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A Qualitative Study of the Preparedness of Novice Teachers to Teach Effectively in a Blended Learning Environment

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A Dissertation submitted to the Education Faculty of Lindenwood University in partial fulfillment of the requirements for the degree of

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

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Abstract

Proponents of the effective use of blended learning argue that without technology-enhanced instruction, students graduate from high school missing the digital skills they need to be successful competitors in the labor market (Dickinson, 2018). Yet, authors of supporting work have established technology-enhanced instruction can have a negative effect on student achievement (Newman & Dickinson, 2017). Examined in this qualitative study was the preparedness of novice teachers to provide effective instruction in a blended learning environment, as researchers have found teacher self-efficacy is the number one predictor of instructional quality (Belanger, 2018; Conant, 2016; Künsting, Neuber, & Lipowsky, 2016). Self-efficacy is, therefore, a possible factor affecting student achievement in blended learning environments. Three teacher education professors, three secondary principals, and nine novice teachers, as members of focus groups, were interviewed to explore the perceived preparedness of the novice teachers from three different perspectives. Several factors affecting the self-efficacy of the novice teachers were identified after the data were examined. Pre-service training is inconsistent at both the collegiate and secondary school levels. The amount of hands-on instruction at the collegiate level, the time dedicated to new-teacher induction and support at the district level, and the training approach during induction were all found to influence the level of self-efficacy in novice teachers in a blended learning environment. Conclusions reached in this study may assist administrators at both the collegiate and secondary school levels to make improvements in the preparation and training of new teachers for work in blended learning environments.

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Chapter One: Introduction

Proponents of the effective use of blended learning in education argue that without technology-enhanced instruction, students graduate from high school lacking the digital skills they need to be successful competitors in the labor market (Dickinson, 2018). Plough (2017) stated, "Because the use of instructional technology in today's schools can influence future career opportunities, technology use is a matter of social justice" (p. 28). Authors of supporting work have shown, however, that simply placing technology in the hands of students does not automatically open a door to increased achievement (Newman & Dickinson, 2017).

Chapter One begins with background information about the shift in education from teacher-centered pedagogical practices founded on behaviorism to constructivist-based, student-centered learning environments, such as those provided through blended learning. Further background information follows regarding the challenges faced due to this theoretical transformation, which lays the groundwork for a study of the preparedness of novice teachers to teach effectively in a blended learning environment. This discussion precedes the theoretical framework, which is followed by the statement of the problem, purpose of the study, research questions, and significance of the study. The chapter then includes the definition of key terms and concludes with delimitations, limitations, and assumptions of the study.

Background of the Study

When one thinks of blended learning in modern education, thoughts turn to the integration of electronic devices into the classroom environment and delivery of content and instruction to students through digital and online methods (Pandit, 2018). However,

the concept of blended learning began long before the invention of electronics and the internet, when Sir Isaac Pitman launched the first long-distance learning course in the 1840s (Pappas, 2015). As part of his mail-order program, Pitman used a shorthand method of writing to disseminate information and assignments to students (Bezovski & Poorani, 2016). All of the course content was delivered via postcards, and the students returned coursework to Pitman in the same manner (Kumar, Kumar, Palvia, & Verma, 2017).

Pitman's early version of blended learning is categorized as correspondence education, and it remained a popular platform for long-distance instruction well into the 20th century (Dodds, 1985). Then, in 1919 the United States transmitted the first educational broadcast over the radio, which led to the beginning of the Educational Broadcast Era (Gregersen, 2020). Learning organizations used radio programming exclusively to broadcast lectures for long-distance students until the mid-20th century when television broadcasting revolutionized long-distance learning by adding a visual element to content delivery (Gregersen, 2020). Students then watched as teachers added notes, models, and demonstrations to lectures, providing a clarity that increased student comprehension (Dodds, 1985; Gregersen, 2020; Pappas, 2015).

Over the next century, developers improved technology tremendously, progressing from hand-delivered postcards to computers and other digital devices (Kumar et al., 2017). Through these advancements, developers opened the door to the first generation of web-based instruction in 1998 (Kumar et al., 2017; Pappas, 2015). In a span of fewer than two decades from the first delivery of online education, technology evolved and became an interwoven part of modern American culture (Pappas, 2015). In

fact, researchers studying use of digital technology in American civilization stated both youth and adults in modern society now rely on communication technologies for enjoyment, acquisition of knowledge, social networking, and even personal and professional advice (Mishna, Bogo, Root, Sawyer, & Khoury-Kassabri, 2012).

This evolution of digital technology has brought about the societal era known as the Knowledge Revolution, in which individuals have the means to choose what knowledge and skills they wish to pursue independently, as well as methods for acquiring the information (Collins & Halverson, 2018). Learning by choice is an intricate part of the daily lives of American youth, who are often entrenched in the pursuit of their interests outside of the classroom where digitized knowledge is practically omnipresent (Coccia, 2017; Collins & Halverson, 2018). Many scholars believe the best way to bring that same enthusiasm to the classroom is through blended learning programs (Lee, Barker, & Kumar, 2016). These 21st-century educators view electronic devices, such as tablets and computers, as essential instructional tools rather than mere instruments of academic enrichment (Plough, 2017).

Avenues to spark a passion for learning in American students are much-needed to meet the rigorous achievement standards delegated by legislators through recent education mandates such as the Every Student Succeeds Act (ESSA) of 2015 (Mathis & Trujillo, 2016). A history of low performance on state and national exams, coupled with new rigorous standards, are the driving forces for educators calling for changes in teaching practices (Sahli, 2017). Researchers have stated that one of the greatest factors impeding academic performance is a lack of student interest and engagement in classroom activities (Sahli, 2017). In a study by the Board Director of the Innovation

Unit in the United Kingdom, Hannon (2012) declared the 21st century requires people to be lifelong learners in a quickly changing world, yet students are not graduating with this mindset due to a lack of engagement in school (Hannon, 2012). Some educators calling for change in pedagogical practices believe traditional learning environments fail to connect learning to the world in which students live, suggesting schools should become a technology-supported base camp for inquiry beyond the classroom (Hannon, 2012).

To improve achievement, teachers and administrators are seeking ways to provide students with effective personalized blended learning opportunities such as problem-based learning and project-based learning, which often involve a mixture of online discovery and face-to-face instruction (Maxwell & White, 2017). Data support the use of blended learning to increase student achievement, as researchers have consistently reported students in blended learning courses not only outperform students in traditional classrooms, especially on tasks requiring higher-order thinking and collaborative skills, but also retain knowledge for longer periods of time (Shand & Farrelly, 2017; Yew & Goh, 2016). Researchers and scholars also agree that for success in the 21st century, today's public-school graduates need a modern skillset that goes beyond what is assessed on standardized tests (Jacobson-Lundeberg, 2016).

Skills have been identified by employers as missing in graduates seeking employment in the modern workplace (Wolff & Booth, 2017). Employer surveys consistently reveal that "soft skills" must become a priority in education, as they are now essential employability skills (Wolff & Booth, 2017). This shift in employer needs is attributed to globalization of the employment and business market as well as the rapid development of technology and its impact on society (Joynes, Rossignoli, & Amonoo-

Kuofi, 2019). Skills necessary in the 21st century are often separated into four distinct categories educators call the "Four C's:" critical thinking, creativity, collaboration, and communication (Joynes et al., 2019). Proponents of blended learning believe the incorporation of digital technologies in the classroom is a vital component of curriculum that supports 21st-century learning (Van Laar, Van Deursen, Van Dijk, & De Haan, 2017).

While most modern educators agree blended learning is a highly effective model for teaching students 21st-century skills, designing effective blended learning is a challenging endeavor (Boelens, De Wever, & Voet, 2017). Boelens et al. (2017) used data from several studies to identify four key challenges to designing blended learning: incorporating flexibility, facilitating interaction, facilitating students' learning processes, and fostering an affective learning climate. Some school districts and universities are developing teacher training and ongoing professional development to support teachers in blended learning classrooms (Shand & Farrelly, 2017; Whiteside, Dikkers, & Baker, 2019). However, this is a new process, and researchers have stressed that many teachers still lack adequate training to provide students an effective blended learning experience (Whiteside et al., 2019).

Theoretical Framework

The theories of behaviorism and constructivism provided supporting components for the framework of this study. With many teachers answering the call for change, the field of education is undergoing a tremendous shift in instructional design as educators move away from traditional, teacher-led classrooms toward student-centered, technology-enhanced learning environments (Dole, Bloom, & Kowalske, 2016). Throughout the

nation's history, the majority of American classrooms have been structured according to the beliefs of the behaviorist theory of learning, led by professionals such as B. F. Skinner, often referred to as the champion of behaviorism (Dole et al., 2016; Lancaster, 2017). Behaviorists believe learning takes place as a student absorbs content from a stimulus in the environment and reacts to the stimulus, thereby making connections between new information and pre-existing knowledge (Thibaut et al., 2018). Behaviorist educators contend knowledge and skills are developed through behavior modification, thus acknowledging learning is attributable to forces outside of a student, rather than to the internal functions of the human mind (Kay & Kibble, 2016; Thibaut et al., 2018). Behaviorism is the framework of the traditional teacher-led classroom, with the instructor providing outside stimuli and the students reacting appropriately to gain conceptual knowledge (Clark, 2018).

The constructivist theory, on the other hand, is based on an entirely different interpretation of learning and places the assembly of new knowledge within the mind of the learner (Krahenbuhl, 2016). According to Piaget, knowledge expands and develops inside the mind of a learner, who makes connections within his or her internal organization through interactions with the world (Bada & Olusegun, 2015). This theory of learning is a prominent factor in much of today's student-centered instructional practices, as "students learn to decide what they need to know to find success within the class and educational format" (Lee & Hannafin, 2016, p. 710). Many teachers use a variety of learning platforms to support student-centered instruction, for example, team-based learning, problem-based learning, project-based learning, and technology-enhanced

practices such as the flipped classroom and blended learning (Bradford, Mowder, & Bohte, 2016; Dole et al., 2016).

Transitioning from behaviorism to constructivism can be problematic for learners and teachers alike, as the two ideologies are on opposite ends of the learning theory spectrum (Khalil & Elkhider, 2016). This shift in instructional practices without sufficient preparation and support can negatively affect teacher self-efficacy, which studies have revealed is the greatest indicator of the quality and effectiveness of lesson design and delivery (Künsting, Neuber, & Lipowsky, 2016).

Statement of the Problem

The conflicting views of behaviorism and constructivism regarding teacher preparation in the area of blended learning were investigated in this study. Many education professionals believe blended learning is the most-effective method of providing student choice while filling in the gaps in curricular content through a mixture of online and face-to-face learning (Horn & Fisher, 2017). Furthermore, they believe blended learning provides students with enhanced opportunities to develop 21st-century skills such as communication and collaboration (Jacobson-Lundeberg, 2016).

Blended learning is a form of personalized instruction that utilizes both digital technology and face-to-face instruction to deliver content to students (Pandit, 2018). Learning is student-centered in this constructivist approach as students build knowledge and skills through interactions with their world (Ribeiro Piske et al., 2017). Proponents of blended learning are in favor of teachers retaining the freedom to structure lessons to best meet the needs of their students (Dole et al., 2016; Steiner, 2017). Teachers who follow the constructivist theory of learning feel disempowered by stringent standards and

high-stakes testing, asserting authoritarian assessment systems actually restrict pedagogy (Dole et al., 2016; Steiner, 2017).

However, behaviorists who believe in the importance of consistency and accountability are concerned that moving away from traditional teaching practices will lower the quality of instruction (Khalil & Elkhider, 2016). In a related study called *Standards Matter*, a group of researchers from John Hopkins University found that while the consistent use of high-quality curriculum greatly impacts student achievement, the preponderance of curricular materials are self-selected by individual teachers and are not regulated by the districts for which they work (Steiner, 2017). This modern trend in teaching practices is a matter of concern for traditional behaviorists who fear a loss of rigor and accountability in American education (Steiner, 2017).

One of the greatest challenges impeding academic performance is a lack of student interest and engagement in classroom activities (Sahli, 2017). Since students spend a great deal of time outside of school learning by choice in pursuit of knowledge that matches their interests, many scholars believe the best way to bring that same enthusiasm to students in the classroom is through blended learning programs that include personalized learning options (Coccia, 2017; Collins & Halverson, 2018; Lee et al., 2016). With the advancing popularity of blended learning programs in American schools, questions arise regarding the impact of implementation on student performance (Belanger, 2018).

The ESSA, signed into law by President Obama in 2015, "requires—for the first time—that all students in America be taught to high academic standards that will prepare them to succeed in college and careers" (Young, Winn, & Reedy, 2017, p. 1). However,

through the law, legislators also relaxed control over education by the federal government, placing more of an emphasis on state and local autonomy and entrusting curricular decisions to local governing bodies (Young et al., 2017). While this legislation raised assessment standards for American schools, the local autonomy empowers constructivists to design curriculum according to their beliefs in an effort to meet high standards (Young et al., 2017).

Several studies have provided evidence that blended learning is an effective means of developing 21st-century skills in students (Patrick, Kennedy, & Powell, 2013). However, education experts caution placing too much emphasis on digital technology while neglecting important technology-free skills (Makarova & Makarova, 2018). While necessary, strong digital literacy skills alone will not produce high school graduates who are college and career-ready in the 21st century (Soffel, 2016). Creating a well-balanced and effective blended learning environment is a challenging endeavor that requires personalization and differentiation of instruction in both face-to-face and digital formats (Lai, Lam, & Lim, 2016). Behaviorists caution this flexible constructivist-based approach to instruction must include traditional teaching practices, rigor, and accountability to remain competitive in a global education climate (Steiner, 2017). While multiple sources of data reveal positive effects on the learning outcomes of students in blended learning environments, data also exist demonstrating the negative impacts of digital technology on student performance (Conant, 2016). Research including exploration of the causes of negative effects on student performance in blended learning environments is limited (Conant, 2016).

Purpose of the Study

The purpose of this study was to examine the preparedness of novice teachers to provide effective instruction in a blended learning environment, as researchers have found teacher self-efficacy is the number one predictor of instructional quality, and this is a possible factor affecting student achievement in a blended learning environment (Belanger, 2018; Conant, 2016; Künsting et al., 2016). Also explored in this study were pre-service teacher education programs, new teacher orientation, professional development, and continuing support provided by the secondary principals of novice teachers.

Research questions. The following research questions guided the study:

1. In what ways do college of education personnel prepare pre-service teachers to teach effectively in a blended learning classroom using district-supplied technology and resources?
2. In what ways do secondary principals prepare and support novice teachers to teach effectively in a blended learning classroom using district-supplied technology and resources?
3. How prepared and supported do novice teachers feel regarding their ability to teach effectively in a blended learning environment using district-provided resources and technology?

Significance of the Study

Technology-enhanced instruction and blended learning are relatively new fields of research, and the available data presented by researchers revealed mixed results regarding the effects of blended learning on student achievement (Belanger, 2018). In a 2016 study regarding the effects of one-to-one integration of technology on student

achievement, Conant (2016) discovered a statistically significant negative difference in student performance with the use of technology compared to student achievement without technology. Conant (2016) stated in his findings, "Not only did the one-to-one students not outperform the traditional students by a statistically significant difference, their mean scores on all three tests were below the mean scores of the traditional students" (p. 123). The question to answer through further research is, why?

This study is significant because it provides valuable insight into one possible factor affecting the success of blended learning environments. Information gained through this study extends current knowledge regarding teacher self-efficacy and the influences that affect self-efficacy. The practical applications of this study include improvements in the following areas: pre-service teacher preparation, new-teacher induction programs, and continued support for novice teachers.

Definition of Key Terms

Novice teacher. For the purpose of this study, the term novice teacher refers to any teacher who has been teaching full-time for a period of five years or fewer.

Delimitations, Limitations, and Assumptions

The scope of the study is bounded by the following delimitations:

Time frame. The research took place during the spring semester of the 2019-2020 school year and was conducted through interviews with three teacher education professors, three building principals, and three focus groups, each with three teachers who had been teaching full-time for five years or fewer.

Location of the study. The study was conducted in the southwest region of Missouri (Missouri Department of Elementary and Secondary Education [MODESE], 2014).

Sample. The sample included only teacher education professors, secondary building principals, and secondary school teachers. Using only public university and school personnel did not allow for opinions from educators in private universities or schools.

Criteria. To be identified as novice teachers, all participants had been teaching full-time for five years or fewer. To further explore the opinions of teachers and to increase the depth of information gathered, only those who were teaching in state-tested, core content areas were selected.

The following limitations were identified in this study:

Location. The location of the study was a limitation because it is representative of the southwest region of Missouri and not the entire state.

Sample demographics. The sample size of 15 participants was a limitation of the study. Participants were divided into three sample groups labeled Groups A, B, and C. Group A included three education professors, one from a community college and two from universities in southwest Missouri. Group B participants included principals from three secondary schools, each with one-to-one technology in place. Group C participants met as three focus groups with three participants each, for a total of nine teachers of state-tested content areas interviewed in a focus group setting. These teachers represented the same three secondary schools as the principals in Group B. The composition of each

group was designed to provide insight from three different perspectives into the preparedness of novice teachers to teach in a blended learning environment.

Size of the schools. The size of the schools was another limitation of the study. The participants were chosen from three secondary schools with varying student populations enrolled in grades 9-12. For this study, small schools were defined as schools with an enrollment of 0 to 700 students, medium schools were defined as schools with an enrollment of 701 to 1,500 students, and large schools were defined as schools with an enrollment of 1,501 students or more. The first participating school had a student population of 476; the second, a student population of 1,329; and the third, a student population of 2,216 (MOSESE, 2018). The schools were chosen to avoid bias based on school size.

Teaching experience. The teacher participants were limited to those who had been in service for five years or fewer. This selection was directly related to the purpose of the study and refined the research to the experiences of novice teachers.

Self-reported data. The qualitative interview and focus group format of the research was a limitation because data were self-reported and reliant upon personal reflection and interpretation of individual experiences.

Instrument. The instrument used to collect data was created by the researcher, and, therefore, considered a limitation.

The following assumptions were accepted:

1. The responses of the participants were offered honestly and willingly.
2. The sample was representative of the general population of educators who held teaching certificates from the MODESE.

Summary

Chapter One included a discussion of the need for technology-enhanced, blended learning environments to prepare students for future careers. Through the background of the study, a shift from traditional, teacher-led classrooms based on the behaviorist theory of learning to student-centered learning environments founded on constructivism and the connection of these practices to technological advancements was explored.

In the statement of the problem section, information was provided regarding the need for research into the preparedness of novice teachers to teach effectively in a blended learning environment. The foundation for the three research questions was discussed as the purpose of the study. The research questions were detailed, which addressed pre-service teacher education programs, professional development provided by school districts, and novice teachers' perceptions of preparedness to provide effective instruction in a blended learning environment. Chapter One also included the significance of the study, as well as the definition of key terms. Finally, the delimitations, limitations, and assumptions were stated.

Provided in Chapter Two is a review of relevant literature. A thorough description of the theory guiding this study is provided. Also included are how the development of technology and blended learning relate to each other, as well as the impact of teacher self-efficacy on the quality of instruction.

Chapter Two: Review of Literature

Chapter Two is an exploration of the behaviorist and constructivist learning theories provided as support for the theoretical framework of this study. The perceived need for blended learning environments and the shift from behaviorist-based, teacher-centered classrooms to constructivist-based, student-centered learning environments are discussed. Also addressed are the challenges faced in this transitional period of instruction and the effects of teacher preparation on the success of novice teachers in a blended learning environment

The following topics are reviewed within Chapter Two: the theoretical framework, technology, the need for change, and 21st-century skills. The shift from teacher-centered to student-centered classrooms, technology in education, and personalized learning are also discussed. Finally, the impacts of teacher self-efficacy on instruction and the impact of professional development on teacher self-efficacy are addressed.

