TEACHER PERCEPTIONS OF SELF-EFFICACY

RELATED TO DISTANCE LEARNING

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TEACHER PERCEPTIONS OF SELF-EFFICACY

RELATED TO DISTANCE LEARNING

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TEACHER PERCEPTIONS OF SELF-EFFICACY

RELATED TO DISTANCE LEARNING

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By

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I began this journey on a bit of a whim. Many times, over the past few years, I second guessed myself for thinking it was a good idea. Now, as I complete the journey, I am proud of what I have accomplished and know that I have grown as a person, educator, and academic leader throughout the process.

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ABSTRACT

Distance learning has been steadily growing in popularity over the past 20 years. The majority of distance learning has taken primarily taken place at the collegiate level. Although distance learning has been used minimally at the K-12 level, the pandemic in the spring of 2020 put it at the forefront of all levels of education. Now that education has returned to a sense of normalcy, there are lessons to be learned from the online experience. The majority of the research for distance learning pertains to the collegiate level. This study sought to provide insight for secondary leaders and university education preparation programs on teachers' preparation and continued professional development to improve self-efficacy for instructing in the virtual setting. This causal-comparative study was framed from the beginning and veteran teachers' perspectives to determine if preservice practices have changed or if experience in the classroom carries over to the online setting. A statewide survey was distributed to secondary educators to measure their levels of self-efficacy for virtual instruction and gather information on their backgrounds and preparation. Findings indicated there was no statistical significance between beginning and veteran teachers for online instruction.

CHAPTER ONE

INTRODUCTION

Developments in the past 20 years have brought technology and its uses to the forefront of classrooms around the world. Technology has changed the way we work, play, communicate, and live. Digital improvements have made technology in schools increase a hundredfold in the past two decades (Champa et al., 2020; Dinc, 2019; Lim et al., 2013; Sailer et al., 2021). Technological innovations allow teachers the opportunity to take learning to a whole new level to create authentic, personalized, and unique learning environments. Technological advancements, student needs, and societal demands are all factors that have transitioned education to a distance learning platform and continue to reshape our view of the traditional classroom (Dinc, 2019; Sailer et al., 2021).

Distance learning has been in existence for over 100 years. Technology has allowed it to evolve into an extension, and sometimes a replacement, of the everyday classroom (Lim et al., 2013). For higher education, distance learning has been growing annually at a rate of more than 6% over the past 20 years (Digital Learning Collaborative, 2020). According to the Digital Learning Collaborative (2020) report, in 2019, there were 32 states offering statewide online school, involving over 310,000 K-12 students. Digital learning for K-12 students is the one area experiencing the most growth, yet there is far less data available about best practices, preservice training, professional development, and K-12 usage (Champa et al., 2020; Lynch, 2020; Webb et al., 2021).

In the spring of 2020, the world was significantly affected by the COVID-19 (coronavirus) pandemic. The virus killed thousands of people around the world and

closed the physical doors of all schools and universities in the United States for the remainder of the 2019-2020 school year (Centers for Disease Control and Prevention, 2020; Champa et al., 2020; Sutiah et al., 2020; Webb et al., 2021). Most K-12 schools attempted to offer resources in various capacities, usually through some form of a digital learning platform. The pandemic also pushed universities in the United States to altogether shift from seated to online to conclude the spring semester. Because the coronavirus was not eradicated by fall 2020, schools had to evaluate their reopening policies and methods of delivery for that semester. Many chose to remain solely virtual, while others offered a variety of learning options. These options included traditional face-to-face classrooms with safety precautions, as well as hybrid versions of face-to-face and distance learning (Graham et al., 2020; Sutiah et al., 2020; Webb et al., 2021).

Education was not prepared for the issues the coronavirus would cause to the learning process. Academic institutions around the world quickly saw the shortcomings of distance education, due mostly to lack of teaching competency and preparation (Lee & Jung, 2021). Schools across the United States were not ready to move completely online with the technical infrastructure, number of devices, learning management systems, student knowledge base, or teacher training and preparation (Champa et al., 2020; Lee & Jung, 2021; Lynch, 2020). During the pandemic, distance learning became the sole method of delivery, and it caused teachers to question their skills and abilities to maintain teaching and learning in a virtual classroom (Champa et al., 2020; Kundu & Bej, 2021; Webb et al., 2021; Yurtseven et al., 2021). In this quantitative study, the researcher surveyed Missouri secondary teachers to determine their level of preparation and efficacy for teaching in a distance learning environment. The researcher looked at the preparation

and training for online learning, including either preservice training or professional development in recent years. Teachers were surveyed about their professional learning experience and self-efficacy levels to instruct in a virtual environment.

Problem Statement

The move to distance learning in 2020 was swift and surprising for the education world. Although not a new concept in education, distance learning was not widely used in K-12 schools throughout the United States prior to the pandemic. Some K-12 institutions had been utilizing distance learning platforms for over 20 years and were experiencing a steady increase in enrollment over the past 5 years (Arnett, 2021; Moore-Adams et al., 2016). When schools were forced to close, only 16% of teachers were utilizing online instruction in their classrooms (Arnett, 2021). The pandemic forced all districts across the nation to rapidly transition into online learning platforms for emergency remote instruction. Educators were left with the stress of planning, presenting, altering the learning process, and utilizing a virtual format that may have been unknown to them prior to the shutdown (Arnett, 2021; Corry et al., 2021; Dolighan & Owen, 2021).

The problem is most K-12 teachers have not been trained or prepared to make the transition to distance teaching (Arnett, 2021; Dolighan & Owen, 2021; Webb et al., 2021). This study sought to provide insight from secondary teachers about their preparation, training, and self-efficacy to implement online learning. It examined their efficacy in student engagement, instructional strategies, management of the learning platform, and their personal preparation to use technology. The researcher also included background information to determine the level of experience, training, and preparation to facilitate distance learning as well as participants' educational backgrounds.

While there has been an extensive amount of research on teacher self-efficacy in the traditional K-12 face-to-face setting, information is lacking in regard to self-efficacy in online environments (Naz et al., 2021; Webb et al., 2021; Yurtseven et al., 2021). With more students moving to a virtual platform, it has become increasingly clear that research is needed in this environment (Corry et al., 2021). The 21st-century classroom needs teachers with the digital expertise and self-efficacy to teach, learn, and support students' learning in a variety of educational environments. Teachers must also have self-confidence in their ability to learn new practices, pedagogies, and skills (Moore-Adams et al., 2016; Ogodo et al., 2021). This study examined Missouri secondary teachers' self-efficacy levels to teach in the virtual environment, as well as their preparation and professional development for online instruction.

As the focus of this study was on K-12 education, it will fill the gap in literature where other studies have primarily evaluated distance learning from a higher education standpoint. Many of those studies were explored from the students' viewpoint or from the higher education instructors' view (Poyo, 2016; Saba et al., 2017; Vang, 2018). Anderson (2021) found that fewer than 5% of the studies on distance learning pertain to the K-12 setting. The researcher surveyed secondary educators to gain insight into their perspectives about their efficacy levels to teach virtually. It looked at it from the perspective of the beginning teachers versus veteran teachers, as well as, gained insight into their preservice training and professional development for distance learning. Chapter Two will explore teacher preparation skills, distance learning and instructing, teacher self-efficacy, and teacher professional development needs in greater detail.

Purpose Statement

The purpose of this quantitative, causal-comparative study was to test Bandura's (1986) social cognitive theories by comparing beginning teachers' and veteran teachers' self-efficacy levels and preparation for distance learning in secondary schools in Missouri. At this stage in the research, the teachers' preparedness was generally defined by the undergraduate coursework, or additional professional development received, pertaining to distance learning instruction (Akojie et al., 2022). Corry and Stella (2018) recognized the need for different types of teacher preparation to instruct in online settings versus face-to-face. They found teachers with high levels of self-efficacy in the classroom did not translate to high levels of self-efficacy in the online setting.

Today's education, both higher education and K-12, relies heavily on technology integration as a means of teaching, learning, and delivery of content (Fuchs et al., 2022). Teachers who receive professional development that focuses on developing their technology skills, teaching abilities, and pedagogy are empowered to become more competent with their delivery and lesson design for online learning (Dolighan & Owen, 2021). Research from Philipsen et al. (2019) found that teachers who received timely and relevant professional development for virtual instruction were able to change their teaching identities and pedagogical practices. Therefore, to transition teachers to address virtual instruction needs, professional training and development for teachers are essential to developing new attitudes, skills, and knowledge (Philipsen et al., 2019).

Theoretical Framework

The purpose of this quantitative study was to examine Missouri secondary teachers' self-efficacy levels and preparation to instruct in the distance learning

environment. Albert Bandura's (1986) theories on self-efficacy and social cognition served as the framework for understanding the intricacies presented in this study. Bandura defined a person's self-efficacy as their ability to organize and execute the courses of action required to accomplish a specific task in a particular context (Bandura, 1986, 1997). His self-efficacy theory suggests that should people believe they are capable of producing designated levels of performance, they will in turn influence events and people in their lives. Bandura found that people with high self-efficacy are more likely to choose challenging work, be more engaged in their work, and persist through difficulties in their work (Bandura, 1986). The stronger the perceived self-efficacy, the higher the goals people set for themselves and their commitment to achieve them (Bandura, 2002).

Tschannen-Moran et al. (1998) defined teacher self-efficacy as the belief a teacher has to influence the learning. High levels of teacher self-efficacy involve motivating students, learning content material, teaching difficult concepts, monitoring student behavior, accomplishing goals, and more (Clark & Newberry, 2019; Tschannen-Moran et al., 1998). Teacher self-efficacy is specifically connected to the individual teacher's beliefs about their abilities and can impact student achievement at both an individual and organizational level (Hampton et al., 2020; Thornton et al., 2020). Bandura's (2002) research exposed a low sense of SE in teachers and administrators resulted in intimidating use of technology and poor usage of new technologies.

There is an increasing amount of supportive evidence to corroborate with Bandura's (1997) theory that teachers' self-efficacy beliefs are related to teaching efforts, personal objectives, persistence during difficult times, and resilience in the face of difficulties (Archambault et al., 2016; Brinkley-Etzkorn, 2016; Correy et al., 2021;

Luongo, 2018; Tschannen-Moran & McMaster, 2009). A teacher's belief about their level of impact on a student's education is a powerful tool. Teachers need a high level of self-confidence to take on new practices and change their pedagogies. Their perceptions of themselves and their ability to transition to a virtual setting are crucial to the learning outcomes of today's students (Ogodo et al., 2021).

Research Questions

RQ1: What are the differences in the self-efficacy levels for student engagement in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

RQ2: What are the differences in the self-efficacy levels for instructional strategies in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

RQ3: What are the differences in the self-efficacy levels for classroom management in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

RQ4: What are the differences in the self-efficacy levels for use of technology in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

Null Hypotheses

$H_0$1: There is no significant difference between the self-efficacy levels for student engagement in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

$H_0$2: There is no significant difference between the self-efficacy levels for instructional strategies in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

$H_0$3: There is no significant difference between the self-efficacy levels in classroom management in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

$H_0$4: There is no significant difference between the self-efficacy levels for use of technology in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Significance of the Study

This study is significant because there is a lack of research pertaining to teacher preparation for distance learning in the K-12 environment. Due to the coronavirus pandemic, teachers across the nation were forced to teach in a virtual environment with minimal preparation. Prior to the pandemic, 23 states were offering statewide virtual courses, serving 4.5 million part-time or full-time students. Many of these courses were supplemental in nature and were taken on a part-time basis (Digital Learning Collaborative, 2020; Dolighan & Owen, 2021; Ogodo et al., 2021). The majority of these courses were also operated by a minimal number of staff members in a central location in the state, not by individual public institutions (Digital Learning Collaborative, 2020). The number of students being served by virtual learning rose to over 56 million full-time students in the spring of 2020 (Arnett, 2021).

Upon reviewing the Missouri Department of Elementary and Secondary Education's (DESE, 2022b) website, the teacher education requirements do not

specifically address guidelines for virtual instruction. There are standards to which Missouri Department of Elementary and Secondary Education (DESE, 2022a) requires universities throughout Missouri to adhere when structuring their education programs. However, neither virtual learning nor virtual instruction are listed as standards in DESE's requirements for teacher certification. The level of technology knowledge or expectations for technology use in the certification process is also not listed as a required tool or skill. It is noted that technology elements are options to be embedded in the coursework, though it is unclear which skills will be addressed.

The swift transition to distance learning in 2020 placed teachers in a unique situation. It required a move to technology-based teaching, new forms of communication and collaboration, and innovative adjustments to teaching strategies (Scherer et al., 2021). Although many teachers had experienced some type of blended learning and instruction, very few had been trained or had experience with complete virtual learning. A study by Trust and Whalen (2020), of K-12 educators from Massachusetts, found significant gaps in the preparation process for distance learning. In January 2020, 68% of the participants had never tried remote teaching and felt either overwhelmed or unprepared to teach online. This lack of preparation, lack of training for designing quality virtual instruction techniques, and lack of technology skills needed, all created additional stressors and barriers to successful teaching and learning remotely (Jiang et al., 2022; Trust & Whalen, 2020).

This study attempted to fill a gap in knowledge of distance learning preparation for K-12 schools. Because virtual instruction has primarily been utilized in the higher education sector for the past 20 years, there is a lack of research in the K-12 sector.

According to a report from the National Center for Education Statistics (NCES), only 23% of K-12 courses and curriculum were in an online mode at the time the pandemic hit (Ogodo et al., 2021). School districts were not only unprepared for the sudden move to virtual learning, but also unprepared for the loss of learning that resulted from it for months after (Fuchs et al., 2022; Hall et al., 2021; Ogodo et al., 2021). This study examined teachers' preparation for and perceptions of their effectiveness for instructing in a secondary level K-12 virtual setting. It is significant for the future of K-12 virtual learning to examine the preparation process, practices, and support for distance instruction and learning.

Definition of Key Terms

Beginning teacher: For purposes of this study, beginning teachers will be individuals with zero to 4 years of teaching experience (Greer, 2020).

Coronavirus: The coronavirus is an infectious disease that impacted the world, beginning in December 2019 (Sari & Nayir, 2020). COVID-19 will also be used to reference coronavirus. COVID-19 is the medical term for coronavirus.

Distance learning (DL): A term for the physical separation of teachers and learners that has become popular in recent years, particularly in the United States. While used interchangeably with distance education, distance learning puts the emphasis on the learner rather than the instructor or institution and is especially appropriate when students take on greater responsibility for their learning as is frequently the case when doing so from a distance (Simonson & Seepersaud, 2019). For purposes of this study, distance learning, virtual learning, and online learning will be used interchangeably.

Online learning: Learning that takes place digitally, with 80% or more occurring online. This could be in the classroom or from a distance (Luongo, 2018). This term is commonly used in higher education to refer to learning that takes place virtually (Simonson & Seepersaud, 2019). For purposes of this study, distance learning and online learning will be used interchangeably.

Preservice teacher (PSTs): A student teacher in an undergraduate university program gaining teaching experience (E.B. Davis, 2017).

Teacher efficacy: The teacher's belief of their ability to make a difference in the students' learning and have the ability to reach unmotivated or difficult students (Bandura, 2000).

Veteran teachers: For purposes of this study, veteran teachers will be individuals with 5 or more years of teaching experience (Greer, 2020).

Virtual learning: Learning that takes place online. This term is typically used in K-12 education (Simonson & Seepersaud, 2019). For purposes of this study, distance learning and online learning will be used interchangeably.

Limitations

Limitations are the limits the researcher finds that may influence research methodology and outcomes (Gay et al., 2009). With any study, there are factors that limit outcomes or the collection of data that are beyond the control of the researcher. In this study, the limitations are listed below:

- The number of participants who will respond and fully complete the survey.

- The willingness of administrators to distribute the online survey to their teachers.
- The level of technical skills or training of the participants.
- The teacher preparation program or college attended.
- District expectations for virtual instruction and teacher preparation.
- The lingering effect of COVID-19 on the distance learning situation.
- The manner in which individual school districts handled their COVID-19 reopening and the requirements for virtual instruction were inconsistent from one district to another.

Delimitations

The delimits are the boundaries the researcher set forth. This study was delimited to the following factors:

1. The participants were either beginning teachers with zero to 4 years teaching experience or veteran teachers with 5 or more years of teaching experience.
2. Participants must have experience teaching both online and seated students.
3. Participants were teachers who had not been trained for distance learning from an outside agency for a specialized position or higher education job outside of their secondary school position.
4. Districts outside of Missouri were not considered due to the use of the DESE standards for teaching certification. Each state had its own specific standards for teaching certification.

5. The grade levels of participants were delimited to secondary (Grades 7-12) to keep experience levels similar.

Assumptions

The researcher made the following assumptions:

1. It was assumed that participants truthfully answered interview questions.
2. It was assumed the participants had an understanding of distance learning and had taught online in some capacity since the 2019-2020 school year.
3. It was assumed first-year teachers entered the profession with similar training and certification requirements as determined by Missouri's DESE certification process.
4. It was assumed the participants in the study were a cross-section of the total population of teachers.

Design Controls

This study had several limiting factors within which to operate. The researcher requested the Southwest Missouri Regional Professional Development Center (RPDC) disseminate the survey to district leaders across the state. The school administrators in turn would distribute them to their staff members. The number of respondents was beyond the researcher's control. Throughout the state of Missouri, educators adhered to a list of teaching standards and expectations set by DESE, though the manner in which each individual college program handled the requirements have varied. The skills of individual teachers could vary based on their preservice preparation as well as any additional professional development they may have received. The state of Missouri did

not dictate the learning platform or instructional requirements for distance learning during or post pandemic. Therefore, teachers' experiences, skill levels, and professional development for virtual instruction throughout the state should be varied from one district to the next. Although the coronavirus pushed the K-12 sector to migrate to distance education over the past 3 years, much of the research and results are still developing. The pandemic and the fallout from it were unpredictable and unforeseeable, and each district handled it differently (Champa et al., 2020; Sailer et al., 2021; Webb et al., 2021).

The sampling was delimited to secondary Missouri teachers to narrow the focus of the study. By narrowing it to secondary teachers, it was assumed that the expectations and experiences were more consistent than using the entire K-12 teacher population. The study also used a comparison of beginning teachers to veteran teachers to see if training and preparation had changed in recent years or had an influence on teachers' efficacy. The sample was comprised of teachers who had not receive additional distance instruction training for a position outside of their current public teaching position. Participants must have experience in both virtual and seated instruction to understand the comparison in the delivery of the instruction. Educators in a higher education position or an outside agency for a second job would have likely received training and gained experiences that would skew their knowledge and abilities from their fellow teachers. Participants were limited to the state of Missouri, and based on the state teaching requirements. These standards should have been the same for all universities and districts throughout the state. All participants were incentivized to participate in the study by receiving an opportunity to win one of four Amazon gift cards for $25 at the completion of the study process.

