur at any moment in a virtual setting. This course focuses on understanding growth mindset, flexibility, and resources for supporting students and teachers. This training module is designed to serve the needs of pre-service or current educators.

The researcher suggests utilizing this model as the second student-teaching experience within teacher preparation programs, as pre-service teachers will understand the basics of teaching already and can expand their current knowledge into a virtual classroom. School districts looking to create a virtual school within their district can adopt this training model to serve as a base for current educators shifting their instructional practices from in-person learning to virtual learning before the virtual school start date. The researcher would not suggest scheduling this training for one week but instead for several weeks to allow educators to process the new information before the next session. Ideally, the training will take place in the school year prior to the opening of the virtual school.

Study Conclusion

Virtual learning options showed steady growth pre-pandemic and have shown exponential growth post-pandemic (Korkmaz & Toraman, 2020; Molnar et al., 2021). The exposure to ERT during the COVID-19 pandemic has allowed some families to find their preferred way of learning while other families have found a cheaper, yet valuable, school choice option instead of private school options (Barbour, 2011; Rice, 2014). Based on the findings in this study, virtual educators use targeted strategies that lead to the academic success of virtual learners. Further, they have also found ways to support a student's social development and continue to teach to the whole child, not just the academic child (Noddings, 2005). Challenges still arise when teaching this population of learners virtually, but teachers have found solutions to resolve these challenges in the best way possible. It is recommended that teacher preparation programs create virtual learning practicum to allow for pre-service educators to get experience and exposure to the best teaching practices for K-5 virtual learners.

Recommendations for Future Research

This study sought to determine the best teaching practices for K-5 virtual learners. The researcher specifically aimed to understand the practices and strategies that make the courses successful, the challenges that virtual educators face teaching K-5 students virtually, how virtual educators define, measure, and track student success in virtual classes. Lastly, recommendations K-5 educators have for pre-service teachers looking to teach in high technological environments. As the researcher was able to answer these questions, further opportunities for research arose. The researcher has the following recommendations for further research:

1. A study that answers the same research questions but the unit of analysis is targeted for other age ranges. For example, understanding the best practices of virtual learning for 6th-8th grade students and best practices of virtual learning for 9th-12th grade students.
2. A study that aims to identify the academic and social impact of K-5 virtual instruction on students transitioning from virtual learning to in-person learning for 6th-8th grade.
3. A study that aims to determine the academic success factors for K-5 students enrolled in a hybrid learning environment in comparison to the academic performance of these students enrolled in hybrid learning environments.
4. A study that aims to identify the academic impact of district provided, synchronous virtual tutoring services on low-achieving learners.
5. For future research involving grade school educators, the researcher suggests the recruitment stage of the study takes place within the range of September-February. Towards the end of the school year, educators often face burnout and do not want to engage in other research-related tasks outside their normal working hours.

Final Thoughts

As a brick-and-mortar K-5 teacher, the researcher found it fascinating to hear about virtual educators' practices to support their students academically and socially. The researcher had one year of experience teaching students virtually during ERT. The researcher saw that there was potential with this learning mode for some learners despite the harsh backlash from society. Although critics often judge virtual learning for what it lacks, participants' responses proved that it brings many possibilities for both virtual and in-person learners.

The researcher looks forward to seeing how virtual learning will continue to expand. The researcher hopes that the critics will shift away from the misconceptions and focus on the possibilities. The researcher feels that virtual learning can address some of the issues surrounding America's current school system, including the lack of teachers and support staff at schools nationwide. Further, the researcher hopes that school districts begin creating virtual classes for their students, whether intended for the general education classroom, failed classes, or extracurricular activities such as school clubs or tutoring services that utilize synchronous meetings.