Theoretical Framework

It is important to understand the learning theories used to structure new pedagogical practices, especially those involving technology, to ensure technology use is a means for in-depth learning and not the main purpose of instructional design (MacCallum & Parsons, 2016). Modern educators who build a technology-enhanced curriculum based on constructivism stretch the boundaries of education to include knowledge and skills developed within the learner through collaborative online efforts to develop 21st-century skills necessary for success (Mattar, 2018). These constructivist

activities are in direct contrast to lessons based on the behaviorist learning theory (Weegar & Pacis, 2012).

The first person to introduce the concept of behaviorism was American psychologist John Watson in the late 19th and early 20th centuries (Clark, 2018; Moore, 2011). Watson called all schools of psychology prior to his own work "introspective psychology" and identified consciousness as the subject matter of study (Watson, 2017, p. 3). He claimed the term consciousness was neither a definable nor usable concept and was merely another name for the ancient notion of soul (Moore, 2017; Watson, 2017). Watson (2017) believed this idea of soul was based on the philosophical platform and religious concept of dualism as a means to control human behavior through fear stimuli. He determined that consciousness, or the soul, had no clear definition, was not tangible, and could not be studied scientifically (Moore, 2017; Watson, 2017; Weegar & Pacis, 2012). What can be observed is behavior, and Watson sought to make observable behavior the field of study for psychology (Moore, 2017). In doing so, Watson (2017) developed the following question as a rule, or measuring rod, to guide all psychological study: "Can I describe this bit of behavior I see in terms of 'stimulus and response'?" (p. 6).

Watson (2017) believed all behavior, including thought, is learned as a direct response to stimulus, and the most powerful stimulus is fear. As behaviors are learned, an individual is adjusted, or conditioned, to successfully manage future stimuli (Moore, 2017). Desired behaviors in an individual are prescribed through planned stimulus designed to provoke a preferred reaction or response (Watson, 2017). Watson tested his ideas through psychological investigations of response to the fear stimulus (Moore, 2017;

Weegar & Pacis, 2012). His test subjects were infants and young children who had not yet developed prescribed behaviors (Watson, 2017).

The experimental subject in the investigation who gained Watson the most notoriety was a young boy called Little Albert (Moore, 2017). Watson's goal was to determine whether young children could successfully be conditioned to develop a phobia of furry animals using the fear stimulus (Moore, 2017). Over a period of several months, the young boy was repeatedly exposed to several animals (Moore, 2017; Weegar & Pacis, 2012). In initial observations, Little Albert displayed a healthy curiosity when exposed to a variety of animals (Weegar & Pacis, 2012). Following Little Albert's initial introduction to furry animals, Watson and his assistant used a hammer and metal rod to create loud noises behind the boy's head with each subsequent exposure (Weegar & Pacis, 2012). Little Albert soon developed a phobia of the animals as the fear caused by the sound stimulus was transferred to the animals (Moore, 2017). Watson (2017) believed increased frequency of stimulus would strengthen the stimulus-response connection and declared any individual could be conditioned for any profession through carefully orchestrated stimulus-response conditioning.

In 1938, behaviorist B. F. Skinner (2008) developed the concept of operant conditioning based on his studies using laboratory rats in what he called the Skinner box. Unlike Watson (2017), who insisted response to stimuli is a physiological reaction, Skinner (2008) believed learning takes place as a function of the mind in reaction to outside stimuli. Using operant conditioning, the outside stimulus is given as a response following the behavior of the organism, rather than prior to the behavior as a causal factor (Skinner, 2008; Vargas, 2017). These responses are based on three operants Skinner

identified through his research (Vargas, 2017). The operants include the following: neutral operants, which do not increase or decrease recurrence of behaviors; reinforcers, which increase the probability of repeated behaviors; and punishers, which decrease the probability of repeated behaviors (McLeod, 2007). Operant conditioning is applied through a system of positive and negative reinforcements and punishments, or rewards and consequences (Biddulph & Carr, 2017; Skinner, 2008).

Both reinforcers and punishers can be positive or negative (Clark, 2018). Reinforcers are used to increase desired behaviors in two ways (Kay & Kibble, 2016). Positive reinforcers provide a positive stimulus to increase the frequency of a desired behavior (Kay & Kibble, 2016). Negative reinforcers involve the removal of a negative stimulus to increase the frequency of a desired behavior (Clark, 2018). In direct contrast to reinforcers, punishers are used to decrease the frequency of undesirable behaviors (Clark, 2018). Positive punishers employ unpleasant stimuli to discourage the recurrence of unwanted behaviors (Kay & Kibble, 2016). Negative punishers involve the removal of a rewarding stimulus to get unwanted behaviors to stop (Clark, 2018).

Behaviorists who follow Skinner's principles believe learning is based entirely on a student's reaction to environmental stimulus and are not concerned with how students think and feel (Kay & Kibble, 2016). Traditional American education systems are built upon this concept, as teachers disseminate content knowledge and skills to students, providing positive and negative reinforcements and punishments according to student performance (Clark, 2018). In this behaviorist paradigm, instruction is teacher-centered, and learners are passive participants (Khalil & Elkhider, 2016). Learning activities based on the behaviorist approach involve the delivery of information to students and include

lecturing, reading prescribed materials, defining and illustrating factual information, rote learning drill and practice, and the use of reinforcers and punishers (Clark, 2018).

Unlike behaviorists, many scholars consider constructivism to be the most effective learning theory for modern education (Arman, 2018). As the founding father of constructivism, Jean Piaget developed his theory of learning through careful observation of children as they acquired new knowledge and skills (Edwards, 2017). Contrary to behaviorist beliefs, Piaget determined learning takes place as students actively participate through internal, mental processes rather than merely reacting to physiological stimuli (Piaget, 2013; Skinner, 2008; Watson, 2017). Piaget asserted the ways of doing and thinking come from within, as a child's intrinsic system of logic creates an understanding of the world (Boeree, 2016; Piaget, 2013). Knowledge is subjective and "…actively constructed as learners engage with, and make meaning of, their lived experience" (Kay & Kibble, 2016, p. 21). Followers of the constructivist theory challenge the idea there is only one existing reality external to the individual (Kay & Kibble, 2016; Ribeiro Piske et al., 2017).

Piaget established that as students acquire knowledge and understanding of the world through individual experiences, the information is organized into learners' own internal working theories or schemas (Boeree, 2016; Piaget, 2013). Cognitive development takes place in stages, as individuals work to make sense of information gained through interactions with the environment (Ackermann, 2002; Ribeiro Piske et al., 2017). It is this active participation in educational activities that establishes new knowledge and skills within the learner (Ribeiro Piske et al., 2017).

First, the individual encounters new objects or ideas, then tries to assimilate the new information into existing patterns or schemas (Edwards, 2017). If the new information does not fit the existing schema, it causes a cognitive disruption or disequilibrium (Ackermann, 2002; Ribeiro Piske et al., 2017). The individual then seeks to accommodate the experience to re-establish equilibrium (Edwards, 2017). A new balance is achieved as individuals interrupt existing schema with acquired knowledge and assimilate the fresh information into existing configurations (Ackermann, 2002; Ribeiro Piske et al., 2017). The learner combines patterns into more complex theories, or builds entirely new schemas, constructing individualized knowledge that cannot be prescribed by others (Dennick, 2016; Kay & Kibble, 2016; Piaget, 2013).

As students interact with the environment, an action schema is built, driven by their personal interpretations (Palmaru, 2016). In doing so, students develop the skills required to solve problems they face as a matter of survival (Palmaru, 2016). Survival, in this case, is the development of a balance between one's internal schemata and continuous exterior influences (Piaget, 2013).

The constructivist theory of learning has been widely accepted for many years and is becoming increasingly popular in American schools (Bada & Olusegun, 2015). Educators' transformation of beliefs about the way students learn, the call for 21st-century skills, and the use of rapidly advancing technologies have brought about a shift in pedagogical practices from behaviorist-based, teacher-led instruction to constructivist-based, student-centered learning (Soffel, 2016). While the transition is not an easy one to make, it is considered a necessity to meet the needs of modern students (Lapek, 2017).

Technology, the Need for Change, and 21st-Century Skills

The *Merriam-Webster Dictionary* (2020) defined technology as a "manner of accomplishing a task especially using technical processes, methods, or knowledge" (para. 3). Unlike modern digital devices, early technologies in the form of tools such as levers, wheels, and sailing ships aided humans by physical means (Gregersen, 2020). Historically, the development of new technology progressed slowly, with centuries often passing between major inventions (Gregersen, 2020). As more technologies were conceived over time, the rate of advancement increased, and since the rise of digital technologies in the late 20th century, that rate has increased exponentially (Silicon Republic, 2015). The invention of the personal computer in the 1970s opened the door to vast amounts of information for a growing population, and the major digital milestones that followed at the turn of the century paved the way to the Knowledge Revolution (Gregersen, 2020; Silicon Republic, 2015). The evolution of technology is propelled by multiple sources and plays a leading role in sustaining competitiveness and economic growth of nations (Coccia, 2017).

With information so readily available using the internet, the world has become a quickly changing, knowledge-based global society (Van Laar et al., 2017). While information and communication technologies are at the core of innovation, they do not create this knowledge-based economy (Van Laar et al., 2017). It is the people using the technology who are the heart of innovation, making humans the most decisive capital in the workforce (Lapek, 2017; Van Laar et al., 2017). However, as researchers published the results of the 2015 Gallop-Purdue Index, they identified a gap in the perceived

preparedness of college graduates to successfully enter the workforce (Wolff & Booth, 2017). Participants in the poll stated:

> . . . 98 percent of Chief Academic Officers of higher educational institutions rated their institutions as very or somewhat effective at preparing students for the world of work, but only 11 percent of business leaders strongly agreed that graduating students have the skills and competencies they need. (Wolff & Booth, 2017, p. 52)

The list of qualities employers and innovators are seeking in potential employees and partners is changing at such a fast rate in the technology-driven world that educators must provide students with innovative skillsets necessary for future careers not yet in existence (Lapek, 2017). As a result, many public-school systems and higher education institutions are acknowledging the necessity to ensure curricula are applicable for the 21st-century workplace (Lapek, 2017). They are developing programs expressly designed to build the qualities employers find essential to success (Wolff & Booth, 2017).

These skills, referred to as 21st-century skills, include a wide range of knowledge, work habits, and character traits considered vitally important to success in today's world (*The Glossary of Education Reform*, 2016). It is difficult to clearly define 21st-century skills because the term encompasses a widely varied set of knowledge and aptitudes that have not been officially coded or categorized (*The Glossary of Education Reform*, 2016). In the 2015 report of the World Economic Forum, 21st-century skills were divided into three categories: foundational literacies, competencies, and character qualities (Soffel, 2016). Important 21st-century skills include communication, collaborative problem solving, complex problem solving, creativity, digital and information literacy, citizenship,

and productivity (Geisinger, 2016; Van Laar et al., 2017). For success in college and careers, high school graduates need higher-order skills necessary to research and analyze information to solve complex, real-world problems (O'Sullivan & Dallas, 2017; Van Laar et al., 2017). Experts have called for a more unified approach to education, suggesting the creation of K-16 education councils to strengthen relationships between high schools and post-secondary learning institutions (O'Sullivan & Dallas, 2017).

Traditional education provides students with prescribed knowledge and skills (Geisinger, 2016). However, it is no longer enough for graduates to be proficient in traditional core content areas like language arts and math (Lapek, 2017). Employers are looking for more than knowledge; they are seeking workers who can use acquired knowledge in innovative ways (Lapek, 2017). Today's workplace requires skillful and interactive workers with the ability to face increasingly complex tasks with proficiency, both independently and as members of collaborative teams (Van Laar et al., 2017). Workers are expected to synthesize knowledge selected from large amounts of available information and successfully apply this knowledge in many challenging scenarios (Wolff & Booth, 2017). They need excellent problem-solving capabilities and sufficient adaptive skills to meet the fluctuating requirements of the job (Lapek, 2017; Van Laar et al., 2017). Instructing modern students in the conventional manner will not provide them with the knowledge and skills needed to prepare for the future; change is necessary (Soffel, 2016).

The Shift from Teacher-Centered to Student-Centered Classrooms

According to Glasgow (1997), a student-centered learning environment is an educational setting in which students decide what they need to know to find success in

the classroom and all educational endeavors. Teachers implementing student-centered learning use a wide variety of educational programs, instructional approaches, and support strategies to attend to the individual learning needs, interests, and ambitions of students (Poohongthong & Supparerkchaisakul, 2017). Although the teacher in a student-centered learning environment may have considerable responsibility for facilitating investigative and discovery activities, it is expected the students will gradually take responsibility for their learning (Arman, 2018; Glasgow, 1997). Much of the drive and inspiration for student-centered learning comes from the need for students to develop collaborative, communicative, and creative problem-solving skills (Lee & Hannafin, 2016). Educators who facilitate successful student-centered learning environments insist teachers must provide extensive scaffolding and guidance for students to develop skills efficiently (Lee & Hannafin, 2016).

Two increasingly popular strategies for implementing student-centered instruction are problem-based learning and project-based learning (Dole et al., 2016). In typical problem-based learning, students are presented a problem which needs resolution (Yew & Goh, 2016). They collaborate to solve the problem, activating their individual and combined prior knowledge, as well as available resources, to devise a plan of action (Yew & Goh, 2016). Teachers act as facilitators, or guides, to provide students with an optimal level of challenge and support (Kim, Belland, & Axelrod, 2019). Learners in this student-centered environment need personalized assistance carefully monitored and adjusted according to the results of regular formative assessments (Kim et al., 2019).

Researchers have discovered students who learn through problem-based practices make similar or smaller gains in short-term knowledge compared to those learning in

teacher-centered classrooms but significantly larger gains in long-term knowledge retention, especially in performance, skill-based, and cross-curricular assessment (Yew & Goh, 2016). When extensive scaffolding is provided for problem-based learning, struggling students can successfully engage in tasks that might otherwise be too difficult for them to master independently according to their existing capabilities (Kim et al., 2019).

Like problem-based learning, project-based learning involves students working in a collaborative setting to accomplish a desired goal (Sun & Li, 2017). In project-based learning, students go through an extended process of inquiry in response to a complex question, problem, or challenge presented by the teacher (Price et al., 2019). Project-based learning begins with an entry event designed to pique the interest of students (Condliffe et al., 2017). After the entry event, the teacher helps students design a driving question to steer their work (Price et al., 2019).

Cultivating engagement is of vital importance to the success of students who learn to take the lead in project-based learning (Condliffe et al., 2017). The teacher becomes the facilitator as students design a plan, set goals, and work to answer the driving question (Sun & Li, 2017). They work both collaboratively and independently on projects (Condliffe et al., 2017). Discussion, observations, and skill checks are formative assessments to ensure students meet the desired learning goals as they work (Price et al., 2019). Project-based learning units follow constructivist principles "involving students in the construction of knowledge, in-depth inquiry, and/or the use of problem-solving and critical thinking skills" (Condliffe et al., 2017, p. 7; Kim et al., 2019).

When comparing technology-enhanced instruction in teacher-led classrooms to technology-enhanced instruction in student-centered classrooms, researchers discovered proper support in student-centered learning environments is of vital importance (Dervić, Glamočić, Gazibegović-Busuladžić, & Mešić, 2018). The group found statistically significant differences in student performance between teacher-led and student-centered learning conditions (Dervić et al., 2018). Researchers discovered students in teacher-led classrooms outperformed those in student-led classrooms when the only goal was to develop basic conceptual knowledge in novice learners (Dervić et al., 2018). However, the student-centered learning environment was more effective in developing the students' abilities to solve quantitative, real-world problems (Dervić et al., 2018). These findings support previous research regarding teacher-centered versus student-centered instruction, as well as the need to scaffold learning in student-centered classrooms (Condliffe et al., 2017; Yew & Goh, 2016).

Scaffolding to support deep learning takes on many forms as student needs vary from person to person and from project to project (Condliffe et al., 2017). Technology, learning materials, organizational materials, direct instruction, peer aids, and collaboration are all scaffolds (Condliffe et al., 2017). Scaffolds include any form of help, enabling students to reach a higher skill level and accomplish tasks they may not have the ability to do on their own (Condliffe et al., 2017). Dervić et al.'s (2018) and Lee and Hannafin's (2016) research supported the declared need for extensive scaffolding in technology-enhanced, student-centered classrooms, and the deep learning that unfolds when proper supports are in place.

Technology in Education

The change in current education trends is driven, in part, by the development and acceptance of digital technology, which continues to evolve as society solves problems, matches growing demands, and discovers new technologies (Coccia, 2017). Teachers dedicated to providing a high-quality education for their students have always experimented with groundbreaking teaching practices and tools (Makarova & Makarova, 2018). No matter how promising they may be for student development, it is important to exercise care when considering new technologies, avoiding the urge to implement too many innovations at once (Macarova & Macarova, 2018). Consistent utilization of technology in the classroom should be considered a way to increase student knowledge and improve performance (Lamb & Weiner, 2018). Researchers have found positive effects on student achievement when teachers make use of whatever science has to offer, especially when combining new trends with traditional practices (Safar & AlKhezzi, 2013). When properly merged, traditional instructor-led teaching strategies and new information and communication technologies augment the effectiveness of knowledge acquisition by increasing access for students (Safar & AlKhezzi, 2013). These technologies improve the quantity and quality of instruction, stimulating critical thinking and deeper learning outcomes (Lamb & Weiner, 2018; Safar & AlKhezzi, 2013).

In studies of middle schools with a one-to-one ratio of technology to students, researchers identified a natural shift from teacher-centered to student-centered learning (Lamb & Weiner, 2018). Students reported they felt more organized and confident communicating with others through the application of technology in the classroom, providing a platform for building 21st-century skills (Lapek, 2017). Teachers have also

expressed that the use of digital technologies in the classroom has led to a shift in their understanding of pedagogical practices (Lamb & Weiner, 2018). This opens the door to individualization and the inclusion of students' social networking and online skills learned outside of the classroom (Lamb & Weiner, 2018).

Experts agree the best educational technologies are those that improve interactions between learners and their environments (Antonenko, Dawson, & Sahay, 2017). One example of this is the positive effect of digital technology on the quality of student reflection (Leinonen, Keune, Veermans, & Toikkanen, 2016). As part of a research project conducted by Leinonen et al. (2016), educational design experts led a team of educators in the development and utilization of two simple audio-visual reflection applications for K-12 classrooms. Created to mimic social media, the apps enabled students to reflect on classroom learning in ways familiar to them, resulting in a higher level of critical thinking compared to their previous written examples (Leinonen et al., 2016). However, the inclusion of authentic instruction and learning experiences using digital tools can be a difficult transition for teachers to make, and some resist the required change in pedagogical practices (Heitin, 2016).

In a study by Harris Interactive, researchers polled teachers regarding their use of technology in the classroom and discovered that while 89% of participating teachers believed digital technology in education had a positive impact on student performance, only 14% of them used it as part of their instruction on a weekly basis (Frenzel, 2018). Most of these teachers reported being uncomfortable because they did not understand the technology they were required to use in the classroom (Frenzel, 2018). For these hesitant teachers to employ technology, they must evaluate its worth and conclude the benefits to

students far outweigh the difficulties faced when learning to use it (Okyere-Kwakye, Md Nor, & Ologbo, 2016). With proper and effective professional development, teachers can confidently move forward and employ instructional technology in their regular lessons (Frenzel, 2018). It is necessary for modern teachers to develop technological literacy because without it, making technology work often becomes a priority over the educational content of lessons (Hasse, 2017).