The researcher made a number of assumptions when compiling the data. Participants from a variety of districts in Missouri were polled in order to generalize results. Using the RPDC, the goal was to locate a cross-section of willing participants from a variety of geographic locations and district demographics. The sampling of teachers consisted of teachers with a varied number of years of experience, different levels of training, and teachers who attended different universities. This background and experience scenario should reflect most districts throughout the state. The study was limited to districts in Missouri who purposely randomized to represent a variety of demographics, district training and requirements, and sizes of district.

Summary

Distance learning has been on the rise as a means of coursework delivery for many years. Though more common in higher education, it has become increasingly more popular for K-12 students in recent years (Champa et al., 2020; Lynch, 2020; Ruth, 2018; Sailer et al., 2021; Webb et al., 2021). The coronavirus not only made it necessary to virtually teach and learn to finish the 2019-2020 school year, but distance learning also became the sole option for teachers and students in many districts across the United States for the following school year. Sari and Nayir (2020) stated that public education needs to be prepared for the demand from parents and students to continue learning in this environment, long after the coronavirus pandemic is over. The purpose of this quantitative study was to examine Missouri secondary teachers' efficacy levels and preparation to instruct in the secondary distance learning environment.

There is a gap in the literature examining distance learning in the K-12 environment. This study sought to add to the body of literature examining teacher self-

efficacy for 7-12 distance instruction based on the knowledge and preparation, or lack of, that teachers received to for the online environment. Their self-efficacy levels were based on teacher perceptions of their level of influence on student engagement, instructional strategies, technology usage, and classroom management. The researcher used the Teacher Sense of Efficacy for Online Teaching instrument to generate the information. Participants also submitted background information to determine their exposure to preservice training or professional development for instructing in the virtual environment.

Chapter Two will provide a review of related literature exploring the current preservice teacher preparation process for teaching, various aspects of instructing distance learning, and teacher efficacy for virtual learning. Because of the lack of studies in K-12 online education, there is a need to explore these topics in this sector of education. Chapter Two will also include Bandura's social cognitive theories on teacher self-efficacy and their influence on incorporating and adapting to technology. Chapter Three will discuss the methodology of the study, selection and sampling, research setting, research design, instrumentation, and data analysis. Chapter Four will provide a presentation of the research findings. Chapter Five will contain a summary of the study, discussion, significance, implications of the findings, and recommendations for future studies.

CHAPTER TWO

REVIEW OF LITERATURE

Introduction

The need to transform teacher education programs to incorporate more technology skills and pedagogy has been an issue for over a century (Archambault et al., 2016; Moore-Adams et al., 2016). Growth in the utilization of distance learning has put pressure on teacher education programs and schools to produce and train highly capable and technologically adept teachers (Clark & Newberry, 2019). Since the early 2000s, virtual education options in the K-12 setting have been growing. In a 2013 report from Watson et al. (2013), all 50 states were offering some kind of online educational experience for K-12 students. As online learning has developed, qualified teachers with the skills and background knowledge to teach them have not (Archambault et al., 2016; Clark & Newberry, 2019). Chapter Two will provide a review of relevant literature on the issues that influence K-12 distance education, preparation for online learning, and teacher self-efficacy for virtual instruction.

The purpose of this quantitative, causal-comparative study was to test Bandura's (1986) social cognitive theories by comparing beginning teachers' and veteran teachers' self-efficacy levels and preparation for distance learning in secondary schools in Missouri. Despite the changes in the educational environments of today, very little has changed in the teacher preparation programs across the United States (Archambault et al., 2016; Champa et al., 2020). Archambault et al. (2016) conducted an initial study in 2014 and found only seven teacher education programs the United States addressed K-12 online learning. Their follow-up survey in 2016 found a slight increase to 4% of the

universities surveyed that incorporated online learning experiences in their preservice teacher education programs. When the responding universities were asked if they would be adding an online teaching preparation component, 59% indicated they had no interest. Although few institutions were preparing teachers to instruct in online settings, by 2015, all 50 states offered some type of online learning opportunity for K-12 students (Champa et al., 2020). In a study by Webb et al. (2021), only 24% of their 560 college student participants had taken one or more courses for instructional design or online instruction. In that same study, only 3% of the participants had received professional development for online instruction prior to the pandemic.

There is a lack of research about the preparation process for instructors teaching in the distance learning environment in both the K-12 and higher education sectors (Borup & Evmenova, 2019; Hall et al., 2021; Sutiah et al., 2020). Teacher education programs have been slow to respond to the need for preservice teachers to take coursework to help them acquire the skills needed to teach online. The rush to distance instructions, due to the global pandemic and the changes that followed, magnified the need to equip teachers with skills necessary for distance instruction (Borup & Evmenova, 2019; Gonzalez & Ozuna, 2021; Hall et al., 2021; Sutiah et al., 2020).

Distance learning was thrust into the spotlight because of the urgent push from the COVID-19 pandemic. Schools suddenly closing in the spring of 2020, and having to rethink their opening plans for fall, made virtual learning the norm instead of the alternative (Sari & Nayir, 2020; Sutiah et al., 2020). Although many teachers were not prepared to teach in this environment full time, the infrastructure across the country was also not prepared to support learners online. A report in 2018 noted that 27% of rural

students either did not have internet or had internet incapable of receiving large amounts of data, such as streaming and videos (Lynch, 2020). Lynch also noted that in the minority and poverty categories of students, only 1 in 5 had a working computer and 1 in 10 had access to a smartphone. As most states, schools, parents, and teachers were unprepared for the fallout from the pandemic, there should be a better understanding of how to approach this process in the future (Black et al., 2021).

History of Distance Learning

Distance learning is not a new concept. It has been in existence, in some capacity, since its origins in 1728. The *Boston Gazette* was the first entity to offer a form of distance learning by offering art lessons through the mail. Correspondence courses made an appearance in the mid-1700s and were used in some form for over 200 years. The invention of radio and television gave education a broader audience and found they were able to reach thousands of people at one time. The products that would revolutionize education faster than any of their predecessors was the home computer in the late 1980s and the birth of the World Wide Web in 1989 (Simonson, 2019).

The University of Phoenix was the first university to take advantage of the World Wide Web by offering a completely online education program for undergraduates and graduate students. More colleges began experimenting with online education in the 1990s and enrollment grew to over 4 million students by 2008 (Champa et al., 2020; Simonson & Seepersaud, 2019). Many programs did not survive, though due to the lack of educators understanding and adapting to the differences between face-to-face and online instruction (Simonson & Seepersaud, 2019).

Theorists have attempted to explain and define distance education for many years. Due to its continually evolving landscape, it was not until the 1960s that several defining categories emerged (Simonson & Seepersaud, 2019). Otto Peters of Germany viewed distance education as an industrialized form of teaching and learning. He compared it to the industrial production of goods. He thought the teaching process should be restructured through mechanization and automation, accomplished by structured planning and organizing, standardized courses, and centralized administration. Michael Moore formulated his own transactional theories in the 1970, viewing it as more of an independent study. He believed there were two basic elements to be successful: dialog between teacher and student and responsiveness to the needs of the student. As other theories evolved, several themes emerged: student self-motivation, building personal relationships between students and teachers, conducive climate for working adults, clearly designed coursework, increased student to teacher ratios, timely feedback, and interactivity. Many of these ideals shaped what virtual learning is today (Simonson, 2019).

Online K-12 courses have been in United States schools since the mid-1900s. Virtual high schools began to surface by the early 2000's. The state of Michigan was the first state to require an online learning experience as a graduation requirement (Machuskey & Herbert-Berger, 2022). There is a variety of challenges in distance learning. Some of the challenges students face in K-12 online learning are learning preparation, learning styles and processes, technical skills, participation, and expectations (Champa et al., 2020; Sutiah et al., 2020). Self-management of the student's learning is also a key factor. Students that manage themselves at a high level have higher academic

achievement, are more intrinsically motivated, and are more satisfied and successful at online learning (Um & Jang, 2021. Their research also determined that students with higher levels of satisfaction in their online courses were more successful academically and more likely to take additional online courses. Although students need to be self-motivated to be successful in online learning, numerous studies have found the biggest influencer of student satisfaction was teacher online interaction (Champa et al., 2020; Um & Jang, 2020; Wilde & Hsu, 2019).

From an instructor's standpoint, challenges include the following: changing roles, transitioning learning models, addressing a variety of learning styles, communication, and altering the learning process (Champa et al., 2020; Sutiah et al., 2020). The effective use of technology in education is not easily transferred from face-to-face to virtual learning. Educators must take into account thoughtful preparation, planning, designing, testing, and reflection (Champa et al., 2020; Sutiah et al., 2020). Gonzalez and Ozuna (2021) found that many veteran instructors in higher education are still struggling to teach online even though they are experts in their field and comfortable with technology use. Teachers' competencies regarding training, attitude, technical competence, pedagogy and methodology are all predictors of efficient distance learning instructors (Cadamuro et al., 2021).

Bandura's Social Cognitive Theoretical Framework

Educators face unprecedented challenges every day in the classroom impacting their professional and personal success. A teacher's sense of self-efficacy is a form of motivation that influences and determines their persistence to work through the daily challenges and implement instructional change (Bandura, 1977, 1986, 1997). The core of

Bandura's (1977) social cognitive theory comes from the perspective of individuals as producers of experiences and shapers of events. Individuals are able to produce their own experiences and shape events in their lives based on their perceptions. If people did not believe they could produce desired effects or influence the actions of others, then they had little incentive to act. Bandura (2002) believed people do not live their lives in a state of autonomy; in fact, many of the outcomes people seek are only achievable through interdependent efforts. Adopting new technologies, possessing necessary skills, and having the confidence to use those skills, are all necessary pieces for building teachers' self-efficacy. In the face of obstacles, self-efficacy influences teachers' behaviors, choices, and performance efforts (Backfisch et al., 2021). Bandura (1997) determined that a person's perceived self-efficacy is not concerned with the number of skills one possesses, but what they believe they can do with those skills under a variety of circumstances (Bandura, 1997).

Teachers have been tasked with the responsibility to create learning environments conducive to developing unique educational experiences and events. Albert Bandura (1997) spent a lifetime exploring social learning theories that connected traditional and cognitive learning. Bandura believed humans are active processors of information and make connections between their behavior and its consequences. Bandura (2002) predicted that the internet would revolutionize the way we communicate, educate, work, and relate to each other. Educational systems would rely heavily on electronically delivered instruction, calling for different types of teacher efficacy than traditional classroom means (Bandura, 1997). There was also a noticeable disconnect between rapidly evolving technologies and the lack of development in students' level of self-

directed learning and competencies. Prior to the technological age, students' educational development was dependent on the quality of the school in which they were enrolled. Now students are expected to take ownership of their personal learning, but those skills have to be developed for students to attain their own levels of efficacy (Bandura, 2002).

Tschannen-Moran et al. (1998) based much of their research on Bandura's self-efficacy theories. Their work further explained, a person's perception of success at a task raises their efficacy beliefs, contributing to an expectation that future attempts will also be successful. For teachers, this is achieved through actual teaching where they can assess the capabilities they bring to the task and the consequences of those capabilities. Practicing teachers gain information about their strengths and weaknesses while managing, instructing, and evaluating students. These experiences help mold and shape a person's efficacy (Tschannen-Moran et al., 1998).

Tschannen-Moran et al. (1998) added to Bandura's self-efficacy research by focusing on a measurement tool, Teachers' Sense of Self-Efficacy Survey (TSES), to determine teachers' efficacy levels. This model was designed to be a more valid measure of teacher efficacy by incorporating both an assessment of personal competence and a task analysis, based on the teaching context. Measurement prior to the TSES tended to focus on either the personal challenges or the external constraints faced by teachers, but not both factors. The measurement tool used in this study is based on the TSES model.

Bandura's (2002) research recognized the need for teachers to have high levels of self-efficacy to emulate the skills needed for our 21st century student learners. Today's electronic media allows students to build social networks, work collaboratively online, easily exchange and share information, and connect with learners worldwide. Students

have the technology tools, but not necessarily the knowledge or experience to use them effectively. Social cognitive theories provide guides for building the cognitive skills and personal efficacy needed to be creative, productive learners (Bandura, 2002). Individuals with higher levels of SE find it easier to envision successful scenarios. Bandura (1997) proposed a person's SE could be enhanced by leadership in four ways: mastery experiences, social modeling, improved physical and emotional states, and verbal persuasion. These four modes of conveying information allow participants to select, interpret, and integrate the knowledge, to ultimately shape a person's efficacy beliefs (Bandura, 1997). Twenty-five years after his development of these models, researchers are still referencing it to develop teachers' efficacy levels on various platforms (Altuncekic, 2022; Dolighan & Owen, 2021; Hampton et al., 2020; McLeod, 2016; Naz et al., 2021).

Mastery Experience

Bandura (1997) considered mastery experiences to be the most powerful approach to enhance a person's self-efficacy. Mastery experiences are also the most influential because they provide the most authentic evidence for what it will take to succeed at a task. The power of mastery experiences is not found in indoctrinating ready-made behavior, rather, acquiring cognitive, behavioral, and self-regulatory tools and adapting those skills to ever-changing environments (Bandura, 1997). The mastery of experiences is linked to satisfaction and willingness to attempt more complex tasks. However, teachers may also find it difficult to handle information that conflicts with their belief systems, knowledge base, or new expectations. People must experience both successes and failures before a sense of efficacy is firmly established. Experiencing some setbacks

or overcoming obstacles serves a purpose of understanding that sustained efforts and perseverance are needed to build self-efficacy levels (Bandura, 1997).

Verbal Persuasion

Bandura (1997) explained how the use of verbal persuasion can be an effective tool for encouraging teachers to attempt and complete complex tasks. Although it may be limited in its power to create enduring change, it can improve self-efficacy if the praise is realistic and genuine. People provided with verbal persuasion possess the capabilities to master tasks, sustain their efforts longer, and work through self-doubt when difficulties arise (Bandura, 1997).

Verbal persuasion can be general or specific in nature, providing information about the teacher, giving encouragement, or helping overcome obstacles. It can also come in the form of coursework and professional development workshops that provide strategies and methods for teachers to use (Tschannen-Moran et al., 1998). A school culture can be moved in a desired direction by using verbal persuasion opportunities to support staff and tackle challenging improvement efforts (Bandura, 2002). Persuasive efficacy is often given in the form of feedback on a teacher's performance or ability. When feedback is provided in the early stages of skill development, it is proven to make a notable impact on personal efficacy (Bandura, 1997).

Vicarious Experiences and Social Modeling

Bandura's (1997) social modeling approach involves the observation of a teacher who has mastered a new approach or instructional procedure. Teachers can develop understanding and efficacy of a task by observing other teachers. Bandura (1997) explained, the role model must be observed as a peer with similar skills, knowledge, and

ability as the observer. If the model is an expert, authority, or national speaker, observers often fail to believe they can accomplish a similar task. People often seek proficient models that possess the attributes and qualities to which they aspire.

For vicarious experiences to be truly impactful, they must go beyond just a mere observation. What is modeled should tap into the cognitive skills, preconceptions, and value preferences of the observer. A level of retention of the event must be reached to have a lasting impact on the viewer. Retention involves an active process of restructuring and transforming the information into something usable by the observer. The new concepts, along with prior knowledge, are translated into an action plan and performed by the observer (Bandura, 1997).

Improving Physical and Emotional States

The pressures of organizational changes, demands for increased achievement, and high-stakes testing have made teaching a stressful occupation (Bandura, 2002). Bandura (1997) determined that self-efficacy is influenced by both emotional and psychological states of a person. By enhancing a teacher's physical status, reducing stress levels and negative emotions, and correcting misinterpretations of bodily states, enhancement of self-efficacy levels is possible. People rely partly on their physiological state in determining their vulnerability and anxiety to stress. High levels of stress are known to debilitate performance and decrease coping and adaptive efforts. Negative reactions and preconceptions can be minimized through mastery experiences, verbal persuasion, and social modeling.

Thornton et al.'s (2020) research found strong connections between leadership support systems that improved teachers' success and increased teacher SE. Principals that

provided opportunities for self-reflective behaviors and constructive and timely feedback improved both instruction and teacher SE. A study by Naz et al. (2021) determined that teachers experience a higher level of job satisfaction and less burnout when they feel confident and competent in their teaching roles. Teachers cannot master new instructional challenges if their emotional and physical states are compromised or threatened (Goodwin & Shebby, 2020; Thornton et al., 2020). Teachers surveyed after the pandemic reported having lower efficacy levels due to mental health struggles, challenges balancing home life with online teaching, and consistent negative media coverage (Pressley, 2021). Teachers had a high level of uncertainty transitioning to the online instruction model. They noted a lack of support and feedback regarding their virtual instruction also contributed to lower efficacy levels (Pressley, 2021; Sutiah et al., 2020; Webb et al., 2021).

Bandura's Self-Efficacy Theoretical Framework

Education is a unique profession that allows candidates to submerge themselves in the work, for an extended length of time, in order to experience mastery teaching, social modeling, and verbal persuasion (Bandura, 1997). Clark and Newberry's (2019) study found these three experiences, during preservice training, had a significant positive correlation and were strong predictors of teacher self-efficacy. They also found these three experiences represented only 18% of the variance, indicating, there are other unknown experiences or sources of efficacy influencing teachers' self-efficacy. Their work suggested teacher experiences to not just be traditionally modeled, rather, they create meaningful and highly influential practices (Bandura, 1997; Xianhan et al., 2022).

A case study by Cooper et al. (2020) supported a need for better preservice training of teaching candidates. Their study immersed teaching candidates in a two-semester project for implementing all aspects of an online course. This extended exposure to mastery teaching, social modeling, and verbal persuasion allowed preservice teachers to achieve a higher sense of self-efficacy, to implement a similar program, and reach a higher level of self-efficacy for technology integration (Cooper et al., 2020). Bandura stated (1997) "efficacy beliefs are the product of cognitive processing of diverse sources of efficacy information conveyed inactively, vicariously, socially, and physiologically. Once formed, efficacy beliefs contribute to the quality of human functioning in diverse ways" (p. 117). Self-efficacy controls and dictates people's thoughts and the way they behave. It focuses less on a person's skills and more on internal willingness to attempt or complete a task (Bandura, 1997; Kundu & Bej, 2021).

Distance Learning in Education

Distance learning has been in existence for 300 years in various capacities. What we know as distance learning today has steadily gained popularity as a common and convenient mode of instruction for higher education in the past 20 years (Moore-Adams et al., 2016). In 2018, 31.8% of college students were taking at least one course online and almost half of those students were in programs that were completely virtual (Ruth, 2018). As the popularity of distance learning gained momentum in the higher education world, it has also taken shape in K-12 education. Enrollments in state online programs have been increasing at an average rate of 6% for the past 10 years (Ruth, 2018). In the United States, in 2018, 32 states offered statewide online programs servicing over

310,000 students nationwide (Ruth, 2018). Prior to the pandemic, approximately 23% of K-12 curriculum was available in an online mode (Ogodo et al., 2021).