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APPENDIX A

Pepperdine University IRB Approval

Pepperdine University
24255 Pacific Coast Highway
Malibu, CA 90263
TEL: 310-506-4000

NOTICE OF APPROVAL FOR HUMAN RESEARCH

Date: March 01, 2023

Protocol Investigator Name: Bailey Hooper

Protocol #: 22-09-1937

Project Title: The Best Practices of Virtual Learning for K-5 Students

School: Graduate School of Education and Psychology

Dear Bailey Hooper:

Thank you for submitting your application for exempt review to Pepperdine University's Institutional Review Board (IRB). We appreciate the work you have done on your proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations 45 CFR 46.101 that govern the protections of human subjects.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an amendment to the IRB. Since your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite the best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete written explanation of the event and your written response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual at community.pepperdine.edu/irb.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval. Should you have additional questions or require clarification of the contents of this letter, please contact the IRB Office. On behalf of the IRB, I wish you success in this scholarly pursuit.

Sincerely,

Judy Ho, Ph.D., IRB Chair

cc: Mrs. Katy Carr, Assistant Provost for Research

APPENDIX B

Pepperdine University Recruitment Script

Dear [Name],

My name is Bailey Hooper, and I am a doctoral candidate at the Graduate School of Education and Psychology at Pepperdine University. To fulfill my degree requirements, I am conducting a research study examining the best practices of K-5 virtual educators and the challenges they may encounter when teaching virtually. You are invited to participate in the study. If you agree, you are invited to participate in the interview process. The interview is anticipated to take up to 60 minutes. It will be conducted via Zoom at a convenient location near you (typically your place of work), which will be recorded on a separate device using Otter.AI. The informed consent form and questions asked in the interview will be sent to you before the interview.

Participation in this study is voluntary. Your identity as a participant will remain confidential during and after the study. Confidentiality will be maintained using a password-protected laptop to store all data collected, including informed consent, the audio-recorded interview, and the transcribed data. Data will also be deidentified using a pseudonym assigned to each recording. If you have questions or want to participate, please contact me at bailey.hooper@pepperdine.edu.

Thank you for your participation,

Bailey Hooper

Pepperdine University

Graduate School of Education and Psychology

Status: Doctoral Student

APPENDIX C

Informed Consent for Participation in Research Activities

IRB #: 22-09-1937
Formal Study Title: Best Practices of K-5 Virtual Learning

Authorized Study Personnel:
Principal Investigator: Bailey Hooper

Key Information:
If you agree to participate in this study, the project will involve:

- ☑ (Males and Females) between the ages of (18-80)
- ☑ Procedures will include (Contacting participants using the recruitment script, informed consent, data collection via structured interview, transcription of data, analysis of data, documentation of findings)
- ☑ One virtual visit is required
- ☑ This visit will take 60 minutes total
- ☑ There is minimal risk associated with this study
- ☑ You will not be paid any amount of money for your participation
- ☑ You will be provided a copy of this consent form

Invitation
You are invited to take part in this research study. The information in this form is meant to help you decide whether or not to participate. If you have any questions, please ask.

Why are you being asked to be in this research study?
You are being asked to be in this study because you are a leader in the K-5 virtual education industry. You must be 18 years of age or older to participate.

What is the reason for doing this research study?
The purpose of this study is to determine the best practices of K-5 virtual educators within the United States.

What will be done during this research study?
You will be asked to complete a 60-minute semi structured virtual interview via Zoom. The interview will be audio-recorded only on a separate device using Otter.AI so that no identifiable data is collected in the interview process. The PI will ask you a series of questions aimed at figuring out what strategies are used by leaders in your field. While the research will take approximately 26 to 52 weeks, your interview will only take 60 minutes.

How will my data be used?
Your interview responses will be transcribed, analyzed, and aggregated in order to determine the findings to the established research questions. All recordings will be deleted immediately after the transcription process.

What are the possible risks of being in this research study?
This research presents minimal risk of loss of confidentiality, emotional and/or psychological distress because the interview involves questions about your leadership practices. You may also experience fatigue, boredom, or anxiety as a result.

What are the possible benefits to you?
You are not expected to get any benefit from being in this study.

What are the possible benefits to other people?
The benefits to society may include better understanding of leadership strategies used within your industry. Other emerging leaders might also benefit from any additional recommendations that are shared through this process.

What are the alternatives to being in this research study?
Participation in this study is voluntary. There are no alternatives to participating, other than deciding to not participate.