Educators need professional development regarding technology skills; however, professional development is often tool-driven and presented at a pace too quick for teachers to comprehend successfully (Mehta, Henriksen, & Rosenberg, 2019). While it can be difficult to organize, teachers who receive applicable training and professional development are empowered to design a digitally enhanced personalized learning environment for students and provide challenging content that creatively employs technology (Mehta et al., 2019). According to Frenzel (2018), there are four keys to providing teachers with engaging support. These keys are: to demonstrate the positive impact the technology has on student performance; provide hesitant teachers with ongoing professional development; employ professional staff members to act as expert support; and begin the technology integration process with easy-to-use technology teachers can master quickly (Frenzel, 2018). Once teachers feel comfortable with the use of digital technology, they can integrate it to provide students with enticing personalized learning (Mehta et al., 2019).

Personalized Learning

Personalized learning is an instructional strategy in which teaching is designed to meet the specific needs, strengths, and interests of learners (Rathgeber & Mamenta,

2017). It is one of American education's most popular modern trends, and personalized learning is currently one of the key buzzword phrases in the field of education (Baule, 2019). The meaning of the term is vague, as educators and experts apply it to a wide variety of teaching methods and flexible learning environments (Herold, 2018). This causes some skeptics to struggle with the concept of personalized learning due to concerns that the ambiguity causes confusion, inconsistency, and ineffectiveness (Herold, 2018). Yet, proponents of personalized learning welcome the flexibility to adjust teaching practices to meet the individual needs of students (Baule, 2019).

State legislators are now showing support for the implementation of personalized learning in an effort to revitalize standardized test scores (Burnette, 2017). In fact, since 2012, at least 15 states have adjusted and even waived regulations to encourage the pursuit of personalized learning in schools (Burnette, 2017). Many school districts, like the Lindsay Unified School District in California, have completely redesigned their schools, basing student progress on mastery and eliminating the traditional age-based, grade-level system (Burnette, 2017).

Often referred to as student-centered learning, personalized learning has gained popularity and acceptance in modern American education systems but has roots in prior educational philosophies of a century ago (Blasco, 2017; Dockterman, 2018). Progressive Functionalism was based on the idea of student choice as early as 1917-1940, and politically based Romantic Radicalism led to the development of trends such as alternative schools from 1968-1974 (Blasco, 2017). Personalized learning allows teachers and administrators to view education from a new perspective—through the eyes of the learner (Rathgeber & Mamenta, 2017). By focusing on what and how students

learn rather than what teachers teach and tests assess, instruction can be adjusted to meet the needs and interests of students (Mulvey, Tezuka, & Franz, 2017; Rathgeber & Mamenta, 2017).

Theorists have identified two interests that must be measured in personalized learning: situational and individual (Bernacki & Walkington, 2018). Situational personalization involves the incorporation of students' out-of-school experiences in classwork to peak interest in the subject matter and help students make strong connections with the lessons (Høgheim & Reber, 2017). The idea that situational personalization improves student interest in subject matter has been well-accepted by educators for some time, and new research has shown the practice can also improve student achievement levels in math (Bernacki & Walkington, 2018).

Educational technology is widely used to address both situational and individual interests more effectively than traditional means by stimulating the interests of learners through exciting or fascinating situations and by providing tools to match the long-term interests of students with core content (Bernacki & Walkington, 2018). Well-implemented situational interest can lead students through four sequential phases in the development of individual interest in subject matter (Høgheim & Reber, 2017). The phases of development begin with situational interest triggered by an object or experience designed to capture the attention of learners who move into phase two when their attention is maintained (Høgheim & Reber, 2017). When students find value in the experience they enter phase three which is emerging individual interest. (Bernacki & Walkington, 2018; Rathgeber & Mamenta, 2017). As students develop personal

connections with the subject matter their individual interest increases to a well-developed phase, and situational interest becomes less of a priority (Høgheim & Reber, 2017).

Adoption of personalized learning practices varies both locally and globally as leaders of school systems assess the requirements of their students and communities (Herold, 2018). While personalized learning is individualized on the school district, building, and classroom levels, the movement itself has two primary aspects (Herold, 2019). One approach is geared toward student interests and passions, while the other prioritizes proficient mastery of academic subject matter (Herold, 2019). It involves activating students' prior knowledge, skills, and interests in a differentiated environment to evoke a deeper level of learning than what is achieved through traditional pedagogies (Patrick et al., 2013).

While personalized learning is practiced in various forms, it is grounded in long-accepted learning theories (Herold, 2019). What is new to the theories and a common denominator among most modern examples of personalized learning is the way in which technology is used to amplify traditional teaching methods (Herold, 2019). Blended learning is an instructional model that makes use of digital technologies to deliver personalized instruction, which is popular among those who feel strongly about the need for the development of 21st-century skills (Patrick et al., 2013).

Blended Learning

The most widely accepted of many definitions of the term blended learning is designing instruction wherein content and skills are acquired using a mix of one-to-one technology and face-to-face instruction (Pandit, 2018). Face-to-face instruction takes place in a classroom located in a brick-and-mortar facility away from home, and the

digital elements can occur anywhere the digital technology is functional, including the classroom and students' homes (Pandit, 2018). In a 2012 report for the Innosite Institute, blended learning experts Staker and Horn (2012) created a taxonomy for blended learning with four basic models. These are the rotation model, the flex model, the à la cart or self-blending model, and the enriched virtual model ("Blended Learning Models," 2017).

The rotation model is similar to the traditional station rotation design, which moves students among stations on a teacher-directed basis or set schedule, incorporating digital technology in at least one of the stations ("Blended Learning Models," 2017). Stations may include activities such as group projects, small-group and whole-group instruction, time for individual assignments, and opportunities for collaboration, all of which support 21st-century skills (Staker & Horn, 2012). The rotation model can be designed to move students through the stations as a whole class, in small groups, or as individuals with customized schedules ("Blended Learning Models," 2017; Lapek, 2017). Lab rotation expands the concept of the rotation model beyond a single classroom with students moving through multiple locations on the school campus, including at least one online learning lab (Pandit, 2018).

Some blended learning formats include the delivery of content via online lectures and presentations assigned by the teacher as digital homework (Lai et al., 2016). This blended learning structure is identified as a flipped or inverted classroom and is categorized as a variation of the rotation model (Staker & Horn, 2012; Tolks et al., 2016). While the terms flipped classroom and inverted classroom are not always used consistently, the two refer to the use of the platform at differing education levels (Tolks et al., 2016).

The term flipped classroom generally refers to elementary and secondary settings, while inverted classroom denotes post-secondary applications (Tolks et al., 2016). Flipped classrooms have gained popularity in recent decades, and researchers have found a statistically significant increase in the productivity level of face-to-face classroom time with the implementation of the flipped classroom in high school level courses (Aidinopoulou & Sampson, 2017). In a study on the effectiveness of flipped classrooms, high school mathematics teachers were asked to implement the platform using a systematic design model called the First Principles of Instruction Design Theory (Lo & Hew, 2017, p. 223). When the design principle was applied to two mathematics classes, it was determined the flipped classroom design helped both underperforming and high-ability students increase productivity and achievement levels (Lo & Hew, 2017).

Digital technology is the backbone of the flex model of blended learning, which incorporates online learning and teacher supervision (Pandit, 2018). The flex model of blended learning allows students to complete coursework independently at their own pace with a teacher physically present to monitor progress (Staker & Horn, 2012). Learning through this model is flexible, allowing students to move fluidly through various online and offline activities with personalized supports from the guiding teacher (Maxwell & White, 2017). The flex model is used to support non-traditional and at-risk students, giving them control over their progress and ownership of their learning (Saied & Nasr, 2018).

The self-blend and enriched-virtual models of blended learning are similar models, as students in both paradigms are enrolled in online courses (“Blended Learning Models,” 2017; Maxwell & White, 2017). The teachers of these courses deliver

instruction and host course content online ("Blended Learning Models," 2017; Maxwell & White, 2017). The most significant difference between the two models is that self-blended learning involves students who attend a brick-and-mortar school and select individual courses to attend online, while the enriched-virtual model is considered a whole-school experience with occasional group meetings on the school campus (Pandit, 2018; Staker & Horn, 2012).

Successful teachers in blended learning environments design instruction using a purposeful combination of face-to-face learning and online learning experiences (Lai et al., 2016). Blended learning is a form of personalized learning, and by its very nature there is no one mode or plan of instruction that can be adopted in its entirety to meet the needs of all students (Dziuban, Graham, Moskal, Norberg, & Sicilia, 2018). Teachers design and implement blended learning environments, monitor progress, readjust techniques, and develop new ways to reach students and guide them down multiple paths of learning (Maxwell & White, 2017). Successful teachers in blended learning environments recognize no one model of instruction will work effectively when used as the sole format of learning; specific models should be used according to the current goals and needs of the students (Maxwell & White, 2017) (see Figure 1).

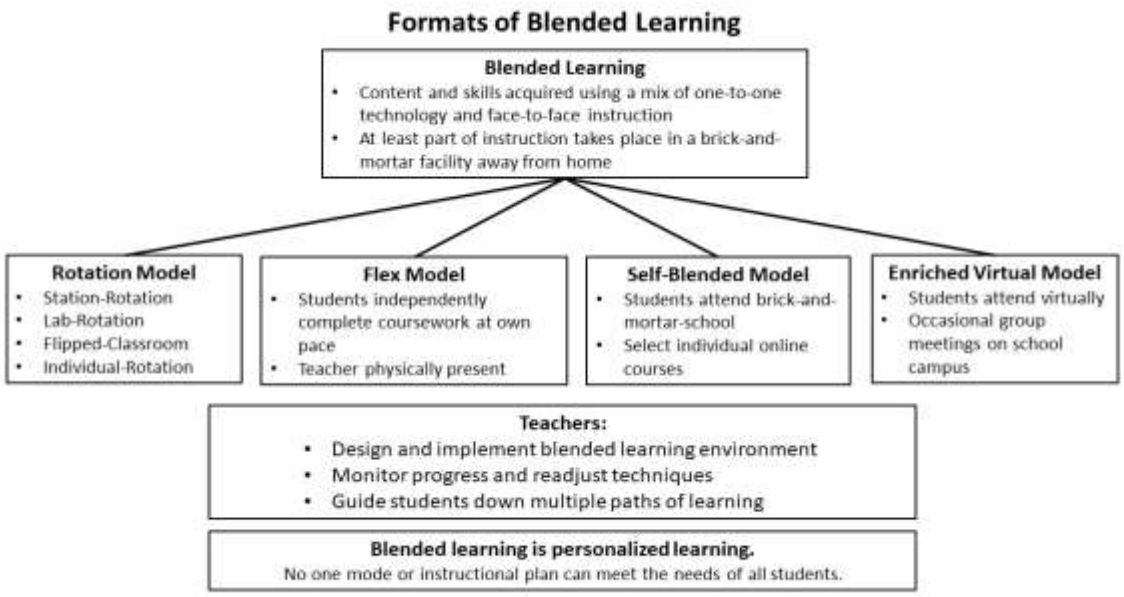

Figure 1. Formats of blended learning. Adapted from "Blended Learning Taxonomy," by H. Staker and M. B. Horn, 2012, *Classifying K-12 Blended Learning.* Copyright 2012 by Innosight Institute.

It is also essential to remember that while digital technologies are valuable resources, relying on them too heavily can hinder the development of 21st-century skills such as communication and collaboration (Makarova & Makarova, 2018). Successful application of technology is not focused on the tool itself but on the learning it facilitates, and student choice should include various formats to gain information (Vander Ark, 2018). The quality conceptualization, or priority, is that students have expressed a need for blended learning and agree the benefits are well worth the effort (Lai et al., 2016).

The preparedness of teachers to instruct students successfully is of vital importance in any classroom. This is especially so in a blended learning environment where the instructor designs and orchestrates complex lesson content and delivery

(Greene & Hale, 2017). Components of blended learning include the coordination of content available in multiple formats, student collaboration, independent completion of personalized assignments, direct instruction, formative and summative assessments, and differentiation of instruction (Plough, 2017).

Like all major change, however, the shift from traditional, teacher-centered classrooms to student-centered, technology-enhanced learning environments can be difficult for teachers to maneuver (Christensen et al., 2018). An effective blended learning plan should include rigorous content, differentiation, and personalized instruction, as well as systematic opportunities for meaningful communication and collaboration (Aslan, 2016). Designing a successful blended learning system requires a great deal of planning and organization, front-loading of lessons and information, and a complete assessment of existing content material to identify additional needs (Aslan, 2016). Effectively completing all of the preliminary tasks required for blended learning is an intricate process, and the successful execution of a blended learning program requires dedication and understanding of what is required to implement both online and offline instruction (Schechter, Kazakoff, Bundschuh, Prescott, & Macaruso, 2017).

Teacher Self-Efficacy Impacts Instruction

Self-efficacy is a vital element of Bandura's social cognitive theory, described as one's internal interpretation of existing knowledge, emotions, and behaviors (Tilton & Hartnett, 2016). It determines an individual's ability to stimulate change and effectively adapt to alterations in the environment (Tilton & Hartnett, 2016). Künsting et al. (2016) stated self-efficacy beliefs are peoples' subjective expectations of whether or how well they will accomplish certain tasks or demands, and a high level of self-efficacy has been

linked to high achievement and greater persistence in learning new skills (Tilton & Hartnett, 2016).

Four main sources of information have the greatest impact on a person's level of self-efficacy (Baleghizadeh & Shakouri, 2017). These include mastery experience, physiological and emotional states, vicarious experience, and verbal persuasion (Wyatt, 2016). Researchers have found mastery experience has the most profound effect on teachers' levels of confidence (Baleghizadeh & Shakouri, 2017).

Remembering prior achievements and attainment of goals increases the likelihood one will face similar challenges with confidence, while those who perceive past attempts as failures are less likely to repeat efforts for similar or new tasks (Morris, Usher, & Chen, 2017). Vicarious experiences increase self-efficacy by providing an opportunity to learn procedures and practices though observation of others completing them correctly (Morris et al., 2017). Evaluative feedback is another source of information that can have positive or negative effects on a teacher's level of self-efficacy, especially when delivered by respected individuals and those in authority, such as building principals (Lambersky, 2016; Morris et al., 2017). Evaluative feedback affects the emotional state of teachers by encouraging them and building their confidence to tackle major tasks or by adding negative emotions and stress when poorly delivered, which is a major cause of low job satisfaction and teacher burnout (Lambersky, 2016).

A teacher's level of self-efficacy directly affects performance in many areas such as interactions with peers, use of effective teaching strategies, openness to demanding or difficult students, and classroom management (Mahler, Großschedl, & Harms, 2018). Künsting et al. (2016) determined two of the most important teacher self-efficacy beliefs:

> (1) the belief in one's ability to instruct students effectively, interact with them in a didactic manner that addresses their needs, and explain [to] them the subject matter to improve their learning; (2) the belief to be able to keep discipline, minimize disruptions, and create a calm atmosphere that enables learning. (p. 301)

Data collected in research on the effects of teacher self-efficacy on student performance reveal a strong connection between the two factors (Veronika, Lívia, Tirpáková, & Eva, 2018).

Self-efficacy affects decisions made when adjusting to new situations like the adoption of technology in the classroom, and it is critical teachers have a high level of self-efficacy when developing an effective blended learning environment (Joo, Park, & Lim, 2018; Tilton & Hartnett, 2016). Teachers may have low efficacy toward digital technology even if they have a high level of self-efficacy overall as a teacher, especially when facing the task of creating a blended learning environment for students (Tilton & Hartnett, 2016). Teachers must overcome four key challenges when constructing an effective blended learning system (Boelens et al., 2017). These challenges include incorporating flexibility, such as time, place, pace, and paths of learning; facilitating interactions with other students and the teacher; facilitating students' learning processes, enabling them to be effective independent learners; and fostering a learning climate that is both motivating and effective (Boelens et al., 2017). A teacher with high self-efficacy toward teaching and the use of digital technology is more capable of building a blended learning environment that enables students to thrive than is a teacher with low self-efficacy (Künsting et al., 2016)

Researchers have also identified a strong relationship between teacher self-efficacy and the cognitive level of planned learning activities (Veronika et al., 2018). Teachers with a high level of self-efficacy are more likely than those lacking confidence to experiment with promising instructional strategies and to challenge students with high-level, open-ended questions (Joo et al., 2018). Developing rigor in the blended learning classroom does not happen automatically (Perron, Gomez, & Testa, 2016). For students to achieve high standards and reach challenging goals, teachers must be intentional in their efforts to provide opportunity and support, while continuously monitoring and reflecting on student progress (Perron et al., 2016).

Some psychologists believe self-efficacy is cyclical in nature; positive experiences increase self-efficacy, whereas struggles or failures lead to a negative shift in efficacy (Baleghizadeh & Shakouri, 2017). Confidence and belief in one's abilities can be altered in a positive direction with skillful guidance that fosters personal success (Baleghizadeh & Shakouri, 2017). However, in a related six and one-half year study on the long-term stability of teacher self-efficacy, scholars found the confidence level of teachers did not change much during that time, indicating the long-term level of self-efficacy is stable, once set (Künsting et al., 2016). In either case, early and effective professional development is vitally important to building high levels of efficacy for emerging teachers (Künsting et al., 2016).

Impact of Professional Development on Teacher Self-Efficacy

According to the National Center for Education, 10% of American teachers employed in public schools have three years of experience or fewer (McFarland et al., 2018). Even higher than the national average, over 30% of the teacher workforce in

Missouri have five or fewer years of full-time teaching experience (MODESE, 2018). However, researchers have indicated new teacher induction and professional development can improve retention rates of new teachers (Ronfeldt & McQueen, 2017).

Effective professional development begins when teachers are pre-service education majors (Teng, 2017). In education programs, teacher candidates must successfully develop knowledge in six areas: content knowledge, pedagogical knowledge, biological and cognitive development of children, personality traits, high-level conceptual knowledge, and education-communication knowledge (Kanadli, 2017). Because in-service teachers develop levels of self-efficacy quickly in several areas of active teaching, it is important for professors of undergraduate programs to identify and correct areas of concern in any of the six knowledge areas before new teachers leave post-secondary institutions (Yoo, 2016). In a study of the factors affecting the self-efficacy of pre-service teachers, Kanadli (2017) found student choice and availability of applied courses, apart from theoretical knowledge, have a positive impact on the self-efficacy of teacher education majors (Kanadli, 2017). Positive interpersonal relationships with professors in teacher education programs build efficacy in pre-service teacher candidates, leading to increased achievement in college and forthcoming careers (Kanadli, 2017).

Once new teachers enter the field, early professional development opportunities designed to strengthen teacher self-efficacy are of vital importance because they enable administrators to identify and address any remaining deficiencies in teachers as early as possible (Künsting et al., 2016). In 2016, the California County Superintendents Educational Services Association (CCSESA) (2016) released its preliminary findings of

an investigation regarding the effects of new teacher and administrator induction programs on job performance. In this study, researchers discovered induction programs had a positive impact on teacher and administrator job retention as well as student performance (CCSESA, 2016). Discerning the needs of new teachers and providing effective induction to meet those needs is of vital importance (U.S. Department of Education, 2018). Mentoring plays a vital role in effective teacher induction (CCSESA, 2016). Data have revealed new teachers want help balancing their professional and personal lives, providing students with successful experiences, and learning to be at ease in their new positions (Bowden & Portis-Woodson, 2017).