The majority of the research available for evaluating the effectiveness and teacher perspectives of distance learning is focused around higher education. Although it does differ from K-12 distance learning, there is much that can be learned from higher education's experiences. Higher education has struggled with the learning culture, technical improvements, course redesign, student engagement, and budget support, are challenges distance learning presents (Fleck & Garris, 2021; Sutiah et al., 2020). Faculty have a love-hate relationship with distance learning. Although it makes educational opportunities more accessible for a variety of learners, it is debatable whether it is the most effective way of learning for students (Fleck & Garris, 2021; Ruth, 2018). Ruth's (2018) study found 70% of the administration were favorable to offer distance learning and only 29% of the faculty were in favor of teaching online. A few reasons faculty do not find it to be beneficial are these: time consuming to create coursework, instructors not recognized for their online efforts to the same level of classroom work, cuts into research time, harder to determine academic honesty, miss the face-to-face relationships, and students are not as accountable to turn in work (Hampton et al., 2020; Ruth, 2018). Where Ruth's study focused on higher education, these same factors were echoed in Berman's (2019) study of K-12 administrators' observations of their staff. Other barriers Berman noted were communication discrepancies, veteran teachers adapting to newer technologies, and how to pace their virtual lessons.

In a poll of higher education faculty, Ruth (2018) noted the instructional approaches and training varied widely from one college to the next. Some were very

structured and supportive, others provided little training and guidance. Universities should not assume their faculty know how to teach online. They should provide staff with instructional courses, provide pedagogical training, and help with the transition to teaching online (Cadamuro et al., 2021; Hampton et al., 2020; Ruth, 2018). For K-12 education to offer more online courses, it would require the addition of trained preservice teachers or professional development and training of veteran teachers (Berman, 2019; Poyo, 2016). The continued growth of online courses increases the demand for educators who are both qualified and have perceived self-efficacy in online teaching (Hampton et al., 2020). The University of Southern California understands the importance of quality online course delivery. Using Mishra and Koehler's (2006) Technology Pedagogy and Content Knowledge (TPACK) approach, the faculty members at USC are trained on using a flipped learning approach for the delivery of content. They also use collaborative documents, web video presentations, and a variety of multimedia tools for the delivery and student interaction of content (Stevens & South, 2016). Sailin and Mahmor (2018) cited the use of technology effectively requires the user to adopt new pedagogies, as well as commit to new teaching methodologies.

Bandura (2002) saw self-directedness as a key factor in a person's occupational life. Previously, a person learned a skill or trade and repeated it much the same throughout their working life. The modern workplace, teaching included, requires a flexible workforce to meet the rapidly changing job demands. With today's fast-paced changes, technical skills and knowledge are quickly evolving and adaptations need to be self-directed to keep from being left behind (Bandura, 2002; Zhu et al., 2020). Students with a higher level of motivation tend to develop a positive attitude toward learning tasks,

put out more effort, and are found to be more persistent (Zhu et al., 2020). Xianhan et al. (2022) found regular interactions with students helped teachers better understand their students' needs, preferred learning experiences, and interests, as well as close the technical gap online learning exposes. It also promotes the exchange of perspectives between the student and the teacher when it comes to technology integration and implementation.

Preservice Teacher Preparation for Distance Instruction

Studies by Kennedy and Archambault (2012) and Hall et al. (2021) found little had changed in the teacher education preparation program for online instruction, even though online instruction has gained popularity. In 2010, only seven teacher preparation programs offered K-12 virtual instruction across the United States. When Archambault et al. (2016) did a follow-up study 5 years later, that number had increased to 15 programs. Most teacher preparation programs have not provided the needed resources, modeling, or instruction that preservice teachers need to be successful in the virtual platform (U.S. Department of Education, 2017). In a report by Webb et al. (2021), only 24% of the participants had received online training for instruction or experienced virtual training in their coursework during their preparation program of study. Teachers felt this lack of preparation when the world's schools shut their doors in March of 2020 (Taylor, 2020). A participant in Kim and Asbury's (2020) study recalled the sudden transition to virtual instruction as, "I guess it felt a bit like you're shown the diagram of how the parachute works and then you're pushed out of the plane" (p. 7).

In 2017, the U.S. Department of Education, Office of Educational Technology (OET), published a set of technology competencies for educators in the National

Education Technology Plan (NETP). This effort was orchestrated by a number of teacher educators and representatives from the following agencies: the U.S. Department of Education, Office of Education Technology, Council for the Accreditation of Educator Preparation (CAEP), International Society for Technology in Education, Association for the Advancement of Computing in Education, and several teacher advocacy groups. This plan was originally designed to clarify the technology proficiencies for teachers and teacher preparation programs, as well as student technology expectations for schools throughout the United States. Although there are a number of suggestions on the part of the learner, teacher, leader, and infrastructure, a set of defined and required competencies was not laid out for teachers or teacher preparation programs and the plan has not been updated since 2017 (Voithofer et al., 2019). The quality of the course, level of personalization, communication lines and expectations, interactions among students, and learning experiences can all vary greatly from one program to another (Graziano & Bryans-Bongey, 2018). Research from Simsek and Yazar (2019) found self-efficacy beliefs, related to technology integration and computer usage, influence teachers' abilities to build classroom environments that integrate technology in meaningful ways. Teachers must believe and demonstrate they are proficient in integrating technology in their teaching if they want to influence student learning (Chand et al., 2020; Graziano & Bryans-Bongey, 2018; Simsek & Yazar, 2019).

A study from Borup and Evmenova (2019) recognized the lack of preparation for preservice teachers in virtual instruction; most college course instructors are unable to model optimum online practices to help prospective teachers envision the potential of online learning. Bandura noted the importance of observing another teacher who has

mastered an instructional approach can improve the confidence and efficacy of the observer (Bandura, 1997). Hall et al. (2021) acknowledged there are many things we could learn from the pandemic to prepare preservice teachers for teaching online, with instructional design processes and field experiences being most essential. The Hall et al.'s study put preservice teaching participants through a two-credit hour asynchronous course focused on design, delivery, and troubleshooting in an online course. Participants left with a variety of skills and competencies they could immediately apply to their instruction in the fall of 2020 when a large portion of instruction was 100% virtual (Hall et al., 2021). These types of mastery experiences are linked to willingness and satisfaction to attempt more complex tasks in the future (Bandura, 1997).

Face-to-Face Versus Distance Learning Pedagogy

One of the concerns teachers have about distance learning is the lack of student contact. Face-to-face instruction allows instructors to judge students' nonverbal behavior to determine levels of understanding and make immediate modifications to instruction (Champa et al., 2020; Eisenbach & Greathouse, 2019). Higher education institutions have experienced significant changes in pedagogical and technological instructional methods to adapt and modify for lack of student contact and interactions (Cadamuro et al., 2021; Luongo, 2018; Sutiah et al., 2020). They felt a new set of skills was necessary to be effective in the distance learning environment. Digital competency is one of the essential skills needed for distance learning instructors. Being competent when using a learning management system, Google applications, and an asynchronous tool, such as Zoom, are all necessary skills. Receiving training on designing digital lessons, how to avoid plagiarism and copyright violations, and designing effective online assessments are also

needed (Gonzalez & Ozuna, 2021; Luongo, 2018). Cadamuro et al. (2021) noted that self-efficacy, when delivering an online course, can be the single most important factor of success or failure for an instructor.

Limited research has been conducted to determine skills necessary for online learning. Most recommendations have been based on existing knowledge on face-to-face instruction (Moore-Adams et al., 2016). According to the Stevens and South's (2016) study, aligning standards, frameworks, and credentials for preservice teachers' use of technology in the classroom will help meet students' needs. Having a common language to articulate expectations around the use of technology would align it from students, to teachers, to school districts, and to universities (Kul et al., 2019; Naz et al., 2021; Stevens & South, 2016). Ogodo et al. (2021) noted that good face-to-face teachers do not necessarily equate to good remote learning teachers. Teachers are often left with trial-and-error practices due to inconsistent online learning standards and an absence of unified online pedagogy. When teachers lack the technical, pedagogical, and interpersonal skills needed to build relationships with virtual students, their students are not being provided the equitable education that in-school instruction provides (Ogodo et al., 2021). Bandura (1997) and Woolfolk Hoy et al. (2013) established strong connections between leadership supports designed to improve teacher success and increased teacher efficacy. Even the highly skilled teacher, with feelings of incompetence, may perform below their ability level if they lack the skills and supports needed (Bandura, 1997; Thornton et al., 2020).

One of the leaders in virtual schooling research and training for the past two decades is Iowa State University. A team from the university, backed by a grant from the

North American Council for Online Learning (NACOL), designed a set of unique competencies that were developed and researched by Cyrs (1997) to serve as a framework for their virtual school training model for preservice teachers (Davis & Roblyer, 2005):

- course planning and organization that capitalize on distance learning strengths and minimize constraints
- verbal and nonverbal presentation skills specific to distance learning situations
- collaborative work with others to produce effective courses
- ability to use questioning strategies
- ability to involve and coordinate student activities among several sites

These competencies served as the backbone of the model Cyrs (1997) and the Iowa State team developed to integrate virtual schooling skills into preservice teacher education. At that time in 2004 approximately 300,000 students were attending online K-12 classes. The U.S. Department of Education partnered with Iowa State to pilot the integration of the Iowa State model into a variety of preservice teaching programs across the country (Davis & Roblyer, 2005). Although it did not change education programs nationwide, it did serve as a virtual model from which many states modeled their programs.

Obstacles in Distance Learning

Obstacles with distance learning could be grouped into four different categories: student, instructor, information technology, and support (Barbera et al., 2016; Sutiah et al., 2020). Student satisfaction with the course, material, or instructor is one of the most typical measures of success or failure in distance learning (Barbera et al., 2016). A

poorly designed course can lead to negative emotions including frustration and lack of participation (Cadamuro et al., 2021; Dong et al., 2020). Online learning is not for all students, as some students do not have the autonomy needed to work independently in this environment (Sailer et al., 2021; Sutiah et al., 2020). Students also have a different set of expectations from their instructors in this setting versus the traditional classroom. They tend to expect 24/7 access to instructors, the classes to be easier and completely loaded, easily excused deadlines for technical issues, and not to feel an administrative presence (Cadamuro et al., 2021; Luongo, 2018).

Luongo (2018) reported 50% of the instructors in her study were dissatisfied with teaching online. The instructors described low interactions between students, weak lines of communication, higher workload for instructors, and a lack of technical support. Seventy percent of the participants in the study reported missing the face-to-face contact with students. They found it made it easier for students to turn work in late, easier for them to ignore instructors, and hard to get an immediate response from students or respond to questions (Luongo, 2018). A study by Ruth (2018) found online teaching demanded a minimum of 14% more time preparing than traditional content. Adequate use of technology tools requires teachers to continually enhance their knowledge and competencies to integrate new technologies into their instruction. This can result in additional stress and negative feelings towards adopting new technologies (Dong et al., 2020).

Instructors must consider how online learning differs from the physical classroom and how they will need to vary strategies, skills, communication channels, and interactions with their students (Graham et al., 2020; Scherer et al., 2021). Uribe and

Vaughan (2017) determined constructive and timely feedback from the instructor as an important part of this equation and is one of the strongest interventions at a teacher's disposal. Bandura (1977) found mastery experiences to be the most powerful source of efficacy. If a performance has been successful, efficacy is raised. When a person's performance is a failure, it lowers their efficacy beliefs and contributes to an expectation that future performances will also be a failure (Bandura, 1977; Tschannen-Moran et al., 1998).

Distance learning poses challenges, including the learning management system, device compatibility, technology skills of student and instructor, support, and quality audio or video (Graham et al., 2020; Luongo, 2018; Sutiah et al., 2020). Support in the distance learning environment comes from the instructor, administration, parents, and technical support. The student's self-efficacy, or their perceived competence in using computers for this situation, is a major factor in their success or failure (Cadamuro et al., 2021; Fleck & Garris, 2021; Luongo, 2018). Technical support can be very frustrating and confusing for the student, and lack of support is an immediate indicator of failure in the process (Fleck & Garris, 2021; Scherer et al., 2021). Verbal persuasion, in the form of feedback or a pep talk, may help counter setbacks in distance learning that could instill self-doubt and negatively influence self-efficacy. The potency of persuasion depends on the trustworthiness, credibility, and expertise of the persuader (Bandura, 1986).

Benefits of Distance Learning

Studies by Sailer et al. (2021) and Saultz and Fusarelli (2017) recognized the benefits for college students taking online courses. For nontraditional college students, distance learning allows for flexibility in a student's schedule. It allows students to access

the information anytime and anywhere, eliminating the need to be somewhere at a specific time. Traxler (2018) noted the globalization of online education allows students to take courses around the world from their dorm rooms. Research from Bucur and Serban (2019) found that online learning also provides the student more time to explore learning sources, improves their motivation to learn, and helps them evolve into more independent learners. Nearly 84% of the students in their study agreed that e-learning improved their interactions with friends and teachers.

One of the benefits for K-12 distance learners is students can pace themselves and not have others to distract their learning. Struggling students can use one-on-one or individualized instruction time to catch up and seek more specific instruction without interruptions from others. Students with disabilities or health concerns can learn from home and not risk exposure or obstacles that could impair their health (Sailer et al., 2021; Saultz & Fusarelli, 2017). Distance learning helps fill a gap in the class offerings. Not all schools are able to offer a large variety of courses intended to prepare them for college or career options (Archambault et al., 2016; Philipsen et al., 2019). Having virtual options can be seen as a way to provide equity in course offerings regardless of ethnic group, socioeconomic status, or location (Philipsen et al., 2019).

Preparation for Distance Learning

Although distance learning has gained significant popularity over the past 20 years, the K-12 workforce is relatively inexperienced at virtual teaching. Poyo (2016) surveyed 252 K-12 online teachers, where 70% either received training through an outside virtual school or were self-taught. Research on preparing K-12 teachers for virtual instruction is limited, even though distance learning has grown exponentially

(Anderson, 2021; Berman, 2019). Prior to the pandemic, the growth of online learning in the K-12 sector was due in part to migrant youth, incarcerated students, at-risk students, elite athletes, and sick and homebound students (Farmer & West, 2019). These types of student diversities present significant concerns for teachers (Farmer & West, 2019). Online instructors have to find ways to support students' independence and autonomy in a distance learning environment through a learner-centered approach (Moore-Adams et al., 2016; Sailer et al., 2021; Sutiah et al., 2020).

Online teaching utilizes a different pedagogical skill set where instructors are more conscious of the teaching strategies and use a broader range of technologies to meet students' needs (Anderson, 2021; Poyo, 2016; Scherer et al., 2021; Yildiz & Erdem, 2018). One of the biggest keys to successful online learning begins with the instructor. The instructors' beliefs, approaches to distance learning, technical competence, knowledge, opinions, and self-efficacy all interact to influence instructional practices (Cadamuro et al., 2021; Yildiz & Erdem, 2018). Social cognitive theory proposes an outcome expectancy based on the individual's estimate of the likely consequences to perform a task at the expected level of competence. The level of success an individual can achieve will be determined by their personal expectations for that task (Bandura, 1986).

Individual characteristics such as age, gender, intrinsic motivation, and teaching experience play a part in facilitating environments for online education (Lee & Jung, 2021; Martin et al., 2019; Scherer et al., 2021). The study by Martin et al. (2019) on teachers' perceptions of their preparation to teach online found their experience and efficacy levels impact online course design and facilitation. Faculty members with 3

years or less of online teaching experience were found to be less successful in building online communities and developing their online programs.

Effective online learning results from using a systematic model of design and development to carefully construct quality instruction (Hodges et al., 2020). Interactions can vary from student and content, between students and student, and student and instructor. Online programs should aim to develop a learning community that supports learners instructionally, as well as socially (Hodges et al., 2020; Luongo, 2018; Ruth, 2018). A typical online course should be planned and developed 6 to 9 months prior to delivering the course. Faculty will be much more comfortable teaching online by their second or third semester (Hodges et al., 2020).

Numerous studies have found that instructors are not prepared to develop and teach practical online courses (Corry et al., 2021; Horvitz et al., 2015; Howard et al., 2021; Konstantinidou & Nisiforou et al., 2022; Webb et al., 2021). Providing instructors with best practices and examining both negative and positive experiences will expand their teaching repertoire. To determine the quality of online instruction, examine the learners' satisfaction, expectations, readiness, and skills. Similar to the classroom, promoting learners' engagement is key to a successful course. Icebreakers, collaborative activities, student presentation, and peer-reviewed assignments are all ways to improve engagement. In addition, having consistent announcements, email reminders, and an informative learning management system improve course management (Konstantinidou & Nisiforou et al., 2022).

Preparing Instructors for Distance Instruction

Technology provides the education world with opportunities to promote and deliver learning in a variety of settings, locations, and environments. For many years, distance education has been defined by these technologies. The next generation of distance learning has quickly evolved over the past 20 years and has shaped the new landscape that we see today (Champa et al., 2020; Saykili, 2018). These technologies have caused a shift in not only the way distance learning is organized, but in the construction of the content and pedagogical ways it is delivered (Saykili, 2018). According to the U.S. Technology Education office, "the state teacher preparation programs should have their candidates ready to use technology in meaningful ways" OET, n.d., Section 2: "Teaching with Technology"). The OET (n.d.) followed that by stating, "new teachers should not require remediation from their hiring district and should be able to use the most recent apps and tools to support learning (p. 3)."

Teacher educators should model the pedagogical approaches that new teachers will implement in their profession (Voithofer et al., 2019). Ongoing professional learning for veteran and higher education teachers is important due to the amount of changing and evolving that occurs in technology. The Office of Educational Technology (n.d.) states "educators should be fluent users of technology, creative and collaborative problem solvers, adaptive, and socially aware experts throughout their career (p. 19)." It is the responsibility of higher education, and the standards put in place for preservice teachers, to improve teachers' instructional technology skills, regardless of the platform of delivery (E.B. Davis, 2017).

Teachers at all levels of education are required to receive professional development to continually grow in their profession. For professional development to be effective, it should be well-designed, coherent, and ongoing to improve teacher knowledge and influence student learning (Brown et al., 2021; Philipsen et al., 2019). Teachers making the transition from face-to-face teaching to online involves more than just placing the information online. Effective online instructors recognize the need to keep things simple for a clear and organized course. Within that simplicity is the concept of chunking learning modules, screen casting and posting instruction, socializing the students, and providing clear communication and demonstration. Although commonplace for experienced instructors, these activities may be seen as potential technological and pedagogical barriers for inexperienced instructors (Gonzalez & Ozuna, 2021).