What will participating in this research study cost you?
There is no cost to you to be in this research study.

Will you be compensated for being in this research study?
There will be no compensation for participating in this study.

What should you do if you have a problem during this research study?
Your welfare is the major concern of every member of the research team. If you have a problem as a direct result of being in this study, you should immediately contact one of the people listed at the beginning of this consent form.

How will information about you be protected?
Reasonable steps will be taken to protect your privacy and the confidentiality of your study data. The PI will be deidentifying participants prior to the data collection process (prior to the audio-recording). Your name will be changed prior to the recording and instead, the PI will use the pseudonym created as part of the deidentifying process. The PI will keep the publicly available recruitment information (name, employment info, etc.) separated and recordings will be saved on

a password-protected computer under the pseudonym of the participant. All recordings will be deleted immediately after the transcription process.
The only persons who will have access to your research records are the study personnel, the Institutional Review Board (IRB), and any other person, agency, or sponsor as required by law. The information from this study may be published in scientific journals or presented at scientific meetings but the data will be reported as group or summarized data and your identity will be kept strictly confidential.

What are your rights as a research subject?
You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study.

For study related questions, please contact the investigator(s) listed at the beginning of this form.
For questions concerning your rights or complaints about the research contact the Institutional Review Board (IRB):
Phone: 1(310)568-2305
E-mail: gpsirb@pepperdine.edu

What will happen if you decide not to be in this research study or decide to stop participating once you start?
You can decide not to be in this research study, or you can stop being in this research study ("withdraw') at any time before, during, or after the research begins for any reason. Deciding not to be in this research study or deciding to withdraw will not affect your relationship with the investigator or with Pepperdine University.
You will not lose any benefits to which you are entitled.

Documentation of informed consent
You are voluntarily making a decision whether or not to be in this research study. Signing this form means that (1) you have read and understood this consent form, (2) you have had the consent form explained to you, (3) you have had your questions answered and (4) you have decided to be in the research study. You will be given a copy of this consent form to keep.

Participant Name: _____
(First, Last: Please Print)

Participant Signature: _____ _____
Signature Date

APPENDIX D

Interview Protocol

- RQ 1: What strategies and best practices are employed by K-5 teachers to teach students virtually?

  Think of a course that stands out as the best virtual course you have ever taught virtually. Tell me about that course:

  IQ1: what were the strategies and best practices you used that made the course so successful? (Follow Ups as needed)

  - FU1: How do you structure synchronous instruction to maximize student learning?
  - FU2: How do you structure asynchronous instruction to maximize student learning?
  - FU3: What other teaching strategies are most helpful in capturing student engagement during synchronous instruction?
  - FU4: How did you support students' social development in a virtual setting?
  - FU5: What tools, techniques, or strategies do you use to engage your learners in synchronous instruction?
  - FU6: What strategies for grading and feedback did you use?

  IQ2: Are there other best practices you can think of that you have not shared with me so far?

- RQ 2: What challenges are faced by K-5 teachers when teaching students virtually?

- IQ 3: When teaching that course and using the strategies and best practices you shared with me, what challenges did you face, and how did you overcome them (FUs as needed)?
- FU1: Did you face any challenges in maintaining student engagement in a virtual setting? How do you overcome them?
- FU 2: Did you have any challenges with your school administration support associated with virtual teaching? How did you overcome them?
- FU3: Did you have any challenges with parent involvement? How did you overcome them?

IQ4: Are there any other challenges you have faced in this or other situations we have not covered so far? How did you overcome them?

- RQ 3: How do teachers define, measure, and track the success of students that are learning virtually?

IQ 5: What does academic success look like in a virtual setting? Can you define it for me?

IQ 6: In what ways are students' academic success tracked and monitored? Are they different from those in a traditional school setting?

- RQ 4: What recommendations do teachers have for pre-service teachers in advanced technological environments?

IQ 7: If you could design a pre-service course that aims to prepare students for virtual teaching, what would the most important topic of the course be and why?

IQ 8: What is the biggest lesson you have learned in teaching virtually?