Effective orientation and professional development designed to provide new teachers an opportunity to experience learning activities that mirror the experiences of students are very successful in creating teacher satisfaction and increasing retention rates (Totaro & Wise, 2018). For example, the West Windsor-Plainsboro Regional School District in New Jersey provides new teachers with a total immersion experience by leading them through an intense four-day, problem-based learning unit, demonstrating instructional practices district administrators expect to see in classrooms (Totaro & Wise, 2018).

The new teacher population is continuously changing, and the majority is currently comprised of millennials who have different orientation needs than those of previous generations (Gilmore, 2018). This new workforce needs quick access to technology, required videos assigned as homework, and rubrics that provide specific details of policies (Abrams, 2018). It is important to provide new teachers with a clear understanding of expectations, including definitions of all key words before any

accountability is put in place, and continued support is necessary to help novice teachers build strong self-efficacy (Abrams, 2018; Gilmore, 2018).

Continuing Support

It takes beginning teachers three to seven years to gain enough experience to be considered highly qualified (Callahan, 2016). However, one of the biggest challenges in developing successful schools is the increasing struggle to retain newly hired and first-year teachers (Carr, Holmes, & Flynn, 2017). Most new teachers begin their first year of instruction with excitement and a commitment to change the world through their work, but the stresses of the job break the spirits of many new teachers; one-third leave the position within the first five years of service (Callahan, 2016).

It is the responsibility of education leaders to integrate new teachers into the culture of the school and to help them become fully functioning members of the faculty (Carr et al., 2017). Pre-service preparation is not sufficient for the education of successful teachers; they need ongoing professional development and support to build a knowledge base to draw upon when making decisions as problems arise (Klein, Taylor, Onore, Strom, & Abrams, 2016). While school administrators cannot keep every new teacher from leaving, they can provide support and professional development opportunities to help teachers build self-efficacy and increase retention rates (Callahan, 2016). Mentoring and coaching are the most common practices to provide support for new teachers, and self-mentoring is becoming increasingly popular in the 21st century (Carr et al., 2017). Self-efficacy is most influenced by interactions between personal and environmental factors, making ongoing support for new educators a necessary component of professional development (Skaalvik, & Skaalvik, 2016).

New teacher mentor programs vary; however, they all share a common goal to improve teaching practices and increase teacher retention (Sowell, 2017). This is accomplished by partnering a new teacher with one who is experienced and able to anticipate obstacles the new teacher will face during the learning curve of the first few years of service (Callahan, 2016). Effective mentors serve as supportive confidants who provide their mentees with positive feedback and guiding input while identifying opportunities for improvement (Fink, 2016).

Mentors offer valuable experience and assistance with tasks such as lesson planning, organization, and classroom practices (Fink, 2016). It is important for mentors to build positive relationships with the new teacher mentees they serve, creating a trust the new teachers can rely on without fear (Sowell, 2017). Not all mentors are well-trained to complete their duties, but those who are, learn how to be effective coaches for their mentees (Vikaraman, Mansor, & Hamzah, 2017). Coaching focuses on target skills chosen by either the mentee or mentor and continues until the mentee meets specific proficiency goals (Vikaraman et al., 2017).

While billions of dollars are spent on professional development in education each year, teachers express traditional professional development does little to help them meet the needs of students in their classrooms (Epp, 2017). Darling-Hammond, Hyler, and Gardner (2017) identified seven common features of effective professional development. These features include focused content, active learning, models of effective practice, collaboration, coaching and expert support, feedback and reflection, and sustained duration (Darling-Hammond et al., 2017). Experts have agreed the most-effective professional development is not attendance at isolated conferences and trainings built

around a handful of focused strategies or resources (Epp, 2017). It is ongoing and personal (Epp, 2017).

Similar to the pedagogical transition from traditional teacher-delivered instruction to student-centered learning, modern educators are calling for change to a collaborative, personalized approach to professional development (Meijs, Prinsen, & de Laat, 2016). Social learning is a form of professional development involving networking and collaborative experiences organized according to teacher interest and choice (Meijs et al., 2016). The collaborative design model incorporates cooperative teams creating new teaching methods to utilize in their departments (Svendsen, 2017). Employing problem-based learning methods, teachers choose an area of teaching they would like to improve and work together to redesign their approaches, collaboratively developing new methodologies (Svendsen, 2017). Members of the team use the new design in their individual classrooms, reflect on their performances, and then meet again as a team to critique and adjust strategies (Svendsen, 2017).

Another way of providing ongoing support to build self-efficacy in blended learning teachers is to offer professional development in a personalized, blended learning format (Darling-Hammond et al., 2017; Terrell, 2017). The Community for Advancing Discovery Research in Education established three emerging design principles of blended professional development for teachers (Kowalski et al., 2017). These three principles include motivating participant engagement, creating opportunities for teachers to collaborate as learners, and supporting reflection on content and practice (Kowalski et al., 2017).

This professional development begins with face-to-face engagement and encourages teachers to make decisions about what and how they will learn (Darling-Hammond et al., 2017; Kowalski et al., 2017). Some school districts, such as the Hattiesburg School District in Mississippi, have implemented a compensation system for active participation and award badges when teachers complete online courses or create project-based learning artifacts (Terrell, 2017). Models of professional development in a blended learning format encourage collaborative efforts and meaningful reflection on artifacts (Kowalski et al., 2017).

Another prevalent form of support for teachers is the professional learning community model, designed to ensure all students learn through a collaborative school culture, focused on results (DuFour, 2004). Well-established professional learning communities create a school-wide culture of collaboration and an expectation that all teachers and administrators work on genuinely inclusive and cohesive teams (Turner, Christensen, Kackar-Cam, Fulmer, & Trucano, 2018). These teams are ongoing, focusing on the critical examination of teaching techniques, implementing data-driven instruction, and increasing student achievement levels (Turner et al., 2018). Professional learning communities provide opportunities for teachers to become leaders and for paraprofessionals to be an equal part of learning teams (Turner et al., 2018). Results of several studies have revealed new teachers experience a significant increase in self-efficacy to accomplish goals when they actively participate in professional learning community teamwork and use data analysis to help students master learning objectives (Voelkel & Chrispeels, 2017).

Summary

American education is in the midst of a transformation from factory-style, teacher-centered institutions to educational environments that support a personalized learning paradigm (Newman & Dickinson, 2017; Plough, 2017; Stone, 2018). As educators work to meet the needs of 21st-century students in a technology-infused world, instruction shifts from traditional behaviorist-based lessons to pedagogical practices based on constructivism (Lapek, 2017). Teaching in a blended learning environment is a challenging endeavor, even for seasoned teachers, and is a major factor contributing to the high stress levels of new teachers; stress has led a growing number of educators to leave the field of education (Carr et al., 2017; Lai et al., 2016). Teacher self-efficacy is the number one predictor of effective educator performance and student learning outcomes (Künsting et al., 2016). It is imperative new teachers receive sufficient education, training, and continued support to teach effectively in a blended learning environment (Kanadli, 2017; Skaalvik & Skaalvik, 2016; Veronika et al., 2018).

Chapter Two contained an historical overview of behaviorist and constructivist learning theories and the impact those theories have on education. Also provided in Chapter Two was background information regarding the development of technology and the need for students to develop 21st-century skills. Blended learning as a technology-driven, student-centered, personalized learning model was included. Finally, the discussion ended with an exploration of the effects of teacher self-efficacy on the quality of instruction, as well as factors that affect teacher self-efficacy.

Chapter Three includes a detailed description of the methodology for this study. Incorporated in Chapter Three are the problem and purpose overview, research design,

population and sample, instrumentation, and a thorough explanation of efforts to ensure the validity and reliability of all data collected during the study. Chapter Three also includes a detailed explanation of the methods used for data collection and data analysis. Finally, an explanation of ethical considerations to ensure participant protection is provided.

Chapter Three: Methodology

Advancements in technology have been a major force in the shift of pedagogical practices from traditional behaviorism to a constructivist approach (Stone, 2018). The need to develop 21st-century skills in students as they prepare for their futures is an important influence on this change (Plough, 2017). Students must become proficient in employing technology effectively and must develop strong character and collaborative problem-solving skills (Plough, 2017).

Learning needs to be personalized for students, and a blended learning environment is becoming increasingly popular in American schools, as it offers both personalization and development of 21st-century skills (Soffel, 2016). However, developing an effective blended learning environment is a challenging endeavor (Lai et al., 2016). Novice teachers entering the field must be thoroughly and properly trained to develop self-efficacy that will empower them to provide rigorous instruction in a blended learning environment (Mahler et al., 2018). This qualitative study was designed to examine the perceptions of university professors, secondary principals, and novice teachers regarding teacher preparation and how preparation affects the confidence level of new teachers to provide effective instruction in a blended learning environment.

This chapter begins with a discussion of the problem and purpose of the study. Next, the methodology behind the research design is addressed, and the research questions are then restated, followed by a description of the population and sample and the reasoning behind these choices. The instrumentation, including an explanation of the reliability and validity of the instrument, is provided, and the data collection process is

explained. Finally, the analysis of the data is outlined, and a full description of steps taken to ensure the ethical integrity of the research is provided.

Problem and Purpose Overview

A complete shift in paradigm from traditional, teacher-centered instruction to a technology-based, student-centered approach is not an easy one to make (Christensen et al., 2018). Quality instruction in a blended learning environment affords opportunities for students to learn important 21st-century skills while mastering challenging content (Aslan, 2016). Planning and facilitating effective instruction in a blended learning environment requires skill and dedication to coordinate many learning opportunities (Aslan, 2016). While society's technology infusion is the force that drives many of the changes in American education, simply placing technology into the hands of students does not guarantee academic success and can actually hinder student achievement (Conant, 2016). Conant (2016) suggested when a study results in this type of outcome, investigators must conduct further research to find out why.

The purpose of this study was to add to existing research by examining the self-efficacy of novice teachers as one possible factor affecting student achievement in a blended learning environment. Teacher self-efficacy is a prominent determining factor of quality of instruction, and a teacher's long-term level of self-efficacy is stable once set (Künsting et al., 2016). Blended learning is a challenging endeavor, and it is critical for teachers to have a high level of self-efficacy when developing effective blended learning environments (Joo et al., 2018; Lai et al., 2016; Tilton & Hartnett, 2016). One of the most influential sources of information impacting one's level of self-efficacy is mastery experience (Baleghizadeh & Shakouri, 2017). Researchers have found that effective

education and professional development including application of skills can provide sufficient mastery experience to increase the self-efficacy of teachers (Yoo, 2016).

Research questions. The following research questions guided the study:

1. In what ways do college of education personnel prepare pre-service teachers to teach effectively in a blended learning classroom using district-supplied technology and resources?
2. In what ways do secondary principals prepare and support novice teachers to teach effectively in a blended learning classroom using district-supplied technology and resources?
3. How prepared and supported do novice teachers feel regarding their ability to teach effectively in a blended learning environment using district-provided resources and technology?

Research Design

This qualitative study was conducted in the natural setting of the participants, with all interviews taking place on-site at the schools in which the participants work (Creswell & Creswell, 2017; Lichtman, 2013). Speaking with participants directly and observing their behaviors within their normal environment is a prevalent element of qualitative research (Creswell & Creswell, 2017). This research included interviews with teacher education professors from colleges in the southwest region of Missouri to discuss how the institutions prepare teacher candidates for positions in blended learning environments (MODESE, 2014). Interviews also took place with secondary building principals from the same region to elicit perceptions of the preparedness of new teachers for work in a blended learning environment (MODESE, 2014).

Interview participants discussed the orientation, professional development, and ongoing support provided to enable new teachers to work in their schools and districts successfully. Finally, a focus group was conducted with new teachers of core content areas in blended learning environments to learn about their perceptions of preparedness to teach in this setting. The focus group discussed what teacher education programs implemented to prepare them for their positions, what building and district administrators provided for professional development and ongoing support, and how confident the novice teachers felt as they carried out new duties.

Population and Sample

According to the MODESE's *Teacher Workforce* report, districts in Missouri employed 70,575 teachers during the 2017-2018 school year (Katnik, 2019, p. 17). Of those teachers, 22,231 (31.5%) had been employed full-time for five years or fewer (Katnik, 2019, p. 15). Missouri districts also employed 16,481 K-12 administrators and supervisors during the 2017-2018 school year (MODESE, 2018, para. 7). Finally, according to the most recent Missouri Department of Higher Education (2019) statistics, there were 12,116 full-time faculty members working for public and private not-for-profit institutions of higher learning in Missouri (MODESE, 2018). The participants in this study were a purposive sampling of these three groups, chosen to provide insight into the experiences of novice teachers in blended learning classrooms and to investigate perceptions regarding the professional development new teachers receive (Butin, 2009; Crossman, 2017; Palinkas et al., 2015).

The first group (A) was comprised of three teacher education professors—two from four-year universities and one from a two-year college—all located in the southwest

region of the state (see Figure 1) (MODESE, 2014, 2018). Group A was interviewed to provide insight into the preparation and training provided by post-secondary institutions for teacher education majors. The second group (B) included three building principals representing one small secondary school with a student population of 442 students; one medium secondary school with a student population of 1,318; and one large secondary school with a student population of 2,216 students. All three schools were located in the southwest region of Missouri and had a one-to-one technology ratio of computers to students in their buildings (MODESE, 2014). The members of Group B were interviewed to gain perspectives regarding the implementation of blended learning, as well as professional development and continued supports provided for novice teachers.

The third group (C) was comprised of nine novice secondary teachers of state-tested, core-content areas representing the same schools as the participating principals. The members of this sample group were selected from state-tested, core-content areas because these courses require rigorous instruction according to mandated guidelines, and student achievement is monitored by the state board of education (MODESE, 2018). The participants met as three focus groups with three participants each, for a total of nine teachers interviewed in a focus group setting. These participants discussed their experiences as novice teachers, as well as their perspectives on how well-prepared and supported they felt to teach effectively in a blended learning environment.

Instrumentation

The interview questions were designed based on the transition of American education from behaviorist-based, teacher-centered instruction to constructivist-based, student-centered blended learning (Christensen et al., 2018; Greene & Hale, 2017). The

intention was to provide insight into the effects of self-efficacy on the ability of novice teachers to teach in a blended learning environment and to elicit perceptions of new teacher preparedness for this environment in the eyes of teacher education professors, secondary building principals, and novice teachers.

All nine questions from the teacher education professor instrument, the first question from the building principal instrument, and the first five questions from the novice teachers instrument were focused on pre-service preparation of teachers for blended learning (Kanadli, 2017; Künsting et al., 2016; Totaro & Wise, 2018). Questions four through six from the building principal and novice teacher instruments were focused on professional development provided for novice teachers by their school districts (Creswell & Creswell, 2017). Questions seven through 10 from the building principal and novice teacher instruments were focused on curricular materials provided at the district and building levels for novice teachers (Schechter et al., 2017; Totaro & Wise, 2018).

Reliability. There are many avenues for ensuring the reliability of qualitative research. Qualitative researchers must keep thorough documentation of every step taken while conducting a study (Creswell & Creswell, 2017). In doing so, the reliability of the research is strengthened by providing a complete plan to allow others to replicate the study in full detail (Creswell & Creswell, 2017). In this study, the research and interviews were guided by detailed protocol, which future researchers might use if duplicating the study. All transcripts from the interviews were examined to ensure clarity and the absence of mistakes. The coding process was monitored and checked for

consistency to protect the data from being interpreted or coded inconsistently (Castleberry & Nolen, 2018).

Validity. Validity in research is truthfulness and reliability of findings in scientific inquiry (Cypress, 2017). A valid study includes instruments that effectively measure what they are intended to measure (Johansson, 2019). Three methods were used to ensure validity of the information gathered during the study.

The first method used was triangulation by involving three separate groups in the interview process, all reflecting on the same issues (Creswell & Creswell, 2017). Member checking was used to ensure the validity of the qualitative findings by allowing participants to review the accuracy of the data, which provided respondent validation (Cypress, 2017). A report detailing the descriptions of themes and discoveries revealed during the interview process was shared with the participants to determine the accuracy of what was reported. Finally, a qualitative research method provided an opportunity to describe in rich detail the experiences and feelings of all participants in relation to the phenomenon studied (Creswell & Creswell, 2017). A deep and thorough description of the perceptions of all participants adds to the validity of the findings (Butin, 2009; Creswell & Plano Clark, 2018).

Data Collection

Data collection began with gaining permission from superintendents of the three public school districts selected from the southwest region of Missouri, the leaders of teacher education departments of the colleges and universities selected from the same region (see Appendix A), and the Lindenwood Institutional Review Board (see Appendix B). An email including a letter of participation (see Appendix C), research information

sheet (see Appendix D), and a copy of the professor interview questions (see Appendix E) was emailed directly to teacher education professors of the participating colleges and universities. An email including a letter of participation (see Appendix F), research information sheet (see Appendix G), and a copy of the principal interview questions (see Appendix H) were sent directly to the participating secondary principals. This email (see Appendix I) also included a request for each principal to select three novice, core content teachers to take part in the research and reply with an email providing contact information for each teacher participant. A letter of participation for the focus group (see Appendix J) and a research information sheet (see Appendix K) were sent to each focus group participant.

All participants were contacted personally to schedule interviews and organize focus group discussions for secondary teachers. Focus group interviews were guided by the focus group interview questions (see Appendix L). Once collected from the interviews and the focus groups, data were coded to provide a thorough analysis.

Data Analysis

Since qualitative data are collected through observation and discussion, the researcher must keep deep and rich records of all conversations with participants in the study (Creswell & Creswell, 2017). The researcher not only takes detailed notes and observations but also begins analyzing information during the interview process, managing two separate procedures simultaneously (Castleberry & Nolen, 2018). The concept of analyzing while investigating is unique to a qualitative study (Amrollahi & Rowlands, 2016; Creswell & Creswell, 2017).

During the interview process of a qualitative study, the researcher acquires a large inventory of dense, narrative data that must be examined, carefully sorted, and organized (Castleberry & Nolen, 2018). To process the information, the researcher must winnow the data or keep pertinent data and disregard the rest (Creswell & Plano Clark, 2018). Without doing so, the data become cumbersome and unclear (Creswell & Creswell, 2017). In doing so, the data must be transcribed and coded to reveal patterns and themes within the text (Creswell & Creswell, 2017).

An electronic transcriber and transcription software were used during the interview process (Johansson, 2019; Salmona & Kaczynski, 2016). All field notes taken throughout the process were typed, and all data sorted and arranged according to type and source (Castleberry & Nolen, 2018). The data were collected, read, and prepared for the coding process (Castleberry & Nolen, 2018). This can be a very laborious and time-consuming process; however, the use of computerized coding software can provide detailed coding (Johansson, 2019; Salmona & Kaczynski, 2016). The transcription software helped to ensure no important details were missed (Creswell & Creswell, 2017).

Once the data were coded using open and axial methods, they were categorized, and the identified themes were considered and described in detail (Creswell & Plano Clark, 2018). Open coding was used to identify themes and develop general categories (Amrollahi & Rowlands, 2016). Once these categories were defined and refined through open coding, the codes were examined again through axial coding to identify commonalities among the codes and organize them accordingly (Amrollahi & Rowlands, 2016). At this point, the connection of the data to the research questions was examined,

noted, and described. When the systematic analysis was complete, findings were reported using a narrative format (Creswell & Plano Clark, 2018).

Ethical Considerations

Ethical considerations in this research were considered and in place from the beginning of the study. Following approval by the Lindenwood Institutional Review Board, the details of the research methodology and confidentiality protections were described to the participants in full detail, and the research information sheet was delivered electronically to all participants. All participants were notified that participation was purely voluntary, and they could opt out of the study at any time without negative consequences. The amount of time required of the participants was explained, as well as the importance of their contribution to the field of education.