The focus of this study on secondary teachers' virtual instruction efficacy in Missouri was based on the increased interest in virtual courses at the 7-12 level. The changing educational needs of students, teacher professional development and education for virtual instruction, and the response from public schools in the months following the pandemic outbreak all factored into the study. DESE (2022b) began offering full and part-time virtual coursework options in 2018. DESE transitioned its original online platform, Missouri Virtual Instruction Program (MoVIP), to Missouri Course Access and Virtual School Program (MOCAP) for the 2019-2020 school year. MOCAP now offers nearly 1,500 courses from 13 different approved vendors. Their 2019 inaugural year served approximately 1,200 students. In the 2021 school year, that enrollment jumped to over 4,000 full-time students. MoVIP also began offering more options for K-6 students in their second year of enrollment. Although the pandemic has inflated the virtual

numbers, prior to 2020 in the U.S., K-12 enrollment had been keeping pace with higher education averages of 6%-7% increase in enrollment over the past 5 years. The 2021 school year doubled the number of virtual students nationwide. In 2022 academic year, after many pandemic restrictions were lifted, that number only decreased 4% from the previous year (U.S. Department of Education, NCES, 2022).

Changing state certifications for preservice teachers to incorporate coursework and guidelines for online learning into education programs has been challenging. Tightly sequenced teacher education requirements, lack of alignment at the state level, and differing faculty perceptions are all issues distance education have encountered (Hill, 2021; Kennedy & Archambault, 2012). Bandura's (1997) model on vicarious experiences is relatable to the training of a preservice teacher. When the skill is being modeled well, and by someone with whom the observer can identify, the efficacy of the observer is enhanced. Pendergast et al. (2011) found teacher self-efficacy beliefs are most impressionable at the beginning of the teacher education program. Therefore, it is important to provide rich and meaningful experiences, designed to build strong teacher self-efficacy, during the teacher education program (Clark & Newberry, 2019; Pendergast et al., 2011).

A study by Jiang et al. (2022), on schools in China, found that most teachers were primarily using technology tools as supportive tools to assist their regular classroom instruction. Their use of technology was typically in a flipped classroom setting or blended learning to enhance classroom instruction and materials. Some instructors would also use it as a communication tool for messaging students outside of the classroom (Jiang et al., 2022). Surveys since the pandemic have shown the use of multiple forms of

media in a lesson have improved students' online learning efficiency (Alturki & Aldraiweesh, 2021; Harsha & Bai, 2020; Tinungki & Nurwahyu, 2020). Jiang et al.'s (2022) research found that adopting a learning management system for the classroom and using instant-messaging apps improved the online student experience. The students in a study by Konstantinidou and Nisiforou (2022) preferred collaborative activities throughout the online course. Activities such as student-moderated discussions, presentations, and peer feedback were all found to strengthen student interactions.

Distance Learning in the Time of COVID-19

On January 11, 2020, the world realized the coronavirus, later renamed COVID-19, was a real-world health crisis. China reported the first death of a 61-year-old man from COVID-19 who frequented the market where the virus originated. February 29, 2020, the United States reported its first death caused by the coronavirus. By mid-March most of the country began to shut down, gatherings were limited to 50 people or less, and it was recommended that schools shut down classes for a few weeks (Taylor, 2020). For some schools that lacked the resources and knowledge base to convert to distance learning, it meant the end of the school year. For others, there was an attempt to provide paper resources and virtual resources to maintain student learning from home. Few schools were prepared to move to a completely online model of learning for K-12 students. Fall 2020 brought a lot of learning and decision making by states and local school districts to determine their plans to begin the year. Districts struggled to provide enough devices and internet service options to students in preparation for distance learning (Champa et al., 2020; Dolighan & Owen, 2021). CNBC News reported that 52% of students returned to a completely virtual learning platform in fall 2020 (Taylor, 2020).

Another 25% attended every day and 19% were a hybrid combining in-person and online (Liesman, 2020). Studies by Brown et al. (2021) and Kuhfeld and Tarasawa (2020) found a considerable amount of learning was lost due to the lack of preparation to teach and learn virtually. The average student lost 32%-37% on reading and 50%-63% on math between the spring of 2020 and fall of 2020 (Kuhfield & Tarasawa, 2020).

The weeks following the shutdown of schools left the world of education feeling the pressures of implementing instruction in a new era. In a study at West Georgia University, prior to COVID-19, approximately 35% of the university staff had ever logged onto or used the university's online management system. Face-to-face (F2F) instruction was their primary means of instruction for their students (Gilles & Britton, 2020). For students in their teacher education program, F2F was also the primary means of their instruction and field experiences in the classroom (Gilles & Britton, 2020). Gilles and Britton (2020) further explained how they quickly revamped their teaching experiences to online lessons with the cooperation of the supervising teacher. The preservice teachers were provided a small glimpse of how teachers had to adapt to rapid changes. Research has shown that preservice teachers are likely to replicate what they observe as valuable and relevant (Naz et al., 2021; Webb et al., 2021). Bandura (1997) referred to this as mastery experiences. Observing veteran teachers, during the pandemic, experiencing obstacles and setbacks, and persevering through them helps build self-efficacy for similar situations (Bandura, 1997).

The months of teaching under pandemic conditions caused teachers to examine their motivation, commitment, knowledge, and self-efficacy for their jobs (Kim & Asbury, 2020). Although most of the nation was unprepared, the state of Florida had been

developing their online options for many years. The Florida Virtual School is a state-funded public entity that provides curriculum and instruction for K-12 online classes. Students can take one or all of their courses channeled through their local districts. They have also developed highly trained online instructors and high-quality curriculum to adapt to the online delivery model (Black et al., 2021). Although having the entire state shift to virtual learning was difficult, Florida had a sturdy virtual foundation to work from.

Preservice Teachers

Teacher preparation programs are the starting point for establishing an educator's technical proficiency. In many cases, teachers will teach the way they were taught until they learn differently (Anderson, 2021; Fleck & Garris, 2021; Poyo, 2016). Therefore, a program that promotes 21st-century learning skills of creativity, communication, collaborative thinking, and modeling a technology rich learning environment is crucial to the 21st-century teacher (Poyo, 2016). A modern teacher should also have e-learning skills that include distance, electronic, virtual, and network learning (Muraveva, 2020). In Bandura's (2002) article, he noted, "The hope and future of people in a knowledge-based global society that is rapidly changing reside in their capacities for continual self-development and self-renewal" (p. 4). The educational systems must evolve from mainly imparting knowledge to teaching students how to educate themselves.

Preservice teacher education programs have been slow to implement technology into their preparation programs. Although the expectation for teachers to integrate technology is apparent, there is not a national standard in place for a specific or required amount of technology training for teachers' certification (Clark & Newberry, 2019;

Moore-Adams et al., 2016; Webb et al., 2021). In most state programs, only one stand-alone methods course is required for certification (Poyo, 2016). Researchers have made recommendations regarding a higher standard for both in-service and preservice teachers to integrate technology and new digital literacies into the methods courses and embed it throughout the certification process. This will provide additional support for technology integration and will strengthen the relationship between pedagogy and technology within the content knowledge (Darling-Hammond & Hyler, 2020; Poyo, 2016).

Teaching practices influence a novice teacher's self-efficacy and pedagogy, especially in a technology-supported environment (Abdullah & Mirza, 2020; Darling-Hammond & Hyler, 2020). The biggest point on which e-teaching differs from the conventional classroom is primarily dependent on technology (Naz et al., 2021). A survey by Webb et al. (2021) found only 24% of their participants had taken a course to prepare them for teaching in a K-12 online environment. The survey also showed 74.9% of the participants received professional development in their current job to teach online. The study also found teachers with a high level of self-efficacy for F2F teaching and technology use transferred to a higher level of self-efficacy for distance learning. Goodwin and Shebby (2020) found numerous studies that recognized, when a teacher feels powerless, their levels of self-efficacy are dampened. They also experience more job satisfaction and less burnout when they feel confident and competent in their work. Bandura (2000) recognized how people are products of their environments. By selecting, creating, and transforming the environmental circumstances around them, they in turn influence their environments as well.

Veteran Teachers

Keeping up with the digital natives that sit in today's classrooms is a daily technological challenge in addition to now dealing with a pandemic and its fallout. COVID-19 has changed the landscape for all teachers and has the education world rethinking its methods and delivery of information (Akojie et al., 2022; Sari & Nayir, 2020). Although many current veteran teachers will always be digital immigrants, no matter how technologically savvy they become, they can teach themselves the skills needed to teach digital natives (Sari & Nayir, 2020).

Lack of training to be prepared to teach DL is a concern for teachers (Clark & Newberry, 2019; Naz et al., 2021; Scherer et al., 2021). Luongo's (2018) research found that professional development opportunities, designed to teach veteran instructors to use the appropriate technologies and learning management systems, can help ease their fears of making changes. Studies that examined teacher mindset about implementing new instructional strategies found teacher self-efficacy to be the most influential factor on the receptiveness of change (Bandura, 1997; Clark & Newberry, 2019; Naz et al., 2021; Tschannen-Moran et al., 1998). Teachers need professional development throughout their careers to continually develop and improve their teaching skills (Gumbo, 2020; Luongo, 2016; Philipsen et al., 2019). Bandura (2002) pointed out the need for self-directed learning; for teachers to adapt to changing times "employees must take charge of their self-development for a variety of positions and careers over the full course of their work life" (p. 6).

The process of connecting content, technology, and pedagogical methods is a challenge (Darling-Hammond & Hyler, 2020; Luongo, 2018). Allowing time to make this

training and conversion happen is also important. Brinkley-Etzkorn (2018) noted two important things that need to happen when converting face-to-face learning to online formats: effective training and continued support. Holmes and Prieto-Rodriguez (2018) found that an individual's computer skills and prior knowledge of technology are critical components of developing positive online learning experiences. Luongo's (2016) study also found a lack of interest, by the university's faculty, to seek out the professional development needed to improve their distance learning courses was an issue. The university in the study did not make it mandatory for all professors to attend the professional development, therefore, many veteran instructors did not take advantage of it. A study by Martin et al. (2019) discovered a connection between online teaching experience and level of competence for online instruction. Veteran faculty members with more than five years of online teaching experience had greater perceived levels of efficacy and proficiency to adapt pedagogies to virtual leaning compared to new online faculty members. Bolliger et al. (2019) confirmed these results and added that new faculty members were found to be less aware of the need to build an online community and the activities to support it.

Self-Efficacy in Education

A person's self-efficacy is a cognitive characteristic for overcoming challenges with persistence and motivation, along with a perceived level of confidence to achieve success in this process (Dolighan & Owen, 2021; Guskey, 2021; Kim & Asbury, 2020; Tschannen-Moran et al., 1998). A teacher's self-efficacy is an indicator of their belief in their capacity to make a positive impact on students and influence their learning (Corry et al., 2021; Guskey, 1987; Kim & Asbury, 2020; Tschannen-Moran et al., 1998). The Rand

corporation studies of the 1970s demonstrated the powerful impact that high teacher self-efficacy could have on teachers' beliefs and their ability to influence student achievement (Clark & Newberry, 2019; Kim & Asbury, 2020). The Rand researchers added two questions to a teaching survey that revealed a strong relationship between teacher influence over student achievement (Guskey, 1987; Kim & Asbury, 2020). This research would spark decades of studies and change the perspective of many educators (Clark & Newberry, 2019; Dolighan & Owen, 2021; Guskey, 2021; Kim & Asbury, 2020). In Rand's teacher satisfaction survey, one of the questions added for the participants to explore efficacy was this: "When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment." The other question from Rand's survey, "If I try really hard, I can get through to even the most difficult or unmotivated students." These two questions sparked a number of subsequent studies into the relationship between teachers' sense of efficacy and student performance (Guskey, 1987).

Tschannen-Moran et al. (1998) found numerous factors play into determining teacher efficacy. The time of day a class takes place and the class size can be factors. Teachers' sense of efficacy can be influenced by a number of school variables such as climate, principal expectations and leadership, school community, and decision-making structures. Teachers' participation in making decisions in their work also bears on the sense of efficacy. Tschannen-Moran et al. (1998) also determined collective efficacy to be an important factor for influencing a teachers' sense of efficacy. Bandura (1997) supported collective efficacy belief in that a school's efficacy as a whole is as predictive of their performance as the teachers' belief in their own equity.

Corry et al. (2021) found a large number of studies have taken place to explore teachers' self-efficacy in the K-12 face-to-face environment, but that same level of knowledge is not available for K-12 online learning environments. Their study recognized the amount of growth in the number of students learning in the virtual environment, and determined it is clear that research in teacher efficacy to instruct online is essential. The Corry et al. study also explored a revised version of the TSES survey tool. Their modified, modernized version allowed for alignment with the K-12 environment, rather than the higher education environment for which it was created. The new instrument was called the Online Teacher Self-Efficacy and Classroom Interaction Survey (OTSECIS).

Self-Efficacy and Technology Use

Teachers' self-efficacy beliefs regarding the use of technology in the classroom are highly influential to creating a meaning environment conducive to learning (Kim & Asbury, 2020; Naz et al., 2021). Dolighan and Owen's (2021) research found self-efficacy and outcome expectations as variables that influence teaching with technology. Teachers with high self-efficacy also had high outcome expectations for technology integration and performance. There is a variety of factors inhibiting technology integration in the classroom that can be internally or externally influential in origin. Kul et al. (2019) determined a number of internal factors impeding a teacher to integrate technology: knowledge and self-efficacy of the teacher, attitude toward technology use, and belief of technology's benefits for education. Some of the external factors that negatively impact teachers' self-efficacy include lack or failure of equipment, software accessibility and adequate training and technical support (Dinc, 2019; Kul et al., 2019).

Teachers with a high level of self-efficacy for technology use are more inclined to use different applications, incorporate student-centered teaching strategies, and use a variety of technology enhanced teaching methods (Tschannen-Moran & Woolfolk-Hoy, 2002).

For teachers to build efficacy and confidence in using technology, hands-on experience and knowledge are two important ways to improve their skills. Mishra and Koehler's (2006) TPACK conceptual framework was developed to bridge the gap between technology developments and teaching activities. TPACK self-efficacy has been found to associate positively with a teacher's intention for technology integration and the actual use of technology in the classroom. The biggest difference in conventional teaching and distance learning is total dependency on technology (Naz et al., 2021). The TPACK serves as a framework to provide knowledge to all educators and support the transfer of the teachers' understanding of content and pedagogy to a virtual environment (Mishra and Koehler, 2006). Naz et al. (2021) recommended the TPACK framework to be included in the teacher education programs with the intent to increase their self-efficacy beliefs and develop their pedagogical skills for distance instruction.

Self-Efficacy and Distance Instructional Strategies

Designing online instruction should begin with the end in mind and measurable learning outcomes about what the students should know by the end of the course (Lumpkin, 2021). To prepare for online instruction there should be support structures, resources, and professional development put into place (Lee & Jung, 2021; Scherer et al., 2021). Teachers should be comfortable working with technology and adaptable to technical issues. Teachers need to establish an online presence that emphasizes the teachers' responsibility to design, organize, facilitate, and instruct in the distance learning

space. Other components of a teaching presence are communication, feedback, student-to-instructor and student-to-student interactions, and quality instructional practices (Scherer et al., 2021). Jiang et al. (2022) suggested mastery experiences in online learning could be achieved by chunking and sequencing the online course, where smaller chunks of basic skills create opportunities for students to achieve success before moving on to more complex material. Other strategies include proficient use of email, audio feedback, online discussions, videos, and asynchronous learning (Jiang et al., 2022; Lumpkin, 2021). Vicarious experiences, such as video modeling and oral explanations, provide visual and auditorial examples for the students to watch and rewatch as needed (Jiang et al., 2022; Lumpkin, 2021).

There are also factors that personally influence faculty members for adopting online education. Studies from Lee and Jung (2021) and Luongo (2018) show external factors, such as institutional incentives, support or lack of support from administration, training provided, and monetary compensation can influence faculty members. Other internal influential factors include age, gender, teaching experience, and intrinsic motivation. Teachers' attitudes and beliefs also contribute to their efficacy levels for online learning and instruction. Cooper et al. (2020) emphasized a need for teachers to be exposed to a blended or online learning experience, from the role of the student, in order to be successful at teaching online.

Self-Efficacy and Student Engagement

Online learning has evolved from the passive, one-way correspondence courses of origin to teachers reconceptualizing the learning process into interactive instruction and engaged students (Lumpkin, 2021). Distance instruction can be conducted using a variety

of methods, including two of the most common: synchronous and asynchronous instruction. Synchronous allows for a limited amount of interaction between the instructor and student. Asynchronous is completely online learning resources and instruction without the interaction of the actual instructor. Most commercial materials designed for remote instruction are designed for an asynchronous method of delivery. Teachers will typically adapt their conventional classroom resources and acquire additional resources when designing synchronous instruction (Arnett, 2021).

Lumpkin (2021) recognized a need to alter instructional practices based on today's students having shorter attention spans. With that in mind, instructors should never exceed more than 15 minutes for an auditory or video-recorded lecture. They need to be clear and effective communicators with the ability to synthesize information from multiple sources to emphasize essential content. Pictures, diagrams, and charts are also engaging visuals to interact with the viewer (Lumpkin, 2021). Teachers in quality online courses look for ways to interact by using announcements, blogs, virtual meetings, chats, journaling, discussion boards, and forums (Cooper et al., 2020; Jiang et al., 2022; Lumpkin, 2021).

Self-Efficacy and Classroom Management

Research from Poulou et al. (2019) reflected a long-standing pattern of effective classroom management being closely tied to achieving effective teaching and student learning. Establishing rules, procedures, behavioral expectations, positive rewards, and consequences are all strategies to create a more supportive learning environment (Poulou et al., 2019). Tschannen-Moran and McMaster (2009) found a relationship between teacher efficacy in managing a classroom and student achievement. They also noted

teachers with higher self-efficacy are more likely to manage a classroom more effectively. Higher instructional quality, more differentiated instruction, more challenging lessons, promoting student autonomy, and keeping students on task are all attributes of highly efficacious teachers. A study by Dicke et al. (2014) found teachers with lower levels of self-efficacy in classroom management experienced more emotional exhaustion and had more frequent classroom disturbances.

Facilitation and classroom management are two important factors in quality online courses. Lumpkin (2021) noted maintaining secure and accurate records, having effective communication, conducting student-centered discussions, having organized coursework with clear directions, and providing timely feedback are all management skills for online classrooms. During the facilitation of a class, teachers should utilize a variety of assessment strategies such as multimedia assignments, open book exams, or student-developed e-books (Lumpkin, 2021). Teachers should create a supportive online environment that encourages student learning, interactions, and social-emotional behavior. That environment starts by establishing rules, procedures and routines, and behavioral expectations. And just like a traditional classroom setting, the use of proactive preventative strategies is more effective than reactive strategies (Poulou et al., 2019).