Throughout the study, all identifying documents and materials were secured. Each participant in the study was assigned a pseudonym, and identifiers such as name, gender, and age were protected to safeguard the identities of participants. However, participants were advised there was a possibility comments would be recognized even with all safeguards in place.

All interviews were conducted in the participants' natural surroundings, and electronic files were password-protected on one computer designated for use with the study and not used for any other purpose (Fraenkel, Wallen, & Hyun, 2019). Electronic recording devices used for the study were password-protected (Fraenkel et al., 2019). All materials and equipment connected to the study were stored in a locked cabinet and will be destroyed three years after the study is completed.

Summary

Chapter Three began with a recap of the educational theories upon which this study was based related to the shift in American education from a behaviorist-based model to a constructivist approach. Following this introduction to the chapter, the research questions were restated, and a discussion of the research design followed. Next, an explanation of the population and sample and the instrumentation designed for use in the study were discussed.

The methods in place to ensure reliability and validity in the study were explained in detail in Chapter Three, followed by a descriptive account of the qualitative data collection process and the analysis of the data. Finally, ethical considerations in place to protect the interests of all participants were explicated. Chapter Four includes the presentation of data.

Chapter Four: Analysis of Data

Background

The purpose of this study was to examine the preparedness of novice teachers to teach effectively in a blended learning classroom using district-supplied materials. Perceptions were elicited from college professors who instruct pre-service teacher education students, principals who hire novice teachers, and novice teachers themselves. While researchers have shown the use of technology in the classroom can have a positive impact on the development of 21st-century skills, others have revealed it can have a negative impact on student achievement. The data collected and analyzed in this study may help to identify low teacher self-efficacy as one possible contributing factor to this negative impact.

Interview questions for this qualitative study were designed to answer the research questions (Lichtman, 2013). The research questions were created based on the transition of American education from teacher-centered instruction to student-centered blended learning (Christensen et al., 2018; Greene & Hale, 2017). The intention was to elicit perceptions of novice teacher preparedness to teach effectively in a blended learning environment as viewed by teacher education professors, secondary building principals, and novice teachers. The results of this study provide insight into the effects of self-efficacy on the quality of instruction.

Qualitative Interview Data

Interviews and focus groups were utilized as the primary source of data for this study. Individual interviews and all focus group interviews were conducted in the participants' natural settings. Participants in the study included teacher education

professors, secondary high school building principals, and novice secondary general education teachers in blended learning classrooms located in the southwest region of Missouri. Participants were asked one of three sets of interview questions depending on the role of each individual in the preparation of novice teachers to teach effectively in a blended learning environment.

Teacher education professors. Complete anonymity was ensured for the teacher education professors by assigning codes to guarantee their privacy. These participants were in Group A and were referred to as Professor 1, Professor 2, and Professor 3.

Interview question A1. How does this institution prepare its pre-service teachers to effectively educate students in a student-centered/blended learning environment?

All three teacher education professors focused entirely on the technological aspects of blended learning. Professor 1 explained teacher education majors are introduced to a variety of online learning tools such as videos, podcasts, blogs, and virtual field trips. This professor also described direct instruction regarding the effective use of technology in the classroom and pedagogical techniques for implementing technology integration and enabling teachers to adapt to the needs of various districts. Finally, Professor 1 described student application of Google Classroom and Google Forms.

Similarly, Professor 2 described student application of Google Classroom and Google Forms as well as direct instruction regarding blended learning and flipped classrooms. Professor 3 listed direct instruction regarding classroom websites, social media for education, blended learning, and flipped classrooms. All three teacher education professors described direct teaching of educational technology, and two of the

three discussed student application of Google Classroom and Google Forms (see Table 1).

Table 1

Interview Question A1: How does this institution prepare its pre-service teachers to effectively educate students in a student-centered/blended learning environment?

Participant Responses	Prof 1	Prof 2	Prof 3
Introduced: Online learning tools including videos, podcasts, blogs, virtual field trips	X		
Direct instruction: Construction of classroom websites			X
Direct instruction: Social media for education			X
Direct instruction: Good pedagogy techniques on technology integration for adaptability to needs of districts	X		
Direct instruction: Blended learning and flipped classroom		X	X
Direct instruction: Effective use of technology in the classroom	X		
Student application: Google Classroom and Google Forms	X	X	

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question A2. What challenges have you faced in preparing teachers for the role of learning facilitator in a student-centered/blended classroom?

Professor 3 explained the greatest challenge experienced at this university was the availability of equitable technology access for students. To overcome the challenge, the university now provides laptops and iPads for all teacher education majors and has established on-site computer labs. Professor 1 described the challenges of keeping up with rapid changes in educational technology and the variable level of technology integration in the school districts that hire new teachers. Professor 2 addressed the

inconsistent needs of school districts and how the inconsistencies affect educational goals. This professor also described the difficulty in providing consistent placements for teacher education students for internships and student teaching:

> We prefer to find placements for our students with experienced teachers, but often when we are told that the cooperating teacher has, say, 10 years of experience, that teacher decides not to take part in the program, and our student teacher might end up working with a fairly inexperienced teacher.

Professor 2 also explained there is little consistency among districts, regarding the use of technology and teaching practices (see Table 2).

Table 2

Interview Question A2: What challenges have you faced in preparing teachers for the role of learning facilitator in a student-centered blended learning classroom?

Participant Responses	Prof 1	Prof 2	Prof 3
Availability of equitable technology access for students			X
Keeping up with changes in educational technology	X		
Inconsistent internship placements for teacher education students		X	
Variable level of technology integration of school districts	X	X	

Note. Themes directly identified by participants derived from the original interview transcripts.

Interview question A3. How are your pre-service teachers prepared to build pacing guides and curriculum according to the New Missouri Learning Standards?

All three professors described employing direct instruction to help students fully understand the Missouri Learning Standards, use the standards to create lesson goals, and

align curriculum to the standards. While one professor represented a two-year community college that does not employ internship placements, both professors from four-year institutions mentioned curriculum alignment and pacing strategies during student internships. Professor 2 explained:

> It [alignment] starts pretty quickly. For example, I am grading lesson plans now from a freshman class. They are required to address the Missouri standards and make sure their lessons address them not only at grade level but also below and above. The focus continues, and they [students] get a great deal of hands-on experience during their internship placements.

Table 3

Interview Question A3: How are your pre-service teachers prepared to build pacing guides and curriculum according to the New Missouri Learning Standards?

Participant Responses	Prof 1	Prof 2	Prof 3
Direct instruction: Missouri Learning Standards and grade-level expectations	X	X	X
Direct instruction: Using Missouri Learning Standards to create lesson goals	X	X	X
Direct instruction: Curriculum alignment	X	X	X
Direct instruction: Pacing strategies	X		
Internship: Curriculum alignment to standards		X	X
Internship: Pacing strategies			X

Note. Themes directly identified by participants derived from the original interview transcripts.

Interview question A4. What types of projects are used to engage pre-service teachers in the process of using learning standards to guide pacing, curriculum, differentiated/personalized instruction?

When asked to describe projects used to actively engage teacher education students in various applications of learning standards, all three professors described scaffolded instruction and modeling for pre-service teachers as well as internship and/or observation opportunities. Professor 3 described direct instruction through standards scavenger hunts, and both Professors 2 and 3 described direct instruction related to the components of effective lesson planning. Professor 1 also mentioned an application project for which students created a technology-based lesson and shared all the technology used to build the lesson (see Table 4).

Table 4

Interview Question A4: What types of projects are used to engage pre-service teachers in the process of using learning standards to guide pacing, curriculum, differentiated/ personalized instruction?

Participant Responses	Prof 1	Prof 2	Prof 3
Scaffolded instruction for pre-service teachers	X	X	X
Modeling for pre-service teachers	X	X	X
Direct instruction: Standards scavenger hunts			X
Direct instruction: Components of effective lesson planning		X	X
Student application: Create technology-based lessons and share all technology used	X		
Observation and teaching internships	X	X	X

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question A5. Please describe the training your pre-service teachers receive to enable them to build curriculum in an electronic format for use in blended learning environments.

Both Professors 1 and 3 described direct instruction for students to develop a broad understanding of multiple technologies and applications within the learning

environment, as well as student utilization of multiple free technology tools and programs. Professor 1 added coursework requires students to create online assessments that incorporate multiple digital formats within questions, such as videos and graphics. Professor 1 also described student application of technology through the creation of technology-based lessons and group sharing of all technology used in these lessons. In response, Professor 3 discussed opportunities for students to listen to guest speakers regarding educational technology, and Professor 2 cited student application of Google Classroom. All three professors explained students receive valuable training throughout multiple observation and internship experiences (see Table 5).

Table 5

Interview Question A5: Please describe the training your pre-service teachers receive to enable them to build curriculum in an electronic format for use in blended learning environments.

Participant Responses	Prof 1	Prof 2	Prof 3
Direct instruction: Develop broad understanding of multiple technologies and applications within learning environment	X		X
Direct instruction: Professional development opportunities – guest speakers			X
Student application: Utilization of multiple free technology tools and programs	X		X
Student application: Google Classroom		X	
Student application: Create online assessments incorporating multiple digital formats within questions	X		
Student application: Create technology-based lessons and share all technology used	X		
Observation and teaching internships	X	X	X

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question A6. What types of assignments do pre-service teachers complete to learn lesson planning/curriculum-building skills?

Professors 2 and 3 explained teacher education majors must learn the components of effective lesson planning early in their coursework. All three professors asserted their institutions require teacher education students to write lesson plans and identify elements of effective lesson plans. They also mentioned several opportunities for students to observe practicing teachers during the creation of lesson plans, as well as setting the expectation for students to plan and integrate instruction as part of their internship requirements.

Adding a technology element to the discussion, both Professors 1 and 3 explained students are taught to utilize multiple free educational technology tools and programs in their lesson planning. According to Professors 1 and 2, students in their institutions create technology-based lessons and share the technology used. Finally, Professor 1 added pre-service teachers are expected to create online assessments incorporating multiple digital formats within the questions on the assessments (see Table 6).

Table 6

Interview Question A6: What types of assignments do pre-service teachers complete to learn lesson planning/curriculum-building skills?

Themes	Prof 1	Prof 2	Prof 3
Student application: Identification of effective lesson plan elements	X	X	X
Student application: Lesson planning	X	X	X
Student application: Utilization of multiple free technology tools and programs	X		X
Student application: Components of effective lesson planning		X	X
Student application: Creation of online assessments incorporating multiple digital formats within questions	X		
Student application: Create technology-based lessons and share all technology used	X	X	
Observation and teaching internships	X	X	X

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question A7. What is the structure of the training, if any, pre-service teachers receive to effectively differentiate/personalize instruction?

All three professors explained their students must complete a course on exceptional learners. Professor 2 explained, “Our teacher education students are required

to take a course entitled 'The Exceptional Learner' by the end of their sophomore year. This course covers education laws, IEPs, modifications, and accommodations." Direct instruction of learning styles was also listed by all three professors. Two of the three professors explained their institutions provide students with direct instruction involving data tracking and data-driven response to intervention practices. Professor 2 specifically mentioned interventions for advanced learners as well as struggling students. Professor 1 spoke of direct instruction in the area of cognitive learning strategies, and both Professors 1 and 2 discussed interview opportunities with experienced teachers regarding lesson planning, curriculum, and differentiated instruction (see Table 7).

Table 7

Interview Question A7: What is the structure of the training, if any, pre-service teachers receive to effectively differentiate/personalize instruction?

Participant Responses	Prof 1	Prof 2	Prof 3
Direct instruction: Technology tools	X		X
Direct instruction: Data tracking		X	X
Direct instruction: RTI		X	X
Direct instruction: Learning styles	X	X	X
Direct instruction: Cognitive learning strategies	X		
Direct instruction: Course for exceptional learners including education laws, IEPs, modifications, accommodations	X	X	X
Interview experienced teachers (lesson planning, curriculum, differentiated instruction)	X	X	

Note. Themes directly identified by participants derived from original interview transcripts. RTI = response to intervention; IEP = individualized education plan.

Interview question A8. How are pre-service teachers prepared for using formative assessment to organize small group and individual instruction?

Each of the three professors discussed direct instruction for students to understand learning styles, collaborative grouping, and the components of effective formative assessment. Professors 1 and 2 also mentioned direct instruction for flexible grouping, and Professor 1 elaborated with specific mention of heterogeneous and homogenous grouping. Professors 2 and 3 described direct instruction on utilizing data to make changes in instructional sequences. Professor 3 added, "…Our students are provided with several opportunities to practice providing specific feedback on formative assessments that is useful for the growth of their students." In response, Professor 2 also elaborated:

> We have a high focus on collaborative group work. Many of our professors employ it in their teacher education classrooms, and students learn through the practice of several grouping methods that they experience as students. Our students also include grouping strategies in their written lesson plan assignments beginning in their freshman year. They are also instructed in the use of data to drive instruction; that includes analysis for the purpose of grouping students.

Table 8

Interview Question A8: How are pre-service teachers prepared for using formative assessment to organize small group and individual instruction?

Participant Responses	Prof 1	Prof 2	Prof 3
Direct instruction: Understanding of components of effective formative assessment	X	X	X
Direct instruction: Providing specific feedback			X
Direct instruction: Data-driven instruction		X	X
Direct instruction: Learning styles	X	X	X
Direct instruction: Flexible grouping	X	X	
Direct instruction: Collaborative grouping	X	X	X
Direct instruction: Data used for heterogeneous and homogenous grouping	X		

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question A9. What electronic platforms, if any, are pre-service teachers taught to utilize as they build curriculum for use in the classroom?

All three professors listed Google tools, Google Drive, Microsoft tools, and the use of the Blackboard learning platform as part of their coursework. Professor 3 also listed lesson-building sites such as Common Curriculum and Planboard. Google Classroom was described by Professors 1 and 2 as the learning platform for pre-service teachers to build curriculum (see Table 9).

Table 9

Interview Question A9: What electronic platforms, if any, are pre-service teachers taught to utilize as they build curriculum for use in the classroom?

Participant Responses	Prof 1	Prof 2	Prof 3
Google tools	X	X	X
Google Drive	X	X	X
Microsoft tools	X	X	X
Common curriculum, lesson-planning software			X
Planboard, lesson planning software			X
Teaching and learning analytics dashboards			X
Blackboard used as student	X	X	X
Google Classroom	X	X	

Note. Themes directly identified by participants derived from the original interview transcripts.

Secondary building principals. To assure complete anonymity, principals were assigned codes to guarantee privacy. These participants were labeled Group B and were referred to as Principal 1, Principal 2, and Principal 3.

Interview question B1. How prepared do you feel your new teachers were, prior to service, to step into a blended learning classroom and deliver content effectively? All three secondary principals evaluated novice teachers in their buildings as being "somewhat prepared" to teach effectively in blended learning environments. Each principal also stated the level of preparedness varied among novice teachers. Principal 3 elaborated, "[The] background of the individual teachers seems to play a role in how ready they are for blended learning." When asked to clarify, Principal 3 explained the background of the teachers referred to the use of technology on a personal level. Each principal mentioned novice teachers have some familiarity with the Missouri Learning

Standards. Principals 1 and 3 both stated that recent Missouri teacher education graduates arrive with limited understanding of curriculum-hosting platforms. Principal 1 also specified some graduates understand personalized learning (see Table 10).

Table 10

Interview Question B1: How prepared do you feel your new teachers were, prior to service, to step into a blended learning classroom and deliver content effectively?

Participant Responses	Princ 1	Princ 2	Princ 3
Very prepared			
Somewhat prepared	X	X	X
Varied greatly among candidates	X	X	X
Some familiarity of Missouri Learning Standards	X	X	X
Experienced with curriculum-hosting platforms	X		X
Familiar with personalization of instruction	X		

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question B2. How are your new teachers trained to build pacing guides according to the New Missouri Learning Standards?

All three principals in the study stated standards are printed and delivered to novice teachers in a binder to use for lesson planning. Principal 2 explained, "…The standards are supplied to all teachers each year, even for veteran teachers, especially with the recent development of the New Missouri Learning Standards." Principal B2 also explained novice teachers review application of the standards in lesson planning on a regular basis as part of the new teacher mentor program. This principal went on to describe another avenue of professional development supplied by the district:

> We are immensely proud of the interactive professional development available to all district personnel through Canvas. Our district technology department has spent over two years building the professional development modules on Canvas. They are highly informative, with videos that are very entertaining, and offer deep learning activities for our staff. Our teachers and other personnel can use the Canvas-based PD at their own pace and earn completion certificates to fulfill hours mandated by the state.

Finally, both Principals 2 and 3 explained their school districts operate as professional learning communities. Most training for building pacing guides takes place in content-area professional learning community meetings as teams work together throughout the year to build curriculum prior to instruction. Principal 1 stated the district provides binders for new teachers that include curriculum units and pacing guides. (see Table 11)

Table 11

Interview Question B2: How are your new teachers trained to build pacing guides according to the New Missouri Learning Standards?

Participant Responses	Princ 1	Princ 2	Princ 3
Standards printed for teachers	X	X	X
Standards and lessons reviewed with mentors		X	
Teachers work in PLC groups to write pacing guides according to standards, prior to instruction		X	X
All teachers have access to district PD on Canvas		X	
New teachers are provided with curriculum units that include pacing guides	X		

Note. Themes directly identified by participants derived from original interview transcripts. PLC = professional learning communities; PD = professional development.

Interview question B3. Please describe the new teacher training your school district provides, specifically related to teaching in a blended learning environment.

All three of the principals answered that their teachers are taught to use an electronic grade book. Regarding curriculum development, Principal 3 stated the district introduces incoming teachers to Google Classroom, while Principal 2 explained new teachers are introduced to Canvas through hands-on experiences as they build their first Canvas modules during new-teacher orientation. Principals 2 and 3 both discussed further training in regular professional learning community meetings during which teachers build curriculum as teams and employ data-driven differentiation practices on a regular basis. In contrast, Principal 1 explained:

> While this district has technology in place, it is not a supported priority in the community. Because of this it is not a high focus in the school district, so technology-based training is limited during orientation. Most of our teachers that are using blended learning in the classroom are initiating it on their own. (see Table 12)

Table 12

Interview Question B3: Please describe the new teacher training your school district provides, specifically related to teaching in a blended learning environment.

Participant Responses	Princ 1	Princ 2	Princ 3
Not a high focus on technology	X		
Taught to use electronic gradebook	X	X	X
Introduction to Google Classroom			X
Introduction to Canvas		X	
Orientation workshop: Build first Canvas module		X	
Data-driven differentiation work in PLC groups		X	X

Note. Themes directly identified by participants derived from original interview transcripts. PLC = professional learning communities.

Interview Question B4. Please describe the training your new teachers receive to enable them to build curriculum using the specific format expected in your building's blended learning environment.

All three building principals explained new teachers are trained by mentors on the required format for building curriculum. Principal 2 described a district-wide training approach focused on Canvas, the teaching and learning platform utilized by the district:

> Orientation in this district includes an introduction to Canvas with a training workshop where incoming teachers are led through the process of building their first Canvas-based module. We also host a lot of professional development on Canvas. New teachers receive continued support with the platform during professional learning community meetings where content teams design and edit modules for students as needed.

Principal 3 stated incoming teachers are introduced to Canvas and Google Classroom

during orientation. Both Principals 2 and 3 indicated their districts' educational technology departments regularly share technology tools and websites with teachers to maintain awareness of current trends in the field (see Table 13).

Table 13

Interview Question B4: Please describe the training your new teachers receive to enable them to build curriculum using the specific format expected in your building's blended learning environment.