Summary

This chapter provided a thematic review of literature relevant to distance learning obstacles, benefits, teacher preparation for distance learning instruction, the importance of having solid technology skills, COVID-19's impact on distance education, and how teacher efficacy is influenced and shaped by these factors. From January 2020 to May 2021, the coronavirus made distance learning and virtual schools for K-12 students a

necessary method of educating students for the United States and many other countries around the world. With the massive virtual student influx, classroom teachers had to quickly adjust and adapt to delivering content online. Given what we know about distance education at the K-12 level, there is a need for defined practices, pedagogies, and training for teachers instructing virtually. Research on best practices for distance learning is continuing to develop and evolve (Berman, 2019; Lumpkin, 2021; Webb et al., 2021). As these practices progress and take shape, teacher education programs need to incorporate these practices into preservice teacher training and K-12 professional development needs to fill the knowledge gaps for all teachers (Berman, 2019; Kim & Asbury, 2020; Naz et al., 2021; Webb et al., 2021).

Numerous studies have recognized that teacher preparation programs have been slow to respond to the growing need for coursework that addresses the needs of online learners and instructional practices (Altuncekic, 2022; Borup & Evmenova, 2019; Champa et al., 2020; Pressley, 2021). A study by Pressley (2021) found virtual teachers that did not receive distance learning professional development (PD), regardless of experience, had the lowest levels of instructional and engagement efficacy. Arnett (2021) found effective PD was a key ingredient to teacher online success. In Arnett's survey of online teachers, the teachers who received effective PD felt more confident using online tools and felt assured they were providing for their students.

Researchers have recognized a need for a different skill set and competencies for online instruction versus the traditional classroom (Istijanto, 2021; Naz et al., 2021; Scherer et al., 2021; Webb et al., 2021). Readiness to teach online is based on perceptions for teaching, attitudes and beliefs, knowledge and skills, preparedness and training, and

experience (Howard et al., 2021). A study by Martin et al. (2019) on teacher preparedness for distance education examined their self-efficacy levels based on their levels of experience working with online learning. Teachers with little to no experience instructing virtually had low self-efficacy levels and were less aware of how to build an online presence and community of students (Scherer et al., 2021). Based on Bandura's (1997) theory on vicarious experiences, it is important for teachers to witness quality online instruction in person or virtually in order to fully grasp online learning from both the teacher and student perspectives (Borup & Evmenova, 2019).

When the pandemic surfaced, in the spring of 2020, there were almost 700 completely online schools across the United States with approximately 300,000 K-12 full-time students enrolled in them. The state of Missouri had two schools in the entire state that offered full-time virtual coursework. Since then, Missouri has opened up a completely online option for students, with district approval. As of March of 2021, less than 2% of the student population had been granted enrollment in Missouri's statewide program. Many districts across the state understand the need for an online learning option, and now also offer a fully virtual platform option to their students (Datta, 2022).

In Chapter Three, the researcher will cover the methodology by which the study was conducted. Details will include the sampling, research setting, research design, instrumentation, procedures, and data analysis. It will also provide additional details on the survey instrument used to gather the quantitative data. Chapter Four will provide a clear presentation of the findings. Chapter Five will be a summary of the study, significance, implications on the educational community, and recommendations for future research.

CHAPTER THREE

METHODOLOGY

Introduction

The purpose of this quantitative, causal-comparative study was to examine Missouri secondary teachers' efficacy levels and preparation to instruct in the distance learning environment. The researcher surveyed secondary teachers throughout the state of Missouri to determine self-efficacy levels for student engagement, instructional strategies, classroom management, and use of technology. The comparison of data was determined by their years of service, beginning versus veteran teachers. Chapter Three describes the methods and research design used to conduct the study and how the data were analyzed.

Self-efficacy levels have been found to be a key factor in adopting, integrating, and promoting technology (Fraillon et al., 2019; Xianhan et al., 2022). The U.S. Department of Education (2017) has been working with education accreditation organizations for over a decade to adopt a universal set of standards for preservice teacher education programs. Research surrounding technology-related beliefs continually reinforces the importance of effective classroom technology usage to be integrated into instructional practices to improve teacher self-efficacy and better prepare preservice teachers for instruction (Fraillon et al., 2019; Nelson & Hawk, 2020; Xianhan et al., 2022). Teacher self-efficacy is much more than believing one has the ability to perform the tasks necessary to teach the course. Self-efficacy involves the mastery of necessary knowledge and skills to teach in the online environment, along with the ability to effectively deal with stresses and new challenges (Hampton et al., 2020).

Research Questions

This study explored the self-efficacy levels of secondary teachers for instructing in the distance learning environment. The information will be used to help fill a gap in the literature between higher education and K-12 learning. There is a lack of information about pedagogy, preparation, and teacher self-efficacy for K-12 distance instruction (Corry et al., 2021; Dolighan & Owen, 2021; Guskey, 2021).

RQ1: What are the differences in the self-efficacy levels for student engagement in the distance learning environment for beginning teachers versus veteran teachers?

RQ2: What are the differences in the self-efficacy levels for instructional strategies in the distance learning environment for beginning teachers versus veteran teachers?

RQ3: What are the differences in the self-efficacy levels for classroom management in the distance learning environment for beginning teachers versus veteran teachers?

RQ4: What are the differences in the self-efficacy levels for use of technology in the distance learning environment for beginning teachers versus veteran teachers?

Null Hypotheses

$H_0$1: There is no significant difference between in the self-efficacy levels for instructional strategies in distance learning for beginning teachers and veteran teachers.

$H_0$2: There is no significant difference between the self-efficacy levels for student engagement in distance learning for beginning teachers and veteran teachers.

$H_0$3: There is no significant difference between the self-efficacy levels for classroom management in distance learning for beginning teachers and veteran teachers.

H_04: There is no significant difference between the self-efficacy levels for use of technology in distance learning for beginning teachers and veteran teachers.

Participants

The participants for this quantitative study were purposely selected to assist the researcher in exploring the research questions. The researcher included beginning and veteran teachers from a variety of district sizes and geographical areas in the state of Missouri. The study was also limited to secondary teachers, Grades 7-12, as the bulk of K-12 students in virtual learning are concentrated in the secondary level (Missouri Department of Elementary and Secondary Education, 2022b). The intention of surveying teachers across the state was to gather different teaching perspectives and experiences as well as varied experiences by different teacher preparation programs from universities throughout the state. Participants were also Missouri teachers with experience instructing in both virtual and face-to-face classes. For purposes of comparison, participants need to have experience teaching in both environments.

Administrators were contacted by the Southwest Regional Professional Development Center to distribute a survey to their staff members. Participants answered a series of background questions prior to taking the Teacher Sense of Efficacy for Online Teaching (TSEOT) survey. There were 130 participants that responded to the survey. Quantitative research requires a minimum sample size of All participants were entered into a drawing for four $25 Amazon gift cards.

Selection and Sampling

Participants were chosen for this study using random purposive sampling (Johnson & Christensen, 2014). The samplings were both beginning teachers and veteran

educators from Missouri schools that had experienced instructing in the virtual environment. Secondary administrators were contacted and asked to solicit staff members that met the qualifications specified in the participant's section. The goal was to acquire feedback from both beginning and veteran teachers from each district. Once accepted, an email was sent to explain the study, gain consent, and administer the survey. The sampling had at least 102 samples based on alpha = .05, power of .8, and a medium effect size (Faul et al., 2009).

The selection of teachers was narrowed down to secondary instructors, Grades 7-12, due to the number of students participating in virtual classes prior to, and after, the pandemic. According to the NCES in the 2020 school year, 85% of the students enrolled virtually were secondary level. In the 2022 academic year, 67% of virtual students were secondary. The majority of instruction for virtual learning was still occurring at the secondary level.

Research Setting

The research setting for this study was secondary teachers in school districts throughout the state of Missouri. The schools ranged in size, location, and demographics to reduce bias and weakness of data (Johnson & Christensen, 2014). Within Missouri there were 518 public school districts distributed over 114 counties. There were also approximately 21,600 teachers teaching at the secondary level (DESE, 2022b). Surveys were distributed via administrators throughout the state by emailing and sharing on Google Drive. The individual subject's research setting was based on their personal preference, when and where they chose to fill out the survey.

There are a number of factors that make online learning a choice method for students. In a hybrid setting, both seated and virtual options, online courses allow students to take classes not offered by their schools. Virtual courses offer the flexibility to learn at a time that fits the students' schedule. On-demand learning benefits students by providing recorded lectures and videos that allow students to watch and rewatch for reinforcement of the learning. Students with health impairments, mental or physical restraints, or who have a family member that needs confinement appreciate the convenience and safety that online learning provides. Some students are also able to stay focused better with fewer distractions around them than the traditional classroom (Hodges et al., 2020; Simonson, 2019).

On March 13, 2020, the United States declared a national State of Emergency and stay-at-home orders. Most of the 3.8 million K-12 teachers in the U.S. were trained for face-to-face learning, but little was known at that time about the experience of educators for providing virtual instruction (Akojie et al., 2022; Jiang et al., 2022; Ogodo et al., 2021). Lack of equipment and resources, poor or no internet service, unprepared teachers and schools, inadequate support for educators, and lack of interaction between students and teachers all contributed to the failure of online education during, as well as continued failure, in post pandemic months. What the pandemic did do for K-12 education was provide an opportunity to reconsider the role of virtual technologies, the preparation needed for distance instruction, the need for better infrastructure, and the changing needs of today's students (Akojie et al., 2022; Jiang et al., 2022).

Research Design

The majority of the research on distance education has focused on higher education. Prior to the pandemic, the number of K-12 virtual learners had been minimal, less than 5% of students in the United States (Anderson, 2021). The OET cited 1.5 billion students in 188 countries were locked out of education during the peak of the pandemic (U.S. Department of Education, 2017). Teacher efficacy for classroom usage has been examined and analyzed since the Rand study in the 1970s (Guskey, 1987). The same level of knowledge on teacher self-efficacy is currently not available for online learning.

A quantitative causal-comparative study was conducted to compare the results of a survey on the self-efficacy of beginning and veteran secondary teachers for instructing and delivering content in digital learning environment. The causal-comparative method of research established an association between variables, which indicates a true cause-and-effect relation occurred between secondary beginning and veteran teachers and instructional strategies, student achievement, classroom management, and technology use (Mills & Gay, 2019). The method utilized was appropriate since a comparison of two independent variables, beginning and veteran teachers, and the four dependent variables were present. Because Missouri had a minimal number of virtual students prior to the pandemic, then experienced a large influx, the researcher determined that gauging teachers' perceptions of their experience with online instruction would provide beneficial insight for academic institutions. Research in the face-to-face classroom has shown teacher self-efficacy to be positively associated with student achievement and engagement (Corry et al., 2021; Dolighan & Owen, 2021; Tschannen-Moran et al., 1998). Teachers with a higher sense of self-efficacy are also more willing to experiment with

new methods to meet the needs of their students, as well as being more resilient and persistent in the face of setbacks (Anderson, 2021; Corry & Stella, 2018).

The TSEOT survey, used in the Dolighan and Owen (2021) study, is based on the Teacher Sense of Self-Efficacy (TSES) by Tschannen-Moran and Hoy (2001), which has been widely applied in practice for over 20 years and widely accepted as a means to measure teacher self-efficacy in the traditional classroom. The TSES model provides insight to the cyclical nature of teacher efficacy and is supported by validity and reliability evidence (Klassen & Chiu, 2010; Tschannen-Moran & Hoy, 2001; Wolters & Daugherty, 2007). The TSES provides the researcher with the ability to calculate subscale scores on efficacy for student engagement, instructional strategies, classroom management, and use of technology when instructing virtually. Robinia and Anderson (2010) found similar results using a modified TSES survey. They noted teachers that acquired more experience and training reported higher levels of self-efficacy for online instruction. The adapted TSEOT survey provided a more accurate picture of teacher efficacy with adaptions for technology and terminology changes.

This study was framed from the perspective of beginning teachers versus veteran teachers to determine if experience and efficacy transfer over to virtual instruction. Teacher preparation is also continually changing. By viewing the study from beginning versus veteran teachers, it provided insight into the preparation and training for online learning and the changes in recent years. Once the survey ended, the data was separated into two categories: beginning and veteran teachers. An independent *t*-test was utilized to compare the results of each of the four categories through the Statistical Package for Social Sciences (SPSS) to demonstrate the differences between the variables.

Instrumentation

The primary purpose of this quantitative causal-comparative study was to compare differences in teachers' self-efficacy levels and experiences throughout the state of Missouri that were teaching or had taught on a virtual platform. By understanding these experiences, the teacher self-efficacy survey answered the research questions in this study. Using Bandura's (1997) social cognitive framework, the questions were designed to understand teacher's efficacy levels for instructing in a virtual environment.

Tschannen-Moran et al. (1998) developed an instrument to specifically examine and measure teachers' self-efficacy. The TSES was based off of, and advocated by, Albert Bandura's work. It is a 24-question survey used to address teachers' efficacy in student engagement, instructional strategies, and classroom management. The TSES was modified by Robinia and Anderson (2010), with permission from Tschannen-Moran and Hoy (2001), to address online teaching efficacy. They modified some of the questions and added eight new items to adapt it to address online teaching. In those additional eight questions, they also addressed teachers' self-efficacy for use of technology. The new instrument was titled The Michigan Nurse Educators Sense of Efficacy for Online Teaching (MNESEOT). Horvitz et al. (2015) also used this tool in their study on higher education online faculty.

Dolighan and Owen (2021) conducted their study post pandemic and sought to measure and understand teacher efficacy as they transitioned from face-to-face to online teaching. Dolighan and Owen used the MNESEOT 2010 survey format and modernized it to address the challenges online instructors faced in 2020. The alterations to the survey tool were approved by Robinia and Anderson (2010) for the Dolighan and Owen study. It

was also approved by the research ethics board at Brock University in Ontario, Canada. Dolighan and Owen called the revised survey instrument the Teacher Sense of Efficacy for Online Teaching (TSEOT). Permission was granted from Tim Dolighan to use this survey tool and alter the introductory information as needed (Appendix A).

The TSEOT consists of 32 questions that ask for participants to rate their perceived efficacy on a Likert scale of 1-9 (Appendix B). There are an additional 20 background questions. The survey was set up using Google Forms for this study. Participants were provided an email explanation, and it took an average of 10-15 minutes to read and complete the form. The four subscale areas of student engagement, classroom management, online instruction, and technology usage were calculated and tabulated together to achieve a total mean score and standard deviations of the teacher sense of efficacy for online teaching (Horvitz et al., 2015; Robinia & Anderson, 2010; Tschannen-Moran & Hoy, 2001). The Pearson correlation coefficient was used to determine relationships between interval variables. Analysis of variance (ANOVA) was used to assess differences of means of online teaching efficacy scores.

Dolighan and Owen (2021) study established validity and reliability standards for this version of the TSES tool. The original TSES survey has a vast amount of usage as a survey tool (Tschannen-Moran & Hoy, 2001). The TSES was determined to be highly reliable (12 items, a = 90). The TSEOT was modeled off of the TSES, using Cronbach's alpha for the eight student engagement items, the eight instructional strategy items, eight classroom management items, and eight items on technology usage. Study questions were addressed by calculating means and standard deviations of the responses from the 32 questions. There are also 20 questions covering background information about each

participant. Within those background questions is the number of years of teaching to determine whether the participant will be classified as a beginning or veteran teacher for the purposes of this study. Dolighan and Owen's TSEOT tool was reviewed and approved by the research ethics board at Brock University.

Research Procedures

The survey tool used in this study, TSEOT, was approved via email by Tim Dolighan, coauthor of the survey (Appendix, A). To comply with Southwest Baptist University's guidelines on the protection of human participants, a request was submitted to the Research Review Board (Appendix C). The request sought permission to survey secondary educators in the state of Missouri. Once approved, an email (Appendix D) was composed and sent out to district superintendents and principals. Contact information for districts in the state was acquired from the DESE Missouri School Directory database (Missouri Department of Elementary and Secondary Education, 2023). The email requested the principal share the Google form with their staff or grant permission to contact secondary staff members within their district (Appendix E).

The first round of contacts and survey participation requests, along with a link to the survey, was sent out at the end of October, 2023 (Appendix D). The sample size was determined by the number of responses received throughout the state. The participants filled out a basic questionnaire to gain background information and educational experiences for virtual instruction. The names remained anonymous. Once the data was compiled, the process was moved to the data analysis phase.

The survey did not contain any identifiable information and teachers were informed it was anonymous. Participants were informed that by completing the survey,

they were providing consent to use the data. At the end of the survey, a link was provided to submit their phone number or email for the drawing. Four weeks after the data collection was complete, a drawing for the Amazon gift cards was conducted. Winners were notified via text or email and an address was requested to forward the gift card.

Data Analysis

This causal-comparative study compared the differences between the means of the perceived impact of teacher efficacy with beginning teachers, with 0-4 years of experience, and veteran teachers, with 5 or more years of experience. Independent sample *t*-tests compared the mean between beginning and veteran teachers based on the four dependent categories - instructional strategies, student engagement, classroom management, and use of technology, as designed in the TSES survey tool from Tschannen-Moran et al. (1998). The TSEOT survey tool modified the TSES to modernize the questions and determine teacher efficacy for virtual instruction. In this study, the TSEOT was used to compile the data. The TSEOT is a 32-question survey on which participants ranked their efficacy levels on a 9-point Likert scale. The TSEOT rates the participants perspective with online teaching where 1 represents no experience, or very little, and 9 meaning a great deal of experience (Johnson & Christensen, 2014). The scale ranged from Nothing = 1, Very Little 3, Some Influence = 5, Quite a Bit = 7, A Great Deal = 9. The data from the surveys were categorized, totaled, and divided by 8 to get a mean score (Dolighan & Owen, 2021). The higher the cumulative score on the scale, the greater overall teachers' sense of efficacy for online instruction.

Permission was requested from the administration of all the cooperating districts. E-mails were sent to the district's staff members to find participants to fill out. The

original survey was converted to a digital format to administer the Google Form much quicker and easier. An example of the tool can be found in Appendix A. There are also instructions in Appendix A for taking and scoring the survey tool.

The researcher reported the *t*-test values for each of the four categories. The independent samples *t*-test was used to determine if the null hypothesis would fail to be rejected. The researcher reported the mean and standard deviation for each dependent variable category. Post hoc analysis was conducted for each category to determine and report effect size with the null hypothesis tested with $p < 0.05$ level. The following assumptions were tested for independent *t*-test sample calculations for each research question:

1. The dependent variables, measuring teacher efficacy, will generate a number measured by a Likert scale and based on the answers to the TSEOT survey questions.
2. Participants must choose one of the two independent variable categories, either beginning or veteran teachers.
3. The *t*-test data were run through SPSS to determined outliers, which were removed from the study.
4. A test for normality by Shapiro-Wilk was utilized.
5. The researcher tested for homogeneity of variances using the Levene's test.