Participant Responses	Princ 1	Princ 2	Princ 3
Introduction to Google Classroom			X
Introduction to Canvas		X	X
Orientation workshop: Build first Canvas module		X	
Curriculum modules on Canvas are living documents built by district PLC teams and continuously evaluated and improved by PLC teams		X	
Backwards design units built by district core content teams in place and available to teachers		X	
Mentor support to examine lesson design	X	X	X
Educational technology department regularly shares technology tools and websites		X	X

Note. Themes directly identified by participants derived from original interview transcripts. PLC = professional learning communities.

Interview question B5. What methods, if any, are used to show your new teachers how to use formative assessment to drive instruction?

When discussing professional development on utilizing data from formative assessment to drive instruction, both Principals 2 and 3 cited hiring guest speakers and trainers. All three principals discussed district-supported conference opportunities such as Marzano's data-driven instruction and professional learning community summits.

Principals went on to discuss data-driven work in professional learning community groups, and Principals 1 and 3 mentioned similar content-area and grade-level meetings. Principal 2 focused on Canvas professional development, then went on to discuss district biannual Ed Camps. He expounded:

> Twice each year our district holds Ed Camps here at the high school, and it is typically broken down into four sessions. Boards are displayed in the cafeteria where teachers can sign up to host sessions, then fellow teachers create an afternoon schedule by choosing what they would like to attend according to their own needs and interests. For the past five years our teachers have rated this as the most valuable professional development experience of the year. (see Table 14)

Table 14

Interview Question B5: What methods, if any, are used to show your new teachers how to use formative assessment to drive instruction?

Participant Responses	Princ 1	Princ 2	Princ 3
PD opportunities: Guest speakers/trainers		X	X
PD opportunities: Conferences	X	X	X
PD opportunities: District Canvas PD		X	
PD opportunities: Teacher-developed workshops at district Ed-camp		X	
Data-driven work in PLC teams		X	X
Work in content-area/grade-level teams	X		X
Guidance from new-teacher mentors	X	X	X

Note. Themes directly identified by participants derived from original interview transcripts. PD = professional development; PLC = professional learning communities.

Interview question B6. Can you describe the training, if any, your new teachers receive to enable them to provide differentiated instruction?

All three principals listed conferences as training opportunities regarding differentiated instruction. They also explained districts must provide adequate professional development to keep teachers current on education laws that protect the educational rights of all students, which pertains to differentiated instruction. Principal 2 also mentioned the district Canvas modules and Ed Camp opportunities previously discussed. Principals 1 and 3 mentioned work with content-area and grade-level teams as training for novice teachers. Similarly, Principals 2 and 3 discussed regular training through collaboration during professional learning community meetings. Finally, Principals 2 and 3 stated their districts provide training throughout the school year by bringing in guest speakers and trainers who are experts in many areas of education (see Table 15).

Table 15

Interview Question B6: Can you describe the training, if any, your new teachers receive to enable them to provide differentiated instruction?

Participant Responses	Princ 1	Princ 2	Princ 3
PD opportunities: Guest speakers/trainers		X	X
PD opportunities: Conferences	X	X	X
PD opportunities: District Canvas PD		X	
PD opportunities: teacher developed PD at district Ed Camp		X	
Required District PD: Education laws	X	X	X
Data driven work in PLC teams		X	X
Work in content area/grade level teams	X		X
Guidance from new-teacher mentors	X	X	X

Note. Themes directly identified by participants derived from original interview transcripts. PD = professional development; PLC = professional learning communities.

Interview question B7. What curriculum resources are in place for new teachers when they begin working in your building?

According to the participants, all three school districts provide teachers with purchased textbooks and additional curricular materials. Principals 2 and 3 also discussed educational technology programs for direct instruction, student support, and diagnostic testing and test preparation. The same principals also added that several of the textbooks now come with online support and interactive student applications as well as other support materials (see Table 16).

Table 16

Interview Question B7: What curriculum resources are in place for new teachers when they begin working in your building?

Participant Responses	Princ 1	Princ 2	Princ 3
District-purchased textbooks and curriculum materials	X	X	X
District-purchased educational technology programs		X	X
Purchased web-based support materials		X	X
PLC-authored Canvas courses		X	

Note. Themes directly identified by participants derived from original interview transcripts. PLC = professional learning communities.

Interview question B8. What type of continuous training, support, and guidance is employed, specifically related to curriculum and instruction in a blended learning environment?

All three principals discussed ongoing professional development experiences at both the building and district levels to support and guide novice teachers, as well as new-teacher mentor programs and observations by administration followed by timely feedback. Principals 2 and 3 also stated their new teachers are provided multiple opportunities to attend educational conferences related to various aspects of blended learning, and professional learning community groups provide regular collaboration and support. Principal 2 added that opportunities for continued training and support for blended learning are the most popular workshops offered during the district's Ed Camp experiences:

It is very exciting to see so many teachers who are experts in employing educational technology in the classroom share what they have learned with others. New teachers can

network and learn from masters in the classroom, which is far more effective than administrators who do not use the technology themselves. (see Table 17)

Table 17

Interview Question B8: What type of continuous training, support, and guidance is employed, specifically related to curriculum and instruction in a blended learning environment?

Participant Responses	Princ 1	Princ 2	Princ 3
Professional development at building and district levels	X	X	X
Professional development conferences		X	X
Ed Camp experience: Teachers presenting seminars to teachers		X	
New teacher mentor program	X	X	X
Observations with feedback by administration	X	X	X
PLC teams		X	X
Canvas-based district PD		X	

Note. Themes directly identified by participants derived from original interview transcripts. PLC = professional learning communities; PD = professional development.

Interview question B9. What are the greatest challenges you face in providing continuous support for new teachers in a blended learning environment?

In considering the greatest challenges to providing enough support for new teachers in a blended learning environment, Principal 1 discussed insufficient technology resources available in the district as well as insufficient funds for professional development. Expanding on this, Principal 1 explained:

> There is so much for new teachers to learn and a limited amount of time to share with individual teachers. We also serve a community that believes strongly in traditional education. So, while we need to provide our students with 21st-century skills, our community does not support a strong emphasis on digital learning.

Both Principals 2 and 3 agreed with Principal 1 regarding the sizable amount of information and skills new teachers need to learn and the limited amount of time administrators can afford to spend with individual teachers. The two also stated that new teachers are at various levels of technological competency, which makes it difficult to meet the needs of all new teachers with the same training. Finally, Principal 3 mentioned difficulties keeping professional learning community groups on task and purposeful, which interferes with the effectiveness of collaborative support for new teachers (see Table 18).

Table 18

Interview Question B9: What are the greatest challenges you face in providing continuous support for new teachers in a blended learning environment?

Participant Responses	Princ 1	Princ 2	Princ 3
Insufficient technology resources	X		
Insufficient PD funds	X		
Teachers are at various levels of technology competency		X	X
There is a great deal for new teachers to learn	X	X	X
Keeping PLC groups on task and effective			X
Limited amount of time to share with individual teachers	X	X	X

Note. Themes directly identified by participants derived from original interview transcripts. PD = professional development; PLC = professional learning community.

Interview question B10. What advice would you give to other administrators regarding staff training and support as they implement blended learning in their schools?

Principal 1 advised other administrators to listen to the needs of the community and remember that schools are in place to support them. Principal 1 continued, "…When your own educational philosophy leads you to see a need for change in the service that you provide for your students, plan that change carefully and make your changes carefully; one step at a time." This participant also advised administrators not to give up when facing challenges to change. Principal 2 offered advice about keeping up-to-speed as much as possible with current trends in education and technology in education. According to this principal:

> If you do not make an attempt to stay up-to-date with current trends in education you lose connection with members of your staff and become out-of-touch with what they are trying to achieve. In order to help them to the best of your ability, you need to speak their language.

Principal 3 suggested, "No matter what you do, remember who you are doing it for: the kids. Don't sweat the small stuff so much, and don't be afraid to take chances for your kids."

Novice teachers. Complete anonymity was ensured for novice teachers by assigning them codes to guarantee privacy. All novice teacher participants were placed in Group C. Participants in the first focus group were referred to as Novice Teacher 1, Novice Teacher 2, and Novice Teacher 3. Participants in the second focus group were referred to as Novice Teacher 4, Novice Teacher 5, and Novice Teacher 6. Participants

in the third focus group were referred to as Novice Teacher 7, Novice Teacher 8, and Novice Teacher 9.

Interview question C1. How prepared did you feel you were, prior to service, to step into a blended learning classroom and deliver content effectively?

When asked this question, four of the novice teachers definitively answered that they were not very well-prepared to provide effective instruction in a blended learning environment. Another four of the novice teachers felt they were somewhat prepared to be effective teachers in a blended learning environment. Novice Teacher 9 was the only participant who expressed feeling very prepared to deliver content effectively in a blended learning classroom. This teacher explained, "I feel like I am probably one of the younger teachers starting out, so I have just always had technology. My family was really into technology and my high school teachers used Canvas just like we do. So, it is just second nature to me."

Participants in all three focus groups went on to discuss their pre-service instruction regarding various technologies utilized in blended learning environments. All participants felt they were proficient using Microsoft tools throughout college. Novice Teachers 3, 5, 8, and 9 experienced the Blackboard learning platform while attending college, and Novice Teachers 2 and 9 utilized Canvas. All of these participants expressed that they previously used the platforms as students. Only two novice teachers utilized learning platforms in a teacher role during college; Novice Teacher 9 reported implementing Canvas, and Novice Teacher 3 used Google Classroom during student teaching. Only one of the participants stated her institution provided direct instruction during regular coursework to use technology in the role of a teacher. Three of the

participants received direct training to use technology in the role of teacher during their student teaching experiences. Novice Teacher 3 elaborated, “I can’t say enough about how great my teachers were during student teaching. I learned so much from them, and if it weren’t for them, I wouldn’t have been ready to handle this job” (see Table 19).

Table 19

Interview Question C1: How prepared did you feel you were, prior to service, to step into a blended learning classroom and deliver content effectively?

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
Not very well prepared	X			X		X	X		
Somewhat prepared		X	X		X			X	
Very prepared									X
Direct training provided in college courses					X				
Direct training provided in student teaching experience			X		X	X			
Microsoft	X	X	X	X	X	X	X	X	X
Google drive	X		X	X		X			
Experienced Blackboard in college			X		X			X	X
Experienced Canvas in college		X							X
Technology experience in teacher role			X						X
Technology experience in student role			X	X	X	X		X	X

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question C2. Can you describe the methods used to teach you how to effectively implement the New Missouri Learning Standards when building pacing guides and organizing core content in your curriculum?

When discussing the process of using the New Missouri Learning Standards to build pacing guides, none of the novice teachers mentioned learning how to build them either online or on paper as part of their teacher education programs. Novice Teacher 3 learned about building pacing guides according to state standards during the student teaching experience. The Missouri Learning Standards were used during the teacher education program attended by several of the interview participants. Novice Teachers 4, 5, 6, and 9 received instruction employing the standards to build individual lessons, beginning early in their programs. According to these participants, the standards were addressed in several ways to build lessons. Novice Teacher 5 stated:

> It's not that we didn't use the Missouri Standards at all. We used them a lot when we had to write lessons. We just didn't do any work on pacing guides. I didn't learn how to do that at all until I had my own classroom.

All but two of the participants stated they were introduced to online lesson planners, but they did not use them during any of their coursework (see Table 20).

Table 20

Interview Question C2: Can you describe the methods used to teach you how to effectively implement the Missouri Learning Standards when building pacing guides and organizing core content in your curriculum?

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
Did not learn to build curriculum online	X	X	X	X	X	X	X	X	X
Did not learn to build pacing guides	X	X	X	X	X	X	X	X	X
Introduced to online lesson planner	X		X	X		X			X
Taught to use Missouri Learning Standards in lesson writing				X	X	X			X
Introduced to online tools			X	X				X	X
Learned about using standards to build pacing guides in student teaching			X						
Alternative route to certification		X					X		
Learned to use Missouri Learning Standards for pacing guides on the job					X	X			X

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question C3. Please describe the training you received as an education major that enabled you to plan lessons and build curriculum in an electronic format for use in blended learning environments.

Several of the participants stated they were introduced to various online lesson planning systems. Novice Teachers 5, 6, and 8 were introduced to Planbook during their coursework. Novice Teachers 1, 3, and 4 stated they were introduced to Planboard, a similar platform; and Novice Teachers 4 and 6 were introduced to Common Curriculum. These introductions were an overview of the planning systems, but students were not

trained to use them, nor were they employed by students as any part of their coursework. Novice Teachers 3 and 9 were the only two participants who stated they received direct instruction with lesson planning systems (see Table 21).

Table 21

Interview Question C3: Please describe the training you received as an education major that enabled you to plan lessons and build curriculum in an electronic format for use in blended learning environments.

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
Direct instruction: Planbook									
Direct instruction: Planboard									
Direct instruction: Google Classroom			X						
Direct instruction: Canvas									X
Introduced to Planbook					X	X		X	
Introduced to Planboard	X		X	X					
Introduced to common curriculum				X		X			
Introduced to Canvas	X								X

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question C4. What type of training, if any, did you receive to effectively differentiate/personalize instruction?

Five of the nine participants indicated they received direct instruction to employ scaffolding in their teaching practices. With regard to differentiation and personalization of instruction, Novice Teachers 1, 3, and 9 stated they received direct instruction. Novice Teacher 3 went on to explain:

> I don't want to sound like I am talking bad about the education I got from my college, because it was a good experience, but all the actual, hands-on learning happened for me when I was in student teaching. The two teachers that I worked with were just phenomenal, and I learned so much from them! They are the ones that inspired me to use blended learning in my classroom because they were so excited about it and they were really good at it. By the time I finished my student teaching I had all of the modules for my U.S. History course already built in Canvas, and it was a good thing because I really needed it when I started teaching. If it weren't for my cooperating teachers, I don't know what I would have done.

Novice Teachers 3, 5, and 8 reported receiving direct instruction in the area of modification and accommodation. Novice Teacher 6 expounded:

> We took an entire class on teaching special education students in the regular classroom. We learned about special education laws and practiced modification and accommodation in several lessons. We also had to include accommodations and modifications in all lesson plans after that.

Novice Teachers 1 and 3 shared they were introduced to modification and accommodation via guest speakers and information provided in coursework that explained special education laws but did not practice this type of personalization. None of the interview participants discussed training to employ differentiated or personalized instruction, apart from practices related to modifications and accommodations for special education students (see Table 22).

Table 22

Interview Question C4: What type of training, if any, did you receive to effectively differentiate/personalize instruction?

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
Direct instruction: Modification and accommodation			X		X			X	
Direct instruction: Scaffolding	X		X	X		X		X	
Direct instruction: Addressed need, not how to	X		X						X
Introduction: Guest speakers	X		X						
Introduction: Special education laws	X		X						X

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question C5. What electronic platforms, if any, were you taught to utilize for building curriculum to use with your future students?

Five of the nine interview participants commented they were introduced to Google Classroom as a possible platform to use when building curriculum for student use. They did not create teacher accounts nor build any lessons or units using this platform during their coursework. Novice Teachers 3 and 9 explained they received direct instruction regarding the use of Canvas as a learning platform for students. Novice Teacher 3 received training during student teaching, and Novice Teacher 9 learned how to use the platform during regular coursework. Novice Teacher 3 also learned to use Google Classroom during student teaching (see Table 23).

Table 23

Interview Question C5: What electronic platforms, if any, were you taught to utilize for building curriculum to use with your future students?

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
Direct instruction: Google classroom			X						
Direct instruction: Canvas			X						X
Introduced: Google Classroom	X				X	X	X	X	
Introduced: Canvas									

Note. Themes directly identified by participants derived from original interview transcripts

Interview question C6. Please describe the new teacher training your school district provided for you, specifically related to teaching in a blended learning environment.

While district training for Novice Teachers 1, 2, and 3 did not include information specifically for blended learning, the other six participants discussed various levels of training pertaining to this learning format. These six interview participants stated their districts provided lists of useful educational websites during new teacher orientation. Several of these teachers described watching as a trainer from the education technology department displayed the various websites on a screen in the front of the room and described their implementation during classroom instruction. These same participants conveyed they were introduced to Canvas during district-level orientation. For Novice Teachers 7, 8, and 9, this introduction to Canvas was much the same as the group introduction to educational websites, with the trainer describing the platform on a screen located in the front of the room. These same teachers received direct instruction on the

use of Google Classroom, but did not set up any classes on the platform during orientation. Participant 8 further explained:

> Our district uses Google Classroom for blended learning at this time, but we are switching over to Canvas as soon as we have everything in place. So, for the time being we have been trained on Google Classroom, but we didn't start using it until we were on our own.

Novice Teacher 7 added, "We are not all using Google Classroom in our teaching; it is mainly used by newer teachers. We are the ones who are using blended learning."

According to Novice Teachers 4, 5, and 6, their Canvas training was intense and hands-on. Novice Teacher 5 explained:

> Our new teacher training was a week longer than the regular professional development for the rest of the staff. Most of that week was spent learning the ins and outs of procedures in the district and educational technology. Our district is really big on technology. We spent two full days learning all about Canvas. During that training we created our first class and practiced using all of the Canvas tools for building lessons. We even built a complete module during that training.

All six of the participants who received training specific to blended learning described the training as being too overwhelming to fully comprehend, and four of them stated they had to "start over" when they began preparing for their blended learning classrooms. As Novice Teacher 6 explained, "It was too much, too fast, and we couldn't make sense of it all." All six of these participants expressed similar sentiments, conveying frustration with the pace of the orientation training.

Novice Teachers 1, 2, and 3 experienced frustration with new teacher training in their district as well, but on the opposite end of the spectrum. Novice Teacher 1 described their training as "focusing on training required by the state." Novice Teacher 2 added, "There really was no training or discussion about electronic devices or blended learning at all. We just got our laptops and learned how to log on, and then logged into the electronic grade book." These participants stated they gained their knowledge to try blended learning through student teaching or by researching on their own (see Table 24).

Table 24

Interview Question C6: Please describe the new teacher training your school district provided for you, specifically related to teaching in a blended learning environment.

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
Did not discuss blended learning	X	X	X						
Provided list of useful websites				X	X	X	X	X	X
Introduced: Canvas				X	X	X	X	X	X
Direct instruction: Canvas				X	X	X			
Orientation and training included too much information to process in allotted time				X	X	X	X	X	X
All-district PD after orientation hosted on Canvas				X	X	X			

Note. Themes directly identified by participants derived from original interview transcripts. PD = professional development.

Interview question C7. Please describe the training you received to enable you to build pacing guides and curriculum utilizing the specific format expected in your building's blended learning environment.

All nine interview participants expressed they received a printed copy of the Missouri Learning Standards that pertained to their grade level and/or content area. Novice Teachers 1 and 2 stated they also received curriculum for their content area in "binders" from their content-area team. These binders included a pacing guide they were directed to follow. Novice Teachers 5, 8, and 9 received pacing calendars, and Novice Teachers 8 and 9 were also informed of where they could locate the pacing calendars online.

Novice Teacher 5 was given access to helpful electronic "build-your-own" curriculum units written by district teams. Novice Teachers 4 and 6 were also given access to electronic "build-your-own" curriculum units written by district teams but described them as incomplete and ineffective. Canvas curriculum modules developed by building-level professional learning community teams were provided for Novice Teachers 5 and 6. They described these modules as helpful (see Table 25).

Table 25

Interview Question C7: Please describe the training you received to enable you to build pacing guides and curriculum utilizing the specific format expected in your building's blended learning environment.