There were an additional 20 questions in the demographic portion of the survey that established the gender, teaching status, years of experience, teaching specialty, professional development for online teaching, and three questions pertaining to specific virtual instruction resources and tools. The data was exported to Excel and cleaned for

missing cases and outliers. The first requirement for participation was to have taught in a virtual setting. Teachers that answered zero years of teaching experience online, on Question 39, were automatically removed from the data responses.

Survey data was collected and entered into the SPSS for analysis. The researcher looked for significant variances from the mean in teacher efficacy for beginning and veteran teachers in each of the four categories. Independent samples, on each of the four research questions, used *t*-tests to identify statistical differences. Descriptive statistics were used on the demographic data to determine trends in survey responses including the measure of central tendency and standard deviation (Mills & Gay, 2019).

Summary

The purpose of this quantitative causal-comparative study was to examine Missouri secondary teachers' efficacy levels and preparation to instruct in the distance learning environment. Chapter Three is a detailed description of the methodology used to conduct research on teachers' perceptions of preparation for online learning. Throughout the chapter, the researcher explained the details and process for conducting the quantitative study, survey tool used, and how the data analysis was performed.

In Chapter Four, the researcher will provide an analysis of the data generated in the SPSS software and deciphered by the researcher. Chapter Five contains a discussion and interpretation of the implications of the findings that relate back to the research questions and problem statement. A summary of the research study and recommendations for further research are also detailed in Chapter Five.

CHAPTER FOUR

FINDINGS AND RESULTS

Introduction

Distance learning has experienced significant growth in popularity over the past 20 years. Not only in higher education, K-12 distance education options and enrollment have also grown. Yet, the majority of the research on virtual learning and instruction has taken place at the collegiate level (Champa et al., 2020; Dinc, 2019). The COVID-19 pandemic caused the education world, at all levels, to rethink its virtual learning options and preparedness to teach online. Technological advancements, student needs, best practices, preservice training, professional development, and societal demands are all factors that continue to influence the future of distance learning (Champa et al, 2020; Dinc, 2019; Lynch, 2020; Webb at al., 2021).

This study was based on the proposed problem that most secondary teachers have not been trained or prepared to make the transition to distance teaching (Arnett, 2021; Dolighan & Owen, 2021; Webb et al., 2021). This study sought to gather insight from secondary teachers about their preparation, training, and self-efficacy to implement online learning. It examined their self-efficacy in student engagement, instructional strategies, management of the learning platform, and their personal preparation to use technology. Chapter Four will report the findings from this study to determine how this information will contribute to the data and literature for distance learning.

Purpose of the Study

The purpose of this quantitative, causal-comparative study was to test Bandura's (1986) social cognitive theories by comparing beginning teachers' and veteran teachers'

self-efficacy levels and preparation for distance learning in secondary schools in Missouri. A causal-comparative platform was used to observe differences between two existing groups (Gay et al., 2009). In this study, the groups were beginning teachers with 1-4 years of experience and veteran teachers with 5 or more years. There were four null hypotheses. The null hypotheses stated there were no statistical differences between the self-efficacy levels for student engagement, instructional strategies, classroom engagement, and classroom management in distance learning for beginning teachers and veteran teachers who had experience teaching both online and seated students.

Research Questions

RQ1: What are the differences in the self-efficacy levels for student engagement in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

RQ2: What are the differences in the self-efficacy levels for instructional strategies in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

RQ3: What are the differences in the self-efficacy levels for classroom management in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

RQ4: What are the differences in the self-efficacy levels for use of technology in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

Null Hypotheses

$H_0$1: There is no significant difference between the self-efficacy levels for student engagement in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

$H_0$2: There is no significant difference between the self-efficacy levels for instructional strategies in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

$H_0$3: There is no significant difference between the self-efficacy levels in classroom management in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

$H_0$4: There is no significant difference between the self-efficacy levels for use of technology in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Each research question and related null hypothesis were examined through the analysis of quantitative ex post facto data using the SPSS statistics tool. The independent-samples *t* test was utilized to compare the Likert score means of beginning and veteran teachers. Cohen's *d* was calculated to determine the standardized difference between the means. Cohen's *d* can be cautiously interpreted using the effect size of 0.2 as a small effect size, 0.5 as a medium effect size, and 0.8 as a large effect size (Schäfer & Schwarz, 2019).

Descriptive Statistics

Samples

The researcher collected a sampling of teacher responses through a survey that was distributed to all Missouri secondary school administrators. A random purposive sampling was used to align with the purpose of the study, as well as improve the rigor and trustworthiness of the data obtained (Gay et al., 2009). In order to determine the population of teachers included in the sample, teachers were initially asked if they had experience in both face-to-face and virtual instruction. The researcher received 130 responses from the survey. Ten of the responses were dismissed due to not having both types of instructional experience. The survey information was downloaded to an Excel spreadsheet to sort and total the responses.

Demographics

The researcher used the publicly available Missouri School Directory from the DESE website to contact administrators and teachers throughout the state. Over 500 districts were contacted about disseminating the survey. Due to the anonymity of the survey, it is not clear how many different school districts are represented in this study. Of the responses, 92 were veteran teachers and 25 beginning teachers. There were 68 female respondents and 49 males with an average age of 44 years old. The majority of the participants, 78%, had fewer than 3 years of online teaching experience. Only 9% of the participants had more than 4 years of online teaching experience. Nearly 50% of the respondents of the survey have over 15 years of face-to-face teaching experience.

Data Analysis and Findings

The researcher surveyed secondary-level beginning and veteran teachers from the state of Missouri to examine efficacy levels for distance learning and instruction and address the four research questions. Once the number of survey responses exceeded 102, the data were downloaded, processed, and analyzed using the SPSS statistics tool. Microsoft Excel was utilized to filter, sort, and total the data.

The independent-samples *t* test was utilized to compare the means in self-efficacy levels of beginning and veteran teachers in the four areas of student engagement, instructional strategies, classroom management, and technology usage. The independent-samples *t* test assisted the researcher in testing the reliability of the data by determining the variance between scores for beginning and veteran teachers' self-efficacy for distance learning and instruction. There were several assumptions that needed to be met in order for results to be valid in SPSS statistics. Measurement of the dependent variable must occur on a continuous scale (i.e., Likert scale 1-9). The independent variables include two groups, beginning teachers with 1-4 years of experience and veteran teachers with 5 or more years of experience.

In this study, all survey respondents must have had experience in both face-to-face and virtual instruction. Within the results, there should have been no significant outlier and normal distribution of survey scores. Finally, a homogeneity of variances should have been present, meaning there should have been an equal spread of scores across the means. The researcher accepted the null hypotheses until evidence to reject, or fail to reject, the null hypotheses was found. The probability of finding a difference between groups, if a difference existed, was represented by a power of 0.8. A standard

alpha level of 0.5 means the researcher may reject the null hypothesis if the difference in means occurred in less than 5% of the population (Taber, 2017).

After running the independent samples *t* test for each of the research questions, the researcher reported the differences in the means of the independent variables, beginning and veteran teachers, based on their responses in the four areas: student engagement, instructional strategies, classroom management, and technology usage. Cohen's *d* was calculated to determine the standardized difference between the means. Interpretation of Cohen's *d* can be cautiously interpreted using the effect size of 0.2 as a small effect, 0.5 as a medium effect, and 0.8 as a large effect (Schäfer & Schwarz, 2019).

Data Cleaning

Several school districts declined to take part in the survey due to not utilizing an online platform in their schools. Respondents that did not have both face-to-face and virtual experience were removed from the study. Respondents 18, 30, and 60 were removed as outliers to the study.

The data from the TSEOT survey form were downloaded into an Excel spreadsheet, sorted, and manipulated, prior to loading to the SPSS software. The questions were matched up according to the scoring guide outlined in the TSEOT survey to find totals for each of the four variables: engagement, management, instructional, and technology. The data totals were then loaded to the SPSS software to generate mean scores, standard deviations, correlations, and inferential statistics.

Findings

The independent samples *t* test was used to analyze the data to answer the four research questions. There were 117 valid responses from teachers across the state of Missouri on their perceptions for self-efficacy in relation to distance learning. An independent samples *t* test was run to determine if there was a difference in beginning and veteran teachers' experiences with online learning and instruction in each of the four dependent variables: student engagement, classroom management, online instruction, and technology use.

Research Question 1

What are the differences in the self-efficacy levels for student engagement in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

Null Hypothesis 1

There is no significant difference between the self-efficacy levels for student engagement in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Table 1 presents the mean and standard deviation for the teachers' perception of self-efficacy levels of beginning and veteran teachers for student engagement in the distance learning environment.

Table 1

Teacher Self-Efficacy for Online Student Engagement

		N	M	SD	Standard Error Mean
Engagement	Beginning Teacher	25	41.6	12.3	2.5
	Veteran Teacher	92	40.9	10.7	1.1

The distance learning student engagement mean levels of self-efficacy for beginning teachers ($M = 41.6$, $SD = 12.3$) were slightly higher than veteran teachers ($M = 40.9$, $SD = 10.7$).

Levene's test for equality of variances tested the assumption that the variances in beginning and veteran teachers' perceptions for self-efficacy in the four areas of online learning and instruction were approximately equal. Levene's test with a significance greater than .05 indicated an equal variance within the groups was assumed and there was no statistical difference between the variances of the groups.

Table 2 presents an analysis of the data to answer RQ1 pertaining to student engagement. An independent samples *t* test was run to determine differences in beginning and veteran teachers with student engagement in the online learning environment.

Table 2

Independent Samples Test for Online Student Engagement

	t-test for Equality of Means							
			Significance				95% CI	
Engagement	*t*	*df*	One-sided *p*	Two-sided *p*	M Diff.	SD	LL	UL
	0.286	115.00	0.39	0.78	0.72	2.50	-4.24	5.67

Levene's test for equality of variances tested the assumption that the variances in self-efficacy scores for beginning and veteran teachers were approximately equal. Levene's test found the significance to be greater than .05, indicating little variance within the groups and no statistical difference in variance. The two-sided *p* difference for the two groups was .78, which was not statistically significant ($p > .05$). A small effect size existed with Cohen's $d = .065$ for teacher self-efficacy and student engagement.

Research Question 2

There is no significant difference between the self-efficacy levels for classroom management in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Null Hypothesis 2

There is no significant difference between the self-efficacy levels for classroom management in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Table 3 presents the mean and standard deviation for teachers' perception of self-efficacy levels of beginning and veteran teachers for student management in the distance learning environment.

Table 3

Teacher Self-Efficacy for Online Student Management

		N	M	SD	Standard Error Mean
Management	Beginning Teacher	25	45	10.6	2.1
	Veteran Teacher	92	47.4	10.6	1.1

The distance learning student management mean levels of self-efficacy for beginning teachers ($M = 45$, $SD = 10.6$) were slightly lower than veteran teachers ($M = 47.4$, SD 10.6).

Table 4

Independent Samples Test for Online Student Management

	t-test for Equality of Means							
			Significance				95% CI	
Management	*t*	*df*	One-Sided *p*	Two-Sided *p*	M Diff.	Std. Err Diff.	LL	UL
	-1.00	115.00	0.16	0.32	-2.39	2.40	-7.15	2.36

Levene's test for equality of variances in student management found the significance to be greater than .05, indicating little variance within the groups and no statistical difference in variance for beginning and veteran teachers' self-efficacy for student management in the virtual setting. The two-sided *p* difference for the two groups was .32,

which was not statistically significant ($p > .05$). A small effect size existed with Cohen's $d = -.225$ for teacher self-efficacy and student management.

Research Question 3

There is no significant difference between the self-efficacy levels for instructional strategies in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Null Hypothesis 3

There is no significant difference between the self-efficacy levels for instructional strategies in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Table 5 presents the mean and standard deviation for the teachers' perception of self-efficacy levels of beginning and veteran teachers for online instructional strategies in the distance learning environment.

Table 5

Teacher Self-Efficacy for Online Instructional Strategies

		N	Mean	SD	Standard Error Mean
Instructional	Beginning Teacher	25	47.9	11.6	2.3
	Veteran Teacher	92	49.7	10.9	1.1

The distance learning online instructional mean levels of self-efficacy for beginning teachers ($M = 47.9$, $SD = 11.6$) were slightly lower than veteran teachers ($M = 49.7$, SD 10.9).

Table 6

Independent Samples Test for Online Instructional Strategies

	t-test for Equality of Means							
			Significance				95% CI	
Instructional	*t*	*df*	One-Sided *p*	Two-Sided *p*	Mean Diff.	Std. Err. Diff.	LL	UL
	-0.69	115.00	0.24	0.49	-1.72	2.48	-6.64	3.19

Levene's test for equality of variances in online instructional strategies found the significance to be greater than .05, indicating little variance within the groups and no statistical difference in variance for beginning and veteran teachers' self-efficacy for instructional strategies in the virtual setting. The two-sided *p* difference for the two groups was .49, which was not statistically significant ($p > .05$). A small effect size existed with Cohen's $d = -.157$ for teacher self-efficacy and instructional strategies.

Research Question 4

There is no significant difference between the self-efficacy levels for technology usage in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Null Hypothesis 4

There is no significant difference between the self-efficacy levels for technology usage in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Table 7 presents the mean and standard deviation for the teachers' perception of self-efficacy levels of beginning and veteran teachers for technology use in the distance learning environment.

Table 7

Teacher Self-Efficacy for Technology Use

		N	Mean	SD	Standard Error Mean
Technology	Beginning Teacher	25	53.2	10.2	2
	Veteran Teacher	92	53.5	11	1.1

The distance learning technology usage mean levels of self-efficacy for beginning teachers ($M = 53.2$, $SD = 10.2$) were slightly lower than veteran teachers ($M = 53.5$, SD 11).

Table 8

Independent Samples Test for Technology Use

	t-test for Equality of Means							
			Significance				95% CI	
Technology	*t*	*df*	One-Sided *p*	Two-Sided *p*	Mean Diff.	Std. Err. Diff.	LL	UL
	-0.12	115.00	0.45	0.91	-0.28	2.44	-5.12	4.56

Levene's test for equality of variances in teacher technology use found the significance to be greater than .05, indicating little variance within the groups and no statistical difference in variance for beginning and veteran teachers' self-efficacy for technology use in the virtual setting. The two-sided *p* difference for the two groups was .91, which

was not statistically significant ($p > .05$). A small effect size existed with Cohen's $d = -.026$ for teacher self-efficacy for technology usage.

Summary

The statistical analysis and findings of this study explored the differences in beginning and veteran teachers' self-efficacy perceptions for teaching and learning in the online environment. The four research questions were explored and the data collected. After the data were collected and examined, all four null hypotheses failed to be rejected. There appeared to be no statistical significance between beginning and veteran teachers' self-efficacy perceptions for virtual teaching.

This chapter included the sampling, demographics, data cleaning, research questions, null hypotheses, data analysis, and findings and results. Comparisons were based on the information collected in the survey data and analysis. Chapter Five presents a summary of the causal-comparative study. It discusses the alignment to review of literature from Chapter Two, conclusions to the study, and recommendations for future exploration of this topic.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Chapter Four covered the results and findings of this causal-comparative quantitative study. The survey results determined there was not a significant statistical difference between beginning and veteran teachers for virtual instruction and learning. In Chapter Five, the researcher further discusses the results of the study by evaluating, interpreting, and analyzing the data and methods used to collect the data. Additionally, the researcher includes a summary of the findings, within the chapter, to answer the four research questions posed in Chapter One. Next, the researcher will provide an in-depth discussion into the findings and how they align with the hypotheses. The conclusion of the chapter is a discussion on the implications of this study to the current body of literature and recommendations for future research on this topic.

Purpose of the Study

The purpose of this quantitative study was to examine Missouri secondary teachers' self-efficacy levels and preparation to instruct in the distance learning environment. Previous studies have examined distance learning from the collegiate level, where it has gained significant popularity in the past 20 years (Poyo, 2016; Saba et al., 2017; Vang, 2018). Even though it may be commonplace to take online college courses, it is still not the preferred method of delivery for college students. College students have noted technical issues, lack of communication, and poorly designed courses as factors that increase stress and anxiety for them (Altuncekic, 2022; Gosselin et al., 2016). Poyo (2016) noted, because online learning is not as widely used in the K-12 environment,

there is a lack of research examining the methods, training, preparation, and instructional practices needed to deliver digital content. In many cases, high-quality teachers, at all levels of education, are placed into online instruction roles with little training and professional development. Both national and state education departments lack certification requirements and teaching standards for teachers instructing in the online environment (Missouri DESE, 2022a; Poyo, 2016). In this study, the researcher examined secondary teachers' perceptions of their training, preparation, and self-efficacy to teach students virtually.

Studies by Hampton et al. (2020), Horvitz et al. (2015), Kul et al. (2019), Naz et al. (2021), Ogodo et al. (2021), and Thornton et al. (2020) examined the importance of self-efficacy levels of teachers and the influence it has on student learning. These studies all pointed towards finding ways to raise teachers' self-efficacy levels to positively influence change in education and instruction for student engagement. Bandura (2002) noted employees that show a high level of learning efficacy are more satisfied with their work, perform better, and are committed to change. People with high levels of self-efficacy, when faced with negative circumstances or situations, are more likely to make efforts to change their work environment and persist in their work (Bandura, 1997; Hampton et al., 2020; Horvitz et al., 2015; Thornton et al., 2020). Due to the increased use of online learning over the past 20 years, and the move to virtual instruction due to the pandemic, the researcher sought to determine if secondary teachers' perceptions of their self-efficacy to teach virtually has improved in recent years. By viewing it from the beginning and veteran perspectives, the study sought to determine if preparation to teach virtually had improved with newer teachers versus veteran. The study also sought to

determine if veteran face-to-face experience and years of professional development carried over to an online platform. This research study used the TSEOT survey tool to examine the self-efficacy levels between beginning and veteran teachers in the areas of instructional methods, engagement, management, and technology use.

Research Questions

RQ1: What are the differences in the self-efficacy levels for student engagement in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

RQ2: What are the differences in the self-efficacy levels for instructional strategies in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

RQ3: What are the differences in the self-efficacy levels for classroom management in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

RQ4: What are the differences in the self-efficacy levels for use of technology in the distance learning environment for beginning teachers versus veteran teachers who have experience teaching both online and seated students?

Null Hypotheses

$H_0$1: There is no significant difference between the self-efficacy levels for student engagement in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

$H_0$2: There is no significant difference between the self-efficacy levels for instructional strategies in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

$H_0$3: There is no significant difference between the self-efficacy levels in classroom management in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

$H_0$4: There is no significant difference between the self-efficacy levels for use of technology in distance learning for beginning teachers and veteran teachers who have experience teaching both online and seated students.