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
Received printed standards	X	X	X	X	X	X	X	X	X
Exposed to all resources related to standards hosted online by the MODESE									
Received pacing calendar	X	X			X			X	X
Received curriculum as a package	X	X							
Instructed where to find pacing guide online								X	X
BYO curriculum units hosted by content group online effective					X				
BYO curriculum units hosted by content group online ineffective				X		X			
Modules built in Canvas by content group					X	X			

Note. Themes directly identified by participants derived from original interview transcripts. BYO = build-your-own.

Interview question C8. From where do you get your curricular materials, such as lessons and content materials?

Some of the participants received ready-to-use textbook and curriculum kits when they began working in their current positions. Novice Teachers 6, 7, 8, and 9 received district-adopted textbooks at the beginning of the school year. Novice Teachers 1 and 2 each received complete curriculum sets purchased by their content group, and these participants also purchased supplemental resources independently. Novice Teachers 4, 5, 6, and 9 were given access to Canvas modules built by professional learning community

teams the previous year. Their professional learning community teams used these modules, modifying them as needed for their current students.

The remaining participants developed their own curriculum. Novice Teacher 3 used the curriculum self-designed during student teaching. This participant voiced frustrations experienced during the school year:

> When I first stepped into my classroom, I was so excited to start on the school year. I guess I was still on a high from the awesome student teaching experience that I had just completed, but when I looked around and explored my room I got really deflated. There were no artifact kits, no supplemental materials of any kind; there weren't even any textbooks other than some which hadn't been used for years and were too outdated to do any good. When I asked about it, I was told that it was not an adoption year so I would have to be patient. If it weren't for the complete units that I had built during student teaching, I would have been lost.

Novice Teachers 7 and 8 built new curriculum during the school year, both independently and as part of a professional learning community team. Novice Teachers 4 and 5 also described building curriculum specifically with their content-area professional learning community teams throughout the school year (see Table 26).

Table 26

Interview Question C8: From where do you get your curricular materials, such as lessons and content materials?

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
Built my own during student teaching			X						
Built independently on the job							X	X	
Built on-the-job with a content team				X	X			X	
Updated modules built in Canvas by previous content group				X	X	X			X
Given complete purchased curriculum set by a content group	X	X							
Purchased supplemental resources online	X	X					X	X	X
Textbooks supplied						X	X	X	X

Note. Themes directly identified by participants derived from original interview transcripts.

Interview question C9. What methods, if any, were you shown by your district/building for using formative assessment to differentiate and drive instruction? Six of the nine focus group participants stated they received no training during orientation regarding the use of formative assessment to drive differentiated instruction. The remaining three participants also stated they did not receive such training, yet common assessment quizzes were provided by their content teams. Novice Teacher 2 added that all team members were instructed to implement small group support according to the results of the quizzes provided to them. Novice Teachers 4 and 5 explained they received professional development regarding the use of formative assessment to drive

instruction delivered by guest trainers and speakers at both the building and district levels. Novice Teachers 4 and 6 stated they had been sent by the district to attend a Marzano class that met locally throughout the year to train attendees to apply standards-based instructional practices. Finally, Novice Teachers 4, 5, and 8 received training and support for employing data-driven instruction through collaborative work in their professional learning community meetings (see Table 27).

Table 27

Interview Question C9: What methods, if any, were you shown by your district/building for using formative assessment to differentiate and drive instruction?

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
No training during orientation			X	X	X	X	X	X	
No training, quizzes provided	X	X							X
Instructed by content group to implement small groups		X							
Guest professional development during school year				X	X				
Marzano PD during school year				X		X			
Developed during PLC time				X	X			X	

Note. Themes directly identified by participants derived from the original transcripts. PD = professional development; PLC = professional learning community.

Interview question C10. What are the greatest challenges you face in receiving continuous support for teaching in a blended learning environment?

Novice Teachers 1 and 3 expressed frustration with the limited amount of technology available for student use in the district. These participants were initially excited to employ blended learning in their classrooms, but the limited technology made

it difficult, and they did not think more technology would be added any time soon. Particularly, Novice Teacher 3 expounded:

> After I graduated from college and had such great experiences, I was really excited to build a great blended learning environment for my students. The administration is supportive, but there just isn't enough technology in place at the school. I ended up having kids search for things on their phones during discussions, but that can become a disaster quickly if you are not careful. I have everything built in Google Classroom, but for students to access it we have to use the computer lab. I tried so many ways to organize that, but supervision was an issue. Finally, I had to designate Fridays as lab days, which means I have to give up at least one full day a week to get enough computer time. It is still worth it for students to build the 21st-century skills that they need, but it can be exhausting.

For many, the practice of blended learning is new in their schools and districts. Novice Teachers 1, 2, 3, 7, and 8 stated very few teachers were practicing blended learning on a regular basis, so they felt like they were "alone on an island." Novice Teachers 1, 5, and 6 explained there was too much to learn to effectively implement blended learning in the classroom.

Novice Teachers 7 and 8 cited a lack of consistency among content teams as a definite frustration. They explained they work in the English Language Arts department, but while Novice Teacher 7 works on the freshman team, Novice Teacher 8 works on both the freshman and sophomore teams. The freshman teacher is very frustrated with the lack of consistency and organization of the team. According to this teacher, there is no leadership in the team, and it feels like they spend their entire time "floundering" and

instruction suffers from it. Novice Teacher 8 agreed the freshman team is suffering and chaotic but stated the sophomore team is incredibly supportive and organized. This teacher added:

> If it were not for the sophomore team to help me out, and I had to spend my time entirely on the freshman team, I would probably be too unsure and frustrated to continue trying to incorporate blended learning in my classroom.

These teachers were not alone in their frustrations with their collaborative teams. In fact, six of the nine focus group participants expressed frustration with their professional learning community groups, because time set aside for collaboration and support was unproductive and often not implemented.

Novice Teachers 1, 2, and 7 expressed dissatisfaction because they had the desire to implement blended learning effectively, yet it was difficult to insert blended learning activities into the current curriculum in place. Furthermore, they received little support because there were so few teachers implementing blended learning. Seven out of the nine focus group participants discussed the difficulties early in the school year because the format of the professional development was either not helpful or was too overwhelming, making it difficult to comprehend well enough to implement in the classroom.

Novice Teacher 7 was also frustrated with the difficulties experienced with keeping students on-task when working on their laptop computers. This participant felt the district provided effective training to use the teacher tools in Google Classroom and Canvas. However, the preparation was lacking regarding building a good student experience, which hindered this teacher's effectiveness as a blended learning teacher.

When discussing how their frustrations and successes affected their implementation of blended learning in the classroom, Novice Teachers 5 and 8 indicated their time spent employing blended learning in the classroom increased during the school year. Novice Teachers 3, 4, and 9 used blended learning in the classroom consistently throughout the year. The amount of time Novice Teachers 1, 2, 6, and 7 engaged in blended learning decreased over time (see Table 28).

Table 28

Interview Question C10: What are the greatest challenges you face in receiving continuous support for teaching in a blended learning environment?

Participant Responses	NT 1	NT 2	NT 3	NT 4	NT 5	NT 6	NT 7	NT 8	NT 9
Not enough technology in the district	X		X						
Blended learning was not practiced prior to me	X	X	X				X		X
Very few teachers practice blended learning; "Alone on an island"	X	X	X				X	X	
Too much to learn	X				X	X			
Lack of consistency							X	X	
Difficult to add technology to provided curriculum	X	X					X		
Format of professional development was not helpful	X		X	X	X		X	X	X
Time set aside for content/PLC meetings was unproductive			X	X	X	X	X	X	
Time in blended learning increased during school year					X			X	
Time in blended learning consistent throughout school year			X	X					X
Time in blended learning decreased during school year	X	X				X	X		

Note. Themes directly identified by participants derived from original interview transcripts. PLC = professional learning community.

Summary

This qualitative study was designed to elicit the perceptions of teacher education professors, secondary principals, and novice teachers regarding the preparedness of novice teachers to teach effectively in blended learning classrooms utilizing district-supplied curriculum. Interview responses were examined to identify consistencies and disparities in the perceived preparedness of novice teachers to provide effective instruction in a blended learning environment. Various factors affecting the self-efficacy of the novice teachers who participated in this study were also discussed.

Chapter Four was comprised of the perceptions of three teacher education professors, three secondary school principals, and nine novice teachers serving in blended learning classrooms. All the participants in this study were located in the southwest region of Missouri, according to the Missouri Educators Professional Development Map published by the MODESE (2014). Each participating secondary school was represented by the school's principal and three novice teachers. All interviews were transcribed and analyzed within a specific participant group. For instance, all college professors were members of Group A, all secondary principals were members of Group B, and all secondary teachers working in blended learning environments were members of Group C. Participants discussed perceptions of efforts made to sufficiently prepare novice teachers for their roles as teachers in a blended learning environment as well as challenges faced by each of the three groups during the process. Participants also discussed the perceived level of self-efficacy of the novice teachers as they taught students in blended learning classrooms.

Chapter Five includes the findings from the analysis of data. Each research question is addressed, and conclusions are discussed. Specific implications for practice are provided, and recommendations for further research are outlined regarding the effects of preparation on the level of self-efficacy of novice teachers in blended learning environments.

Chapter Five: Summary and Conclusions

Advancements in technology have been a major force in the shift of pedagogy from traditional behaviorist practices to a constructivist-based approach (Collins & Halverson, 2018; Stone, 2018). The need to develop 21st-century skills in students as they prepare for their futures is an important influence on this change (Plough, 2017). Students must become proficient in employing technology effectively with efficient collaborative problem-solving skills while developing strong character traits (Mathis & Trujillo, 2016). Instructing modern students in the conventional manner will not provide them with the knowledge and skills they need to prepare for the future; change is necessary (Soffel, 2016).

To meet the needs of students, a blended learning environment is becoming increasingly popular in American schools, as it offers both personalization and development of 21st-century skills (Maxwell & White, 2017; Soffel, 2016). However, creating an effective blended learning environment is a challenging endeavor (Boelens et al., 2017; Lai et al., 2016). An effective blended learning classroom involves more than simply providing technology for students (Makarova & Makarova, 2018). In an effective blended learning environment, at least part of the instruction takes place via technology, giving students some choice in their learning (Joynes et al., 2019). The rest of the instruction takes place face-to-face (Makarova & Makarova, 2018). Best practices include regular formative assessment that drives differentiated instruction (Maxwell & White, 2017). This instruction must be aligned with state standards to fulfill mandated requirements (Mathis & Trujillo, 2016).

Novice teachers entering the field need adequate training to develop the self-efficacy to empower them to deliver rigorous instruction in a blended learning environment (Mahler et al., 2018). Providing students with technology will not guarantee increased student performance (Makarova & Makarova, 2018). In fact, results from some studies indicate technology has an adverse effect (Conant, 2016). Researchers have concluded a teacher's level of self-efficacy is the most-prominent determining factor of the quality and rigor of instruction in the classroom (Mahler et al., 2018).

This qualitative study was designed to examine the perceptions of university professors, secondary principals, and novice teachers regarding teacher preparation. It also allowed for examination of how preparation affects the confidence level of new teachers to provide effective instruction in a blended learning environment. Teacher self-efficacy is one possible factor in the achievement level of students in a blended learning classroom.

In this final chapter, the findings from the research questions which directed the study are discussed. Support through corresponding data is shared to frame the findings of the study. The conclusions and implications for practice are detailed. Finally, the recommendations for further research regarding the effects of teacher self-efficacy on blended learning are presented.

Findings

To help answer the three research questions of this qualitative study, participants' perceptions of the preparedness of novice teachers to teach effectively in a blended learning environment were examined. All interviews and focus groups were conducted in the participants' natural settings and were transcribed. All data from the transcripts

were reviewed to gain an understanding of the perceived preparedness of novice teachers to teach effectively in a blended learning environment.

Research question one. In what ways do college of education personnel prepare pre-service teachers to teach effectively in a blended learning classroom using district-supplied technology and resources?

Participating education professors representing three separate post-secondary institutions described differing approaches to the preparation of pre-service teachers for work in blended learning environments. Information obtained during the interviews with the professors can be divided into three categories including educational technology, effective lesson and curriculum planning, and differentiating and personalizing instruction.

Professor 1 represented a two-year community college that prepares education majors for transfer to cooperating four-year institutions to continue their education. This school had the greatest focus on technology of the three represented in this study. Education majors in this institution are introduced to many online learning tools for use with students in the classroom, providing hands-on experiences for pre-service teachers. According to Professor 1, the greatest challenge in preparing future educators for technology integration is the ever-changing nature of the field. Professor 1 expounded:

> It is challenging to meet the needs of school districts because they are all at different levels of technology use. That coupled with the rapid pace that technology advances make it impossible to cover all of the technology that is out there. So, we do our best to introduce our students to the latest educational technology available, then really focus our efforts on good pedagogy techniques

for technology integration so they can adapt to the needs of the districts that hire them.

Students attending this institution are introduced to the Missouri Learning Standards and receive direct instruction on the basic elements of effective lesson planning. They create individual lesson plans and online assessments as part of their coursework, but do not design curriculum. This school provides students with instruction to develop an understanding of cognitive development and learning styles. Education majors are also introduced to various grouping approaches for differentiated instruction. Professor 1 stated all students receive instruction on exceptional students and education laws related to student rights and special education.

Professor 2 represented a four-year university with an emphasis on practical application and collaborative experiences. Many professors employ numerous grouping strategies within their own courses, familiarizing students with effective approaches for blended learning classrooms. Students learn several strategies to differentiate instruction, such as data tracking and response to intervention. All education majors complete an exceptional student course covering student rights and special education laws.

According to Professor 2, this university does not put a strong emphasis on educational technology. Students use technology such as Microsoft and Google tools, including Google Classroom at an introductory level. Much of the coursework is hosted on Blackboard, but students do not learn to build curriculum on electronic platforms. All education majors create lessons based on the Missouri Learning Standards throughout their coursework, aligning lesson plans and curriculum to the standards. Observations, internships, and student teaching placements are a high priority for this university.

Professor 2 shared, “We do our best to prepare our future educators for the great work that they will do, but there is no better preparation than spending time with teachers who are already in the field doing great things for kids.”

Professor 3 served at a university with a traditional approach to teacher education. The focus of lesson writing and curriculum design is to ensure alignment to the Missouri Learning Standards. Students write all lessons according to a classic lesson design, employing well-tested teaching practices. Professor 3 referred to “scaffolded instruction” and “modeling” as essential tenets utilized in lesson planning.

All education majors complete a course covering exceptional learners and laws related to student rights and special education. This university prepares pre-service teachers to provide differentiated support through data-driven response to intervention practices. Students also gain an understanding of various learning styles with some introduction to collaborative grouping of students, while maintaining rigor in learning.

Professor 3 explained the greatest challenge in preparing students for placements in blended learning environments is limited technology access for students. According to Professor 3, “The university recently purchased equipment to provide every teacher education student with a laptop and tablet for coursework. We also maintain two computer labs, one for MacIntosh and another for PCs.” Training for electronic lesson planning is limited to Microsoft and Google tools, including Google Classroom, and online lesson planners.

Research question two. In what ways do secondary principals prepare and support novice teachers to teach effectively in a blended learning classroom using district-supplied technology and resources?

Discussions with the secondary principals regarding orientation and training of novice teachers were separated into three basic categories including educational technology, effective lesson and curriculum planning, and differentiating and personalizing instruction. Training for novice teachers in the area of blended learning varies widely among the school districts represented by the participating secondary principals.

Principal 1 served in a secondary school located in an agriculturally based, rural district. The school district has technology in place, but the community is very traditional and does not support a strong focus on technology. District training for educational technology is limited to educator email and the electronic gradebook. It is a goal of this principal to improve the use of educational technology in his building and to increase the development of 21st-century skills in the school's students.

Pacing guides and curriculum kits are provided for teachers in this district. Adjustments to the established curriculum are made during grade-level or content-area meetings. Teachers work collaboratively to monitor instruction and student progress. Efforts of individual staff members to provide students with blended learning opportunities including differentiation and personalization are supported by this principal. Blended learning has not been the practice at the secondary level, so district training is not provided. Principal 1 stated that while district funds are limited for professional development, he is seeking ways to support novice teachers practicing blended learning in any way he can.

Principal 2 described a district with a strong technology focus and Canvas as the district instructional platform for teachers as well as students. Following introductory

orientation, new teachers attend an intensive two-day workshop to prepare them to use Canvas as their learning platform. Attendees familiarize themselves with the platform, receiving direct instruction and support as they structure their classes. By the end of the workshop, novice teachers have completed their first learning module for students. All continuous professional development for the district is hosted as modules on Canvas.

Principal 2 explained incoming teachers in this district are trained at the building level for lesson planning according to district requirements. New teachers complete all lesson planning and curriculum development as members of professional learning community groups. The professional learning community team's basic curriculum is in place on Canvas from the previous year. Teams collaborate throughout the year and make necessary adjustments and improvements to the existing curriculum. District pacing guides are in place and adjusted by teams when necessary.

This district provides training for teachers as teams meet on a weekly basis to examine data from common formative assessments and organize response to intervention workshops to provide students with differentiated support. New teachers are also encouraged to differentiate and personalize instruction for students. Both the district and the administrators encourage new teachers to observe master teachers and arrange visits both within and outside of the district.

Principal 3 described orientation training that prepares incoming teachers to use the district's electronic gradebook. The orientation process in this district takes place in one day, with half of the time dedicated to technology. New teachers are taught to use Google Classroom and learn organization of electronic communication and data collection. Principal 3 communicated this district is preparing to transition to Canvas as

its learning platform, with hopes of having it in place for the beginning of the next school year. Canvas has been introduced during orientation for the past two years, but without a great deal of focus. Principal 3 added:

> Some teachers in the district are using Canvas now to learn the program through practical application. These teachers will work with others in their professional learning community groups to help them transition from Google Classroom to Canvas. There are pockets of teachers throughout the district who have become very familiar with the program, and we are hoping that this will help the transition go smoothly and provide consistency across the district when we make the switch.

Principal 3 also explained the bulk of training for new teachers takes place through experiences with their mentors and collaborative time with their professional learning community teams throughout the year. This includes collective lesson planning and curriculum design according to previously constructed pacing guides. Team members are encouraged to teach their classes with a style most comfortable to them, yet in collaboration with other team members. Professional learning community team members in this district are expected to compare student data from formative assessments. These data are collected to evaluate student needs for support and to provide differentiated instruction. Differentiated instruction is encouraged by the district, which provides support through collaborative work, conference attendance, and guest speakers during district professional development days.

Research question three. How prepared and supported do novice teachers feel regarding their ability to teach effectively in a blended learning environment using district-provided resources and technology?

Novice teachers provided another perspective on the preparation they experienced for their new positions. Four of the nine focus group participants did not feel very well-prepared, four felt somewhat prepared, and one participant felt very prepared. Only one student felt the college experience provided direct instruction specifically for teaching in a blended learning classroom. Three of the novice teachers felt as though they had received direct instruction during their student teaching experiences. Two of the nine novice teachers graduated college with experience using some type of learning platform in the role of the teacher.

Responses to questions related to district preparation for teachers in a blended learning role were inconsistent. Many of the novice teachers reported several areas of frustration with orientation and training for various reasons. The most-common concern was about the extent of the training. Three of the participants felt like the training was insufficient, while three of the participants expressed they received too much information to retain in the time given. Novice Teachers 1, 2, and 3 described their orientation as "too short" and did not feel like they got enough information to develop confidence in their abilities to begin the school year. Participant 2 expanded, saying that after a "mountain" of district paperwork to fill out, training felt rushed:

> These are the rules. This is what you can and cannot do. Here is your computer and your login information. You know your room down the hall, have fun with it. You will meet with your team later today.