Limitations

This study had a number of limitations. The researcher set a goal of at least 102 respondents to the survey. There were 130 participants to the survey within 10 days of contacting administrators. Some administrators acknowledged receiving the request and notified they had distributed it to their secondary staff. There were some emails returned from the initial contacts, based on inaccurate contact information in the DESE database. Those schools were further researched and individually contacted with updated contact information from their school's website. Some administrators responded and did not disseminate the survey because their district did not utilize online learning. The amount of experience with virtual teaching varied due to the expectations of the district, whether the district continued to offer online options, post pandemic shutdown procedures, and the professional development and training teachers received based on individual district's needs.

Delimitations

The study focused on secondary teachers to keep responses more consistent. In Missouri, the majority of online learning took place at the secondary level. The study also focused on beginning teachers with 0-4 years of experience and veteran teachers with 5 or more years of experience. It was framed from those two perspectives to determine if experience in face-to-face instruction by veteran teachers transferred to online teaching or if recent trainings and expectations of beginning teachers would influence their self-efficacy. Limiting the study to these areas allowed the researcher to focus on a smaller, more precise sample of teachers to make comparisons. The amount of training in the preservice teaching programs, as well as the professional development provided for teachers, would also influence the varied answers provided in the survey. The findings of the survey, though limited to Missouri, could generally apply to other states and the effectiveness of teachers' preparedness for virtual instruction.

Summary of Findings

The research was examined from the perspectives of two independent variables: beginning and veteran teachers. For each of those independent variables, the self-efficacy for virtual teaching was measured in the areas of instructional strategies, student engagement, classroom management, and use of technology. These four areas were the focus for the TSEOT survey tool used in this study.

In mid-October, emails were sent out to Missouri school administrators requesting permission to contact their staff or inviting administrators to share the survey with their secondary staff. Once the 102 minimum threshold was exceeded, data were processed and analyzed using the SPSS software on the 117 valid responses. There were three

outliers and 10 respondents without virtual experience, in the original 130 responses, that were omitted from the data analysis.

Independent sample *t* tests were used to analyze data, aligned to the research questions, to compare differences in the means of beginning and veteran teachers' self-efficacy levels for virtual instruction. The first test showed the perception of student engagement levels was minimally higher for beginning teachers ($M = 41.6$, $SD = 12.29$) than veteran teachers ($M = 40.92$, $SD = 10.75$), a minimal difference of $M = .69$, 95% CI [-4.24, 5.67], $t(115) = .28$, $p = .775$. Effect size was calculated to determine the strength of the relationship between the variables. Cohen (1988) categorized effect size as < 0.2, very small; 0.2, small; 0.5, medium; and 0.8, large. Effect size for the difference in beginning and veteran teachers for student engagement was small at $d = .065$. Therefore, the null hypothesis for Research Question 1 ($H_0 1$) failed to be rejected. Data indicated there was not a statistically significant difference in beginning and veteran teachers' self-efficacy perceptions of virtual instruction and student engagement.

The second hypothesis tested showed the perception of teachers' classroom management levels was minimally higher for veteran teachers ($M = 47.4$, $SD = 10.65$) than beginning teachers ($M = 45$, $SD = 10.61$), a minimal difference of $M = .45$, 95% CI [-7.24, 2.45], $t(115) = -1.0$, $p = .323$. Cohen's *d* effect size for the difference in beginning and veteran teachers for classroom management was small at $d = -.225$. Therefore, the null hypothesis for Research Question 2 ($H_0 2$) failed to be rejected. Data indicated there was not a statistically significant difference in beginning and veteran teachers' self-efficacy perceptions of classroom management in virtual instruction.

The third hypothesis tested showed the perception of teachers' instructional strategies levels was minimally higher for veteran teachers (M = 49.68, SD = 10.85) than beginning teachers (M = 47.96, SD = 11.55), a minimal difference of M = 1.72, 95% CI [-6.94, 3.49], $t(115) = -.67$, $p = .507$. Cohen's d effect size for the difference in beginning and veteran teachers for classroom management was small at $d = -.157$. Therefore, the null hypothesis for Research Question 3 (H_03) failed to be rejected. Data indicated there was not a statistically significant difference in beginning and veteran teachers' self-efficacy perceptions of instructional strategies in virtual instruction.

The fourth hypothesis tested showed the perception of teachers' technology usage levels was minimally higher for veteran teachers (M = 53.52, SD = 10.99), than beginning teachers (M = 53.24, SD = 10.21), a minimal statistical difference of M = .28, 95% CI [-5.01, 4.45], $t(115) = -.12$, $p = .91$. Cohen's d effect size for the difference in beginning and veteran teachers for classroom management was small at $d = -.026$. Therefore, the null hypothesis for Research Question 4 (H_04) failed to be rejected. Data indicated there was not a statistically significant difference in beginning and veteran teachers' self-efficacy perceptions of technology usage in virtual instruction.

This study showed no statistical significance in the self-efficacy of beginning and veteran teachers in all four areas examined. Although the researcher anticipated there would be a difference in these two demographics, it can also be viewed a few different ways. There was also a section of background questions included in the TSEOT survey tool. The background questions also provided insight for this study.

The background questions in this study gathered information about the participants' teaching experiences, teacher training, and preparation for virtual teaching,

as noted in Table 9. According to survey responses, prior to the pandemic, 40% of the respondents never or rarely used a learning management system (LMS) and 30% used it often or regularly. After the pandemic, 17% still never or rarely use an LMS and 66.4% of respondents often or regularly now use an LMS. In response to the question pertaining to preparation and training for using the LMS, the respondents' reported 27.5% never or rarely felt the training and PD they received for teaching online was effective. Participants also indicated that 33% found their training was often or regularly adequate. Teachers in this study appeared to find collaboration with other teachers to be the most effective learning technique for online teaching, with 62.5% often or regularly collaborating to learn new technology and virtual skills and techniques.

Although a large percentage of teachers are now using an LMS on a regular basis, the percentage of teachers that felt adequately prepared to teach online did not correspond. There was 66.4% of the respondents using an LMS on at least a regular basis, yet only 33% of the respondents found their training for virtual instruction to be adequate. Colleagues also relied much more on each other for gaining skills and knowledge than the professional development being offered. Table 9 represents a summary of the background information on teachers' perceptions of their preparation for distance learning and use of a learning management tool.

Table 9

Perception of the Preparation for Online Instruction at District Level

	LMS before pandemic	LMS now	PD for DL adequate	Consults with colleagues for tech/PD
Never	33.3%	5.0%	10.8%	7.5%
Rarely	15.0%	12.6%	16.7%	8.3%
Sometimes	21.7%	16.0%	39.2%	21.7%
Often	13.3%	11.8%	20.8%	32.5%
Regularly	16.7%	54.6%	12.5%	30.0%

Preservice preparation and continuing education are important parts of the teacher preparation process. A long history of research points to self-efficacy as a known predictor of behavior, and more recently as a predictor of teachers' technology integration (Bandura, 1997, 2002). Teachers with higher technology self-efficacy beliefs have confidence in their abilities to effectively use technology in their classroom (Gilakjani, 2013). A series of background questions in the survey pertained to preservice education and the training received for technology use and online instruction. Table 10 reports the average rating score (on a 5-point scale) for the top five attended colleges in the state of Missouri for educators. These are based on teachers' perceptions of their preservice preparation for online instruction and technology use. Southeast Missouri had the highest rating for coursework that prepares teachers with adequate technology skills. Drury and Missouri State rated highest for coursework and training for preparing teacher for online instruction, yet the average still only fell between rarely and sometimes. If teachers expected to rely heavily on technology use in their face-to-face and online classrooms, more emphasis of these skills should be put on the teachers' preparation.

Table 10 reflects teachers' perceptions of the preservice coursework preparation they received from the top 5 attended universities by participants in this study.

Table 10

Perceptions of the University Preparation for Using Technology and Online Instruction

Top 5 attended universities	Coursework offerings for tech skills	Coursework/training for online instruction and learning
Missouri University	2.13	2.04
Southeast Missouri State	3.40	2.42
Drury University	3.13	2.75
Central Missouri State	2.90	2.00
Missouri State	3.03	2.75
Overall Average Score	2.90	2.06

Scores were based on 5-point Likert scale: 1 = *Never,* 2 = *Rarely,* 3 = *Sometimes,* 4 = *Often,* 5 = *Regularly*.

Discussion of Findings

When reviewing the results of this survey, to determine the differences in beginning and veteran teachers for online instruction, no statistically significant differences were noted in all four areas, and the null hypotheses were rejected in all four variable areas. The effect size in each of the four dependent variable categories was small. The small sizes ranged from -.225 to .065, indicating there was no statistical significance between the two independent variables. While no statistically significant differences were noted, one angle to consider is that it may indicate there have been minimal alterations or improvements in the preparation process for beginning or veteran teachers to generate a difference in the self-efficacy levels of the participants. If the teacher perceptions of student engagement, classroom management, instructional

strategies, and technology use have no statistical significance, then beginning and veteran teachers are reporting very similar self-perceptions of their trainings and preparation for online learning. Mishra and Koehler (2006) emphasized the need for teachers to be equipped with the technological, pedagogical, and content knowledge before ever entering into the distance education realm. The mean scores in this study were average to below average, leading the researcher to believe teachers' self-efficacy perceptions are likely leaving them with a feeling of incompetence and lack of preparation. A person's self-efficacy belief determines how long they will stick with a difficult situation or problem and how long they will put forth the effort to manage the problem (Naz et al., 2021; Scherer et al., 2021.

Based on the background information provided in the survey, there are a large number of teachers currently using an LMS in their classrooms. The expectation by districts to use a virtual platform in the classrooms is apparent, going from 48% never or rarely used one to 66% often or regularly use one now. Yet the responses by teachers of their experience of the PD to prepare for that was much lower at 33%, often or regularly felt PD was provided. In a study by Champa et al. (2020), 70% of the participants had no experience teaching online prior to the pandemic. This was compared to 14% of the participants having one year or more of experience. A study by Martin et al. (2019) looked at faculty members with varied levels of experience and how they rated their efficacy in a number of areas. Faculty members with 0-5 years of online experience teaching and minimal virtual education training rated their abilities lower in nearly all areas examined: course design, communication, technical competence and student management. Martin et al. recommended new faculty members be provided additional

coursework and PD prior to teaching online, as well as vicarious experiences through observation or taking a course as a student with a master-level teacher.

Teachers in this study perceived their training and preparation in the preservice process to be below average. The teachers' perceptions for the preparation for online instruction were exceptionally low with ratings falling between *rarely* (2) and *sometimes* (3). Martin et al. (2019) noted faculty with no formal training for online teaching had lower perceptions of their ability to teach online and relied primarily on their face-to-face experiences. Champa et al. (2020) found student engagement to be the greatest challenge for online instruction, aligning with responses from this study.

Bandura (2002) recognized the need for teachers to have high levels of self-efficacy to emulate the skills needed for the 21st-century student learners in all types of classrooms. Bandura (1997) also found the effective use of mastery teaching, social modeling, and verbal persuasion to have a significant positive correlation to a teacher's self-efficacy. Based on Bandura's theories, teachers need to be trained, witness, and put into practice these three experiences to raise teaching self-efficacy levels. The mean scores for both beginning and veteran teachers, their perception of their self-efficacy for student engagement, classroom management, and instructional strategies ranged from 5.1 to 5.9, which fell in the *some* Likert score category, in general terms that would be average to just slightly above average. This was based on a 9-point Likert scale. The use of technology averaged considerably higher as a 6.6, which fell in the *quite a bit* Likert score range. Teachers in this study found their self-efficacy for technology use to be the highest category of the four areas. Mean scores between 5.1 and 6.6 on a 9-point scale yet would not be considered a high level of efficacy under Bandura's theories.

This study aligned closely with a study out of Canada from Dolighan and Owen (2021) that utilized the same evaluation tool. Their study was conducted postpandemic to determine "how specific variables, teaching experience, professional development experience, and teaching supports correlate with the self-efficacy perceptions of teachers transitioning to online teaching" (Dolighan & Owen, 2021, p.95). They examined teachers' self-efficacy from a variety of categories: male and female participants, age, degrees, years of teaching online, and years of teaching face-to-face. This study's results were very similar to Dolighan and Owen's, even 3 years later. The mean scores for student engagement and classroom management gleaned similar results with the lowest $M = 4.73$ and $M = 5.35$ respectively. Their highest mean score was also in technology use, $M = 6.23$. Their study also determined no significant statistical difference in all four categories measured. Based on the research for this study, these results align with the information about lack of preparation for distance learning instruction. Studies from Champa et al. (2020), Howard et al. (2021), Martin et al. (2019), and Scherer et al. (2021) all cited lack of preparedness leading to lower levels of self-efficacy for virtual instruction.

The Dolighan and Owen (2021) study did cross-reference several other categories, using the background information gathered, to find a correlation between teachers that received professional development and college coursework specific to online teaching strategies. Those respondents reported higher teacher self-efficacy for online teaching. They also found teachers that were using an LMS for face-to-face instruction, prior to the pandemic, reported a significantly higher level of online teaching efficacy. Studies from Archambault et al. (2016), Champa et al. (2020), and Clark and

Newberry (2019) drew similar conclusions to Dolighan and Owen, advocating for teacher preservice preparation and ongoing professional development are needed to support the growing demand for distance learning. The Dolighan and Owen study took place as the education world was attempting to recover from the pandemic. The purpose of their study was to "measure and understand teacher efficacy in the early stages of transitioning from face-to-face to fully online environments" (Dolighan & Owen, 2021, p.101). They hypothesized that prior experience and PD would improve the teacher's self-efficacy. They also proposed prior use and training on an LMS and support from the district would also improve self-efficacy. Both cases proved to be true in their study. Participants that had previous training for distance learning and districts that provided PD and ongoing support all reported higher self-efficacy.

In the background section of this study's survey, participants rated their experience with preparation for virtual instruction. On the preservice questions, 43% of the respondents reported their preservice preparation "never" or "rarely" provided them with the technology skills they were required to use on the job (Table 9). Sixty-seven percent also noted their preservice coursework "never" or "rarely" included any specific training or classes for online instructing. Webb et al.'s (2021) study found only 24% of the participants had received specific training and coursework for virtual instruction in their preservice coursework, meaning 66% did not or received very little. That percentage aligns closely to the 67% of respondents in this survey that lacked adequate training for virtual instruction.

The researcher analyzed the data from the survey's background questions and categorized responses based on the years of experience categories participants selected.

Table 11 has a breakdown of the data collected. Although not significant changes, in the categories of university technology training and coursework provided, there are slight gains, in the participants' perception of preparation, being made from veteran to beginning teachers. Beginning teachers viewed their coursework and PD to be minimally higher than that of veteran teachers. As expected, teachers with 20+ years of experience had the lowest mean for university coursework and technical skills preparation. The growth in the usage of distance education has steadily grown over the past 20 years. The preparation for teachers in the 20+ category would be expected to look much different than preservice preparation now. Newer teachers are relying more heavily on veteran teachers in the category of collaboration, with a mean score of 4.10 on a 5-point scale. Sailer et al. (2021) took a closer look at teacher digital skills and teacher technology-related teaching skills to show a difference in technology usage and technology integration. They determined that some teachers were much more skilled in making technology usage an active skill versus a passive activity. Adopting new technologies, possessing necessary skills, and having the confidence to use those skills are all necessary pieces for building teachers' self-efficacy (Bandura, 1997). Table 11 presents some of the background data broken down by years of experience.

Table 11

Mean Scores for Background Data by Years of Experience

	Univ. tech provided	Univ. coursework provided	LMS prior	LMS now	PD offered	Collaboration
20+	2.90	2.06	2.74	4.02	3.01	3.61
16-20	2.61	1.86	2.67	4.38	3.14	3.52
11-15	3.14	2.30	3.18	4.09	2.95	3.77
5-10	3.03	2.26	3.00	3.80	3.14	3.52
1-4	3.00	2.86	2.25	3.80	3.40	4.10

When formulating the idea behind this research study, the researcher expected to see major changes of the preservice preparation process in recent years. Based on the responses, very little has changed in technology expectations for higher education. And although coursework has improved some, there should be a more significant jump in perceptions for teachers in the 1-to-4-year experience, since the majority of these teachers would be postpandemic graduates. It was also expected there would be a notable difference in the level of professional development practices being implemented over recent years for virtual instruction. Therefore, finding no statistical significance between beginning and veteran teachers in all four dependent variable areas was unexpected. The researcher did not predict the respondents would report technology usage to be the highest mean category: 53.2 for beginning teachers and 53.5 for veteran. These would equate to 6.65 and 6.68 on a Likert scale, falling in the “quite a bit” category and the only area that scored above average responses.

Implications

The findings for this study were inconclusive for determining a statistical significance in the self-efficacy levels of beginning and veteran teachers for virtual instruction. While the researcher did not find a statistically significant difference between the two variables, that led the researcher to believe the two variables have very similar experiences and preparation for online learning. Bandura (1997) found the importance of observing another teacher with mastery experience to significantly improve the confidence and efficacy of the observer. If the preservice preparation, modeling, and professional development has not changed, it will be difficult to improve self-efficacy for teachers for distance instruction. Tschannen-Moran et al. (1998) noted more experience provides a greater sense of confidence and capability in one's self. Preservice and veteran teachers need to be witnessing and experiencing adequate training and modeling of virtual teaching. Based on the results of this study, teachers do not perceive they are experiencing those things.

The participants' mean scores were lowest in the areas of classroom management and student engagement. The instructional strategies were slightly higher and technology usage had the highest mean average. Although all four areas are influenced by the teacher, the first two, classroom management and student engagement, are very dependent on student responses and interactions. Teachers determined these two areas to be their lowest self-efficacy scores. In the area of technology usage, teachers had considerably higher mean scores that fell between 6 and 7 on the Likert scale, indicating *quite a bit* of self-efficacy for use of technology. In the background section of the survey, the answers to the professional development and training for online learning did not

necessarily match this higher mean score for technology usage. Although, 62.5% of responding teachers did indicate they relied on colleagues and collaboration for learning new technology skills. This aligns more with Bandura's (1997) social modeling approach where teachers develop an understanding and efficacy of a task by observing and working with other teachers. Bandura did not find social modeling to be the most influential form of the teaching experience, though it appears to have the most influence in this case.

The U.S. Department of Education Office of Educational Technology (OET) attempted to compile a set of standards to clarify technical proficiencies for teachers. The competencies were intended to provide K-12 institutions with guidelines on the part of the learner, teacher, leader, and infrastructure. The OET did not follow through with the plans for this program and they have not been updated since 2017 (Office of Educational Technology, n.d.). This may be the best place to start considering the development of standards and training for distance education. Providing states with a standard of expectations for distance education, training for preservice teachers, and professional development opportunities for continued education would help level the differences between seated and virtual education.

Because no statistical significance was found between beginning and veteran teachers for virtual instruction, it leads the researcher to believe there has been little change in the preparation process and PD for Missouri secondary teachers doing virtual instruction. This study aligned very closely with the study by Dolighan and Owen (2021) conducted nearly 3 years ago. The researcher believed there would at least be some notable changes made over the past few years to see some significant differences. The

pandemic has made the education world think about the practices and delivery of distance learning. Therefore, there should be some significant improvements being made in the area of preservice teaching. In the area of professional development for teaching online, there may not be as much difference if everyone was receiving PD for virtual instruction. Yet the results of this survey yielded average to below average ratings in 3 of the 4 categories, with the exception of technology use, slightly above average. District administrators and university teacher preparation programs should take notice of this lack of confidence in this area of instruction.

In the state of Missouri alone, the number of participants in online education has increased by over 300% in the past 3 years. Fully virtual students in Missouri have gone from 1,073 students to 3,791 full-time students. Students taking one or more online courses increased from 4,912 in 2019-2020 to 26,140 in 2021-2022 (Missouri DESE, 2022b). This is much higher than the industry average of 6% growth in virtual learning over the past 20 years (Digital Learning Collaborative, 2020). In the researcher's own small, rural school district, enrollment increased from eight full-time students in 2020-2021 to 35 full-time students by the spring semester 2023. This increase in enrollment should spark some urgency from district leaders and educational institutions to ensure the instruction and preparation meet the demand.

The pandemic has changed the educational landscape; families are expecting some flexibility and options in their child's curriculum and alternatives to traditional classrooms (Cadamuro et al., 2021; Champa et al., 2020; Machusky & Herbert-Berger, 2022). There has been very little change in the number of universities reporting a component of online education in their teacher preparation programs. It is important that

teachers are not only properly prepared with online technology and pedagogical skills, it is also the state's responsibility to ensure prospective teachers have 21st-century experiences for both face-to-face and online learning environments (Champa et al., 2020).

Recommendations for Future Research

This quantitative causal-comparative study sought to find a difference in beginning and veteran teachers' perspectives on their self-efficacy for virtual instruction. Although no statistical significance was found, this information may still be of value to administrators and higher education institutions. If beginning and veteran teachers are responding with similar experiences and self-efficacy perceptions, it is possible the preparation for teachers has not changed in recent years, despite increased use of virtual learning at the secondary level. This information could help recognize a need for additional professional development, continual support and education for virtual teachers, and more specific preparation for preservice teachers for instructing virtually. To continue and improve the research in this area, the researcher recommends the following:

1. Conduct this study using a qualitative method to receive more specific feedback in the four areas: classroom management, student engagement, instructional strategies, and technology use. This would also allow the researcher to identify patterns of recurring issues or positive factors with virtual teaching.
2. Replicate this study comparing teachers' perceptions of self-efficacy for face-to-face instruction versus virtual instruction.

3. Conduct a longitudinal study that measures teacher perceptions of self-efficacy for virtual teaching after a professional development series of workshops or training specific to online instruction and management.
4. Conduct a study from the students' perspective of their experience with virtual education versus seated classes.
5. Conduct a longitudinal study of preservice teachers' preparation for online instruction using some the highest attended university education programs in the state of Missouri.

Conclusion

Developing distance education to be an adequate and comparable experience to traditional face-to-face learning has been an ongoing process, for students at all levels. Recognizing the difference in the delivery and management of distance instruction is also a concern for school districts and university preparation programs. Teachers need to be confident in their skills, knowledge, management, and perception of themselves as efficacious instructors for virtual instruction.

The purpose of this causal-comparative study was to evaluate secondary beginning and veteran teachers in Missouri to determine their perception of their self-efficacy for virtual instruction. The majority of the research on this topic has been centered around higher education. The researcher recognized a need to examine this topic from a secondary level, based on significant increase in the use of distance learning in recent years. This study utilized the Dolighan and Owen (2021) TSEOT survey tool. The researcher used a *t*-sample test to evaluate the perceptual differences in participants' self-efficacy. The goal of this study was to increase the body of research regarding distance

education and teachers' perception of their preparation to teach virtually. Despite the survey only focusing on secondary teachers in the state of Missouri, much of the data presented here could reflect teacher perceptions across the nation. Although no statistical significance was found between beginning and veteran teachers, there is still valuable insight to be learned from this study.

The findings from the survey represent secondary teachers' perceptions of their self-efficacy for virtual instruction. The option for students to transition to distance education at a secondary level has become commonplace. It is important we figure out how to make virtual learning a viable and academically equitable option for students. Ogodo et al. (2021) noted that good face-to-face teachers do not necessarily equate to good virtual teachers.

Overall, the results of the data in this study were found to be not statistically significant. Although this was not the desired result of the study, there are still observations to be recognized. Bandura (1997) found mastery experience, verbal persuasion, social modeling, and improving physical and emotional states to be important factors for influencing a teacher's self-efficacy. Even highly skilled teachers, when faced with feelings of incompetence, will perform below their ability if they lack the supports and skills needed to teach effectively (Bandura, 1997). Based on teachers' responses, from the background section of the survey, university preparation programs are not meeting the needs of preservice teachers for online instruction. The Dolighan and Owen (2021) study is a good reference of comparison to see the lack of change that has occurred in the past 3 years. The mean scores in student engagement, classroom

management, instructional strategies, and technology usage, all aligned very closely to this study, despite that the survey took place in Canada nearly 3 years ago.

The respondents in this study expressed a lack of support and continued professional development for supporting online teachers. Both beginning and veteran teachers found their self-efficacy perceptions were below average in the areas of classroom management and student engagement. These responses lead the researcher to believe the opportunities to witness mastery experience or receive verbal feedback from a veteran teacher or administrator are lacking for virtual instruction. The lack of statistical significance between beginning and veteran teachers leads the researcher to believe there has been little improvement in the preservice training and teacher preparation for distance learning. Thus, this indicates both beginning and veteran teachers have very similar training and professional development for virtual instruction.

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APPENDIX A

SURVEY TOOL EMAIL CORRESPONDENCE

From: Kathyrn Taylor <kathyrn.Taylor@mjays.us>
Sent: Thursday, February 17, 2022 9:41 PM
To: Tim Dolighan <tim.dolighan@brocku.ca>
Subject: Survey tool

Hello - I recently reviewed your journal article Teacher Efficacy for Online Teaching During the COVID-19 Pandemic and you stated you altered the MNESEOT survey tool. My dissertation topic is very similar to your journal information and I am looking for a survey tool. Most self-efficacy tools for technology use are very dated or don't fit the need I have. I was wondering if your survey questions were publicly posted or if you would be willing to share?

Thank you!

Kathyrn Taylor
Library Media Specialist, Yearbook Adviser, JH Softball Coach
Marshfield Jr. High, Marshfield, MO

Kathyrn Taylor

From: Tim Dolighan <td17fe@brocku.ca>
Date: February 18, 2022 at 9:04:49 AM CST
To: Kathyrn Taylor <kathyrn.Taylor@mjays.us>
Subject: Re: Survey tool

Hi Katherine
Thanks for your interest. I did modify the online survey to meet the needs of secondary teachers. I am happy to share them with you. I used this particular survey because it was designed for k-12 teachers originally and would be a familiar structure for teachers transitioning to online teaching during the pandemic. Please let me know if you have any questions.
Tim Dolighan

APPENDIX B

TEACHERS SENSE OF EFFICACY FOR ONLINE TEACHING SURVEY

The survey will take approximately 8 minutes to complete.

Directions: You are invited to participate in this study because you are a Missouri Secondary Teacher with experience teaching virtually. As secondary education continues to adapt and develop online teaching environments, you are invited to participate in a study to examine teacher self-efficacy with online teaching and use of technology. This survey is designed to help us gain a better understanding of the current self-perceptions educators hold regarding their abilities to successfully teach in online environments. Perceptions are sought from educators with minimal online teaching experience, to educators with extensive online teaching experience. Your answers are confidential.

Adult Consent to Participate:
The purpose of this study is to learn more about teachers adjusting to online instruction. This survey is based on a highly reliable survey instrument that has been given to other teachers and teaching professionals in different settings for over twenty years. If you would like to see the results of the survey, email me at kataylor@lcr1.org and I would be happy to share the results.

As a participant in the study, you will be asked questions about your education, teaching background, and online teaching experience. You will be asked questions about how satisfied you are with your preparation for teaching online. The survey also includes a few other demographic items. It will take approximately 8 minutes and will be completed using a Google Form.

Data obtained from your responses to this survey will remain anonymous. The results of this research study may be used in reports, presentations, and publications, but the researcher will not identify you. Your answers to the questions in this survey will not be connected to you in any way. At the completion of the survey, you will be provided an opportunity to submit some information for a drawing for a chance to win one of four $25 Amazon gift cards. There will not be any attempt to contact you through that information unless you are drawn for a gift card.

1. By clicking “I Agree’ you confirm that you are 18 years or older, understand the content of this form and agree to participate in this study.

____ Yes, I agree.

____ No thank you, I do not have an interest in participating.

____ I do not have experience in teaching online.

Section 1

Questions 2-33 are concerned with understanding how educators judge their current capabilities for teaching online courses. Even if you have little or no experience with online teaching, please try to answer each question. A helpful prefix to each answer is, "I can do...."

2. How much can you do to help your students think critically in an online class?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

3. How much can you do to get through to disengaged students in an online class? (e.g., passive learners who might lurk online but fail to actively contribute to their own learning.)

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

4. How much can you do to control disruptive behavior (e.g., disrespectful posting or failure to adhere to outline policies for posting) in an online environment? Nothing Very Little Some

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

5. How much can you do to motivate students who show low interest in online work?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

6. To what extent can you make your expectations clear about student behavior in an online class?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

7. How much can you do to get students to believe that they can do well in an online class?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

8. How well can you respond to difficult questions from online students?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

9. How well can you establish routines (e.g., facilitate or moderate student participation) in coursework to keep online activities running smoothly?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

10. How much can you do to help online students value learning?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

11. How much can you gauge student comprehension of what you have taught in an online course?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

12. How well can you craft questions or assignments that require students to think by relating ideas to previous knowledge and experience?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

13. How much can you do to foster individual student creativity in an online course?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

14. How much can you do to get students to follow the established rules for assignments and deadlines during an online class?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

15. How much can you do to improve the understanding of a student who is falling behind in an online class?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

16. How much can you do to control students dominating online discussions?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

17. How well can you establish an online course (e.g., convey expectations; standards; course rules) with each group of students?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

18. How much can you do to adjust your online lessons for different learning styles?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

19. How much can you do to use a variety of assessment strategies for an online course?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

20. How well can you develop an online course environment that facilitates student self-regulation for online learning?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

21. To what extent can you provide an alternative explanation or example when students in an online class seem to be confused?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

22. How well can you respond to defiant students in an online setting?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

23. How well can you structure an online class that facilitates collaborative learning?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

24. How well can you structure an online course that facilitates good learning experiences for students?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

25. How well can you structure an online course that provides good learning experiences for students?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

26. To what extent can you use knowledge of your content area to provide resources for online students?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

27. How well can you navigate the technical infrastructure provided by your school board to successfully set up an online course?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

28. How well can you navigate the technical infrastructure provided by your school board to successfully teach an established online course?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

29. To what extent can you use asynchronous discussions to maximize interactions between students in an online course? (Asynchronous means not online at the same time)

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

30. To what extent can you use synchronous discussions (e.g., same time chat rooms, video conference) to maximize interaction between students in an online course?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

31. How well can you use computers for word processing, internet searching, and e-mail communication?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

32. To what extent does your comfort level with computers facilitate participation in online teaching?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

33. How well can you navigate the internet to provide links and resources to students in an online course?

Nothing		Very Little		Some		Quite a Bit		A Great Deal
1	2	3	4	5	6	7	8	9

Background Information

Thank you for completing the online teaching portion of the survey. The next few questions will provide some background information necessary for the study.

34. Please indicate your gender.
    ___ Male
    ___ Female
    ___ Prefer not to answer

35. What is your birth year? _____

36. Please indicate your current teaching situation:
    ___ Secondary face-to-face only
    ___ Secondary virtual only
    ___ Secondary mixed (part virtual, part face-to-face)
    ___ Secondary face-to-face and teaching virtually with an outside agency/institution
    ___ Other: _____

37. How much experience do you have teaching online?
    ___ less than 1 year
    ___ 1-3 years
    ___ 4-10 years
    ___ 11-20 years
    ___ more than 20 years

38. Please indicate the actual number of years' experience you have teaching online. (You may indicate partial years with decimals. ie., 0.5 or 1.5) _____

39. Approximately how many years do you have teaching traditional face-to-face public education?

    ___ 1-4 years
    ___ 5-10 years
    ___ 11-15 years
    ___16-20 years
    ___ more than 20 years

40. Please indicate the university where you earned your teaching certification. If you did not go through the traditional teaching certification process, please list Alternate Certification.
    _____

41. Did the university you attended provide specific coursework or ample opportunities for acquiring technology skills that you felt adequately prepared to use in your own classroom?

Never	Rarely	Sometimes	Often	Regularly
1	2	3	4	5

42. Did the university you attended to earn your teaching degree provide coursework specifically targeting skills and knowledge needed for online instruction and learning?

Never	Rarely	Sometimes	Often	Regularly
1	2	3	4	5

43. Does your district provide or require a learning management system (LMS) with your face-to-face classes? (Canvas, Google Classroom, Blackboard, etc.)

___ Yes – required
___ Yes – optional
___ No

44. How often did you use the LMS prior to COVID-19 shutdown?

Never	Rarely	Sometimes	Often	Regularly
1	2	3	4	5

45. How often do you use the LMS now?

Never	Rarely	Sometimes	Often	Regularly
1	2	3	4	5

46. Did your school district provide professional development courses or workshops that focused on skills, techniques, problems, and/or preparation for online teaching? This would involve training beyond how to use the LMS.

___ Yes, they provided extensive training and support.
___ Minimal training or guidance.
___ No additional training provided.
___ Other: _____

47. Have you ever taken an online course or received training from another agency that focused on skills, techniques, problems, and/or preparation for online teaching? (This would be training **other than** the university you attended or your school district training)

___ Yes
___ Minimal training or guidance
___ No additional training provided.

48. To what extent do you agree that the professional development or additional training adequately prepared you for the skills needed for online teaching?

Strongly Disagree	Slightly Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

49. To what extent do you collaborate with colleagues to solve problems, try new techniques, and learn skills needed for online teaching?

Never	Rarely	Sometimes	Often	Regularly
1	2	3	4	5

50. What do you feel is the most pressing issue regarding professional learning and support for teachers designing and implementing online learning environments?

51. To what extent do you agree the quality of support systems around remote learning have improved since the start of the pandemic?

Strongly Disagree	Slightly Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

52. Would you consider teaching or continuing to teach online if it were an option rather than a requirement?

___ Yes
___ No
___ May

APPENDIX C

RESEARCH REVIEW BOARD APPROVAL EMAIL

Southwest Baptist UNIVERSITY

COLLEGE OF PROFESSIONAL PROGRAMS
1600 University Avenue
Bolivar, Missouri 65613
(417) 328-2099

October 12, 2023

Re: Teacher Perceptions of Self-Efficacy Related to Distance Learning

Dear Ms. Taylor,

On October 12, 2023 a review of your application and supporting documents for the above named research proposal was completed. The Research Review Board (RRB) for Southwest Baptist University has determined that the proposed research project meets the criteria for Exempt status as per policy 1.15.3 (A.1) in the faculty guidelines. As per the above policy "If the project is certified exempt, the principle investigator need not resubmit the project for continuing RRB review as long as there are no modifications in the exempted procedures". The study has now been approved, therefore, work on the project may begin.
If any modifications to the exempted procedures are made, the RRB will need to complete a new review of the changes to determine if the project remains Exempt or if further review is necessary.

Congratulations on the approval of your project, we wish you well during its completion.

Sincerely,

Colleen Shuler

Colleen Shuler
Chair, Research Review Board
Assistant Professor of Education

APPENDIX D

EMAIL TO ADMINISTRATORS

Dear School Principal,

Please allow me to introduce myself, Kathyrn A. Taylor. I am currently completing the doctoral program in Educational Leadership at Southwest Baptist University in Bolivar, Missouri. I am writing to request your help with my quantitative study. The study will survey secondary teachers throughout the state of Missouri. Completing the survey should take 8-10 minutes. The focus of my dissertation is on teacher perceptions of their self-efficacy for teaching virtually. Results will be used to provide schools and state universities teacher insight for planning and implementing better preservice training and professional development with teachers to build their efficacy for online instruction. The results should help support student virtual learning with higher quality instruction from adequately trained teachers.

As the building administrator, please provide permission to contact your secondary teachers or agree to forward an email with the survey attached. All responses will remain confidential, and will take approximately 8-10 minutes to complete. The teacher survey contains 33 self-efficacy questions and 19 demographic questions. The participation of teachers is voluntary and they may withdraw at any time. This research study survey has been approved by the Southwest Baptist University Research Review Board.

Thank you, in advance, for your help in this study. Please feel free to contact me if you have further questions. I will be happy to provide you with the results of this quantitative study in an executive summary form if requested.

Survey Link: https://forms.gle/w3smpUx9xLhRNfpX9

Thank you for your consideration,

Kathyrn A. Taylor
Educational Leadership Doctoral Student
Southwest Baptist University
(417) 766-5989
kataylor@lcr1.org

This project has been reviewed by the Southwest Baptist University Research Review Board for research and research-related activities including human subjects (417) 326-1659.

APPENDIX E

EMAIL TO EDUCATORS

Dear _____ Secondary Staff:

Please allow me to introduce myself, Kathyrn A. Taylor. I am currently completing the doctoral program in Educational Leadership at Southwest Baptist University in Bolivar, Missouri. I am writing to request your help with my quantitative study. The study will survey secondary teachers throughout the state of Missouri. Completing the survey should take 8-10 minutes. The focus of my dissertation is on teacher perceptions of their self-efficacy for teaching virtually. Results will be used to provide schools and state universities teacher insight for planning and implementing better preservice training and professional development with teachers to build their efficacy for online instruction. The results should help support student virtual learning with higher quality instruction from adequately trained teachers.

As the building administrator, please provide permission to contact your secondary teachers or agree to forward an email with the survey attached. All responses will remain confidential, and will take approximately 8-10 minutes to complete. The teacher survey contains 33 self-efficacy questions and 19 demographic questions. The participation of teachers is voluntary and they may withdraw at any time. This research study survey has been approved by the Southwest Baptist University Research Review Board.

Thank you, in advance, for your help in this study. I am also offering a little incentive if you would be so kind to help me out. I will draw four names/numbers for $25 Amazon gift certificates. There will be a link at the end of the survey to participate. Please feel free to contact me if you have further questions. I will be happy to provide you with the results of this quantitative study in an executive summary form if requested. Thank you for granting me permission to contact you. My target number of responses is 150 responses and your assistance will help me complete my goal!

Survey Link: https://forms.gle/w3smpUx9xLhRNfpX9

Thank you for your consideration,

Kathyrn A. Taylor
Educational Leadership Doctoral Student
Southwest Baptist University
(417) 766-5989
kataylor@lcr1.org