Six of the nine novice teachers commented they received an introduction to Canvas during their new teacher orientations. Novice Teachers 4, 5, and 6 described the

introduction as an “intense” two-day Canvas training. Novice Teacher 6 elaborated on the experience:

> I was really exhausted by the end of that training! There is so much to learn, and they really wanted us to understand everything that Canvas can do. So, we set up a mock class and created a module. They had us do so many things with it which is great, but when I was on my own, I couldn’t remember how I had made any of it.

Novice Teachers 4 and 5 agreed with the sentiments expressed by their peer. Novice Teachers 6 through 9 all agreed their orientation and training included too much information to process in the allotted time frame.

All three participating school districts have content-area and/or grade-level collaborative groups in place to provide training and continuous support for teachers. Two of the three school districts operate as fully functioning professional learning communities. Six of the nine participating novice teachers expressed frustration that the time set aside for content-area professional learning community team meetings was often unproductive. As the only teacher of a content area, one participant was not assigned to a team and joined another for support.

Conclusions

The following conclusions were drawn from the participants’ answers to the interview questions. All three research questions that guided this study are addressed in this section. Triangulation was used to validate data as three separate groups reflected on the same issues (Creswell & Creswell, 2017). Common perceptions of participants were identified by using open coding to identify common themes within the participants’

responses to interview questions that were used in this study. (Cypress, 2017). The data collected from the review of literature were used to validate themes identified during the coding process (Bernard, Wutich, & Ryan, 2016). Member checking was also used to ensure validity of the qualitative findings by allowing participants to review the accuracy of the data, providing respondent validation (Cypress, 2017). Finally, qualitative research provides an opportunity to describe in rich detail the experiences and feelings of all participants in relation to the phenomenon studied (Creswell & Creswell, 2017).

Education and training for pre-service teachers at both the collegiate and secondary school levels are inconsistent. During the data collection process, interviews were conducted with three teacher education professors representing three different post-secondary learning institutions. The teacher education programs described by the participants provided varied approaches to preparation for blended learning environments. These variances reflected the transition in American education from traditional, teacher-led practices to technology-enhanced, student-centered learning.

The first participating post-secondary institution is a two-year community college with a strong emphasis on practical experiences utilizing educational technology. This college focused on building "good pedagogy techniques for technology integration" to enable teachers to adapt to varying needs of districts and to the rapid changes in available educational technology. The second institution is a four-year university with a less-significant emphasis on technology. This institution employed pedagogical practices such as differentiation, personalization, and collaboration. These are all elements of blended learning environments and 21st-century skill development. The third institution

employed traditional practices in education with an emphasis on rigor and alignment to standards in lesson planning.

It is a time of transition in America, with the list of qualities employers and innovators are seeking in potential employees and partners changing at a fast rate in the technology-driven world (Lapek, 2017). The change in current education trends is driven, in part, by the development and acceptance of digital technology which continues to evolve as society solves problems, matches growing demands, and discovers new technologies (Coccia, 2017). Educators must provide students with innovative skillsets necessary for future careers not in existence today (Brown, Ernst, Clark, DeLuca, & Kelly, 2017). The transition from traditional classrooms to education environments that support 21st-century skills is not an easy one to make, yet it is necessary to meet the needs of modern students (Lapek, 2017). Experts have called for a more unified approach to education, suggesting the creation of K-16 education councils to strengthen relationships between high schools and post-secondary learning institutions (O'Sullivan & Dallas, 2017).

The amount of hands-on technology instruction in teacher education programs impacts the level of self-confidence in pre-service teachers to teach in a blended learning environment. This theme appeared as the levels of pre-service confidence reported by novice teacher participants were compared to the amount of technology instruction each participant reported experiencing during pre-service teacher education programs. Four of the nine novice teacher participants reported they did not feel well-prepared for teaching in a blended learning environment. The same participants reported the least amount of technology instruction provided in their teacher education

programs. Four novice teacher participants stated they felt somewhat prepared for teaching in a blended learning environment. These participants reported more educational technology experiences than those who did not feel prepared, but less than the participant who reported feeling very prepared. One novice teacher felt very prepared to teach in a blended learning environment. This participant reported more experiences with educational technology during the teacher education program than all other participants.

Of the four information sources that have the greatest impact on self-efficacy, mastery experience has the most-profound effect on teachers' levels of confidence (Baleghizadeh & Shakouri, 2017; Wyatt, 2016). Remembering prior achievements and attainment of goals, such as those accomplished in education courses, increases the likelihood teachers will face similar challenges with confidence (Baleghizadeh & Shakouri, 2017). Those who perceive past attempts as failures are less likely to repeat efforts for similar or new tasks (Morris et al., 2017).

The level of satisfaction experienced by novice teachers during new teacher orientation can impact the level of self-confidence in novice teachers to teach in a blended learning environment. This theme emerged as the levels of frustration experienced during district new teacher orientation were compared to the amount of classroom time spent engaged in blending learning. When asked whether the time novice teachers spent employing blended learning practices during the school year increased, remained consistent, or decreased, two participants stated that time spent in blended learning had increased. These teachers reported very low frustration levels connected to the orientation process. Three participants stated the amount of time devoted to blended

learning remained consistent during the school year. These three participants expressed moderate frustration levels related to new teacher orientation. Finally, four participants stated the amount of time devoted to blended learning decreased during the school year. Each of these participants expressed they had experienced very high levels of frustration with new teacher training during orientation. Three of these novice teachers also expressed they did not feel very well-prepared to teach in a blended learning environment prior to service.

Early professional development opportunities designed to strengthen teacher self-efficacy are of vital importance. They enable administrators to identify and address any remaining insufficiencies in teachers as early as possible (Künsting et al., 2016). Discerning the needs of new teachers and providing effective professional development to meet those needs is significant. It affects new teacher retention as well as performance in the classroom (U.S. Department of Education, 2018).

A hands-on, immersion approach to induction can have a positive impact on the level of self-confidence in novice teachers to teach in a blended learning environment. This theme emerged as the amount of classroom time engaged in blended learning practices was examined for each participating school with differing methods employed during new teacher orientation. The participating principal of the first secondary school explained training for blended learning during orientation was very limited. Two of the three participating teachers working at this school reported classroom time spent engaged in blended learning had decreased.

The principal representing the third school described new teacher orientation in a district focused on improving its educational technology program. Novice teachers in

this district received most of their training and support in practice through collaboration with content-area or grade-level teams. Two of the participating novice teachers representing this school reported no change in the amount of class time spent engaged in blended learning practices. One participating teacher representing this school reported an increase in class time spent engaged in blended learning.

Finally, the principal of the second participating school described an intensive, hands-on training approach to prepare new teachers for work in a blended learning environment. Two of the three participating teachers at this district reported an increase in classroom time spent engaged in blended learning over the course of the school year. One participating teacher from this district reported no change in the amount of classroom time practicing blended learning. The teachers in this district expressed more of an increase in blended learning time than did participants at the other two participating schools.

Early professional development opportunities designed to strengthen teacher self-efficacy are of vital importance (Künsting et al., 2016). In 2016, as part of the findings of an investigation regarding the effects of new teacher induction programs conducted by the CCSESA (2016), researchers found effective induction programs had a positive impact on teacher job retention as well as student performance. This is expressed in the theme that emerged during this comparison. Another way of providing ongoing support capable of building self-efficacy in teachers in blended learning environments is to offer professional development in a personalized, blended learning format (Darling-Hammond et al., 2017; Terrell, 2017).

Implications for Practice

It is a time of transition in American schools from traditional, teacher-driven, behaviorist-based education to a constructivist-based, student-centered learning approach (Christensen et al., 2018; Khalil & Elkhider, 2016). Schools must prepare graduating seniors to meet the needs of 21st-century employers (Lapek, 2017). Researchers and educators agree effective blended learning environments successfully promote necessary 21st-century skills in students (Patrick et al., 2013). Communication and collaboration among educators are vital to efficacious change (O'Sullivan & Dallas, 2017).

Improve communication and consistency between post-secondary learning institutions and secondary schools. Self-efficacy is a vital element of Bandura's social cognitive theory, described as one's internal interpretation of existing knowledge, emotions, and behaviors (Tilton & Hartnett, 2016). Self-efficacy determines an individual's ability to stimulate change and effectively adapt to alterations in the environment (Tilton & Hartnett, 2016). When novice teachers enter the field of education, it is important they be equipped with the skills necessary to experience success in their new positions (Baleghizadeh & Shakouri, 2017). If novice teachers do not experience successes, it will have a negative impact on their level of self-efficacy (Tilton & Hartnett, 2016).

The level of self-efficacy in teachers is the number one factor in the quality of education in the classroom (Belanger, 2018; Conant, 2016; Künsting et al., 2016). Improved communication between post-secondary institutions and secondary schools can lead to improvements in teacher education programs by raising awareness of the skills future employers are seeking (O'Sullivan & Dallas, 2017). Properly equipped novice

teachers will have a higher level of self-efficacy as they effectively provide instruction in a blended learning environment (Veronika et al., 2018).

Increase effective hands-on educational technology instruction in teacher education programs. As more public schools adopt blended learning practices, the requirement for new teachers to have the skills to teach in blended learning classrooms increases (Hasse, 2017). Novice teachers who have completed coursework that includes hands-on instruction with educational technology will have the ability to adapt to the requirements in the schools that hire them (Kanadli, 2017). This will increase their level of self-efficacy to teach effectively in their new positions (Veronika et al., 2018). In a study investigating factors affecting the self-efficacy of pre-service teachers, Kanadli (2017) found that student choice and availability of applied courses, apart from theoretical knowledge, had a positive impact on the self-efficacy of teacher education majors. It is necessary for modern teachers to develop technological literacy, because without it, making the technology work often becomes a priority over the educational content of lessons, which limits effectiveness (Hasse, 2017).

Increase the length of time for new teacher induction programs. In this study, the number one element of frustration with new teacher orientation programs was the amount of material they were required to learn in the allotted time. Teachers expressed it was "too much, too fast," and even with hands-on application during training, they could not remember how they completed the tasks when it was time to repeat them later. School districts should consider providing induction programs that take place over a longer period of time.

In 2016, the CCSESA released its preliminary findings of an investigation regarding the effects of new teacher induction programs on job performance. In this study, researchers found induction programs had a positive impact on teacher job retention as well as student performance (CCSESA, 2016). Discerning the needs of new teachers and providing effective induction to meet those needs is of vital importance (U.S. Department of Education, 2018). Teachers in this study expressed that more time is needed for effective induction.

Implement hands-on immersion practices employing educational technologies that will be utilized in the classroom during new teacher induction programs. In this study, the participating novice teachers representing the school district that provided hands-on training with technology for blended learning classrooms experienced the greatest level of success. These accomplishments experienced in the classroom increased teacher self-efficacy. These teachers reflected they increased the amount of class time spent implementing blended learning practices.

It is critical teachers have a high level of self-efficacy when developing effective blended learning environments (Joo et al., 2018; Tilton & Hartnett, 2016). Teachers may have low efficacy toward digital technology, even if they have a high level of self-efficacy overall as a teacher, especially when facing the task of creating a blended learning environment for students (Tilton & Hartnett, 2016). Technology immersion in new teacher induction programs can provide novice teachers with the self-efficacy they need to be successful in a blended learning classroom (Baleghizadeh & Shakouri, 2017).

Recommendations for Future Research

Future studies on the preparedness of novice teachers to teach effectively in a blended learning environment should match participating novice teachers to the participating post-secondary institutions in the study. All participating post-secondary learning institutions and secondary schools involved in this study were in the same geographical location. However, this did not guarantee that participating novice teachers attended the institutions represented. Ensuring this connection would increase the depth of the information gathered in the study.

Another recommendation for future research would be to expand the number of participants. Expanding the geographical area of the study could provide a more accurate picture of American education by increasing the variety in the population base. It would also provide data from a greater variety of learning institutions.

Lastly, this study was constructed to examine teacher self-efficacy as one possible factor of negative effects of technology-enhanced education on student achievement. This study could be replicated as a mixed-methods study to include student common assessment scores. This added element could allow for examination of the correlation between the factors affecting the level of self-efficacy in novice teachers and the effects of teacher self-efficacy on student achievement.

Summary

This qualitative case study was designed to examine the preparedness of novice teachers to teach effectively in a blended learning classroom using district-supplied materials from the perspective of college professors who instruct pre-service teacher education students, the principals who hire novice teachers, and the novice teachers

themselves. The perceptions of all participants regarding the preparedness of participating novice teachers were collected by conducting interviews and focus groups. This study was significant because it furthered previous research that revealed a negative impact on student achievement in technology-enhanced classrooms by examining teacher self-efficacy as one possible causal factor.

Chapter One included a background of the study which described the development of technology and its effect on teaching practices in public schools. The need for students to develop skills for success in the 21st century was examined, as well as the introduction of blended learning practices as an effective means to develop these skills in students. The theoretical framework, statement of the problem, purpose of the study, and the research questions were provided. Also included in Chapter One were the key terms, delimitations, limitations, and assumptions of the study.

Chapter Two included the review of literature. The theoretical framework was further investigated as educators' transformation of beliefs about the way students learn, the call for 21st-century skills, and the use of rapidly advancing technologies have brought about a shift in pedagogical practices from behaviorist-based, teacher-led instruction to constructivist-based, student-centered learning (Soffel, 2016). Personalized learning and blended learning were described in detail. The effect of a teacher's level of self-efficacy on the quality of instruction was also addressed. Finally, the effects of teacher preparation and continued support on teacher self-efficacy were examined.

Chapter Three included a recap of the educational theories upon which this study was based, related to the shift in American education from a behaviorist-based model to a constructivist approach. Following this introduction to the chapter, the problem and

purpose overview was provided, and the research questions were restated. A discussion of the research design followed. Next, an explanation of the population and sample and the instrumentation designed for use in the study were discussed. The methods in place to ensure reliability and validity in the study were explained in detail in Chapter Three, followed by a descriptive account of the qualitative data collection process and the analysis of the data. Finally, ethical considerations in place to protect the interests of all participants were explicated.

Chapter Four was comprised of the perceptions of three teacher education professors, three secondary school principals, and nine novice teachers serving in blended learning classrooms. All participants in this study were in the southwest region of Missouri, according to the Missouri Educators Professional Development Map published by the MODESE (2014). Each participating secondary school was represented by the school's principal and three novice teachers. All interviews were transcribed and analyzed within a specific participant group. Participants discussed perceptions of efforts made to sufficiently prepare novice teachers for their role as teachers in a blended learning environment as well as challenges faced by each of the three groups during the process. Participants also discussed the perceived level of self-efficacy of the novice teachers as they taught students in blended learning classrooms.

Chapter Five included the findings and conclusions of this study. Implications for practice were described. First, there is a need to improve communication and consistency between post-secondary learning institutions and secondary schools. Second, effective hands-on educational technology instruction in teacher education programs should be increased. Third, the time for new teacher induction programs should be lengthened.

Lastly, districts should implement hands-on immersion practices using educational technology utilized in the classroom during new teacher induction programs.

Finally, recommendations for future research were provided. The first recommendation was a suggestion to select the sample from novice teachers who attended the participating post-secondary learning institutions. The second recommendation was to expand the geographical area included in the study. Finally, a recommendation was made to replicate the study as a mixed-methods study and include common assessment data to measure the effects of teacher self-efficacy on student achievement.

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Appendix A

Permission to Conduct Research Letter

(Date)

RE: <Name of Institution>

<Address of Institution>

Dear <Title, First name, and Last name>

I am writing to request permission to conduct research in <Name of Education Institution>. I am currently pursuing my doctorate through Lindenwood University and am in the process of writing my dissertation. The study is entitled *A Qualitative Study of the Preparedness of Novice Teachers to Teach Effectively in a Blended Learning Environment.*

I am asking permission to interview the high school principal and hold a small focus group of teachers who have been teaching full time for five years or fewer. If you agree, please sign below, scan this page, and email it back to me, Rachelle R. LaFave, at [redacted].

Your approval to conduct this study will be greatly appreciated. I would be happy to answer any questions or concerns you may have regarding this study.

Sincerely,

Rachelle R. LaFave
Doctoral Student at Lindenwood University

Approved by:

_____

Print name and title here

_____ _____

Signature Date

Appendix B

Lindenwood Institutional Review Board Approval Letter

Dec 16, 2019 6:50 PM CST

RE:
IRB-20-95: Initial - A Qualitative Study of the Preparedness of Novice Teachers to Effectively Teach in a Blended Learning Environment

Dear Rachelle Turner,

The study, A Qualitative Study of the Preparedness of Novice Teachers to Effectively Teach in a Blended Learning Environment, has been Exempt.

Category: Category 1. Research, conducted in established or commonly accepted educational settings, that specifically involves normal educational practices that are not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education instructional strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

The submission was approved on December 16, 2019.

Here are the findings:

Regulatory Determinations

- This study has been determined to be minimal risk because the research is not obtaining data considered sensitive information or performing interventions posing harm greater than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

IRB Discussion

- From the Recruitment section of the application, it is indicated that an email script will be sent to email addresses collected from publicly available contact information at university websites. The IRB requires that applicants provide approvals from each external site at which recruitment of subjects for research purposes may take place.
- The PI is reminded that compliance with the recruitment policies at an external site resides with the PI. Should the policies of an external site require authorization from that site's IRB or another office, the PI must obtain this authorization and upload it as a modification to their approved LU IRB application prior to recruiting subjects at that site.

Sincerely,

Lindenwood University (lindenwood) Institutional Review Board

Jun 18, 2020 10:50 AM CDT

RE:
IRB-20-95: Modification - A Qualitative Study of the Preparedness of Novice Teachers to Effectively Teach in a Blended Learning Environment

Dear Rachelle Turner,

The study, A Qualitative Study of the Preparedness of Novice Teachers to Effectively Teach in a Blended Learning Environment, has been Approved as Exempt.

Category: Category 1. Research, conducted in established or commonly accepted educational settings, that specifically involves normal educational practices that are not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education instructional strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

The submission was approved on June 18, 2020.

Here are the findings:
Regulatory Determination

- This modification entails the addition of site approval letters for this project. This modification does not affect the previously approved risk determination or ongoing approvability of the research.

Sincerely,
Lindenwood University (lindenwood) Institutional Review Board

Appendix C

Letter of Participation

<Professor Interview>

Date:

Dear <Title First Name and Last Name>:

My name is Rachelle R. LaFave. I am a doctoral student at Lindenwood University, and I am conducting a research study titled *A Qualitative Study of the Preparedness of Novice Teachers to Teach Effectively in a Blended Learning Environment*.

I would like to invite you to participate in this study by taking part in a one-time interview. I have attached the Research Information Sheet and a copy of the interview questions. If you choose to participate, please respond affirmatively to this email message, and I will be in contact with you to schedule a day and time that are convenient.

Please contact me at [redacted] with any questions you might have.

Thank you,

Rachelle R. LaFave
Lindenwood University
Doctoral Student

Appendix D

LINDENWOOD

< Professor Interview>

Research Information Sheet

You are being asked to participate in a research study. We are conducting this study to examine the self-confidence of new teachers, who have been in service for five years or fewer, to deliver rigorous core content in a blended learning environment. During this study, you will take part in a one-time interview regarding preparation of new teachers for work in a blended learning environment. It will take about 30 to 45 minutes to complete the interview.

Your participation is voluntary. You may choose not to participate or to withdraw at any time.

There are no risks from participating in this project. There are no direct benefits for you participating in this study.

> We are collecting data that could identify you, such as gender, subject matter taught, and years of service. Every effort will be made to keep your information secure and confidential. Only members of the research team will be able to see your data.

We will do everything we can to protect your privacy. We do not intend to include information that could identify you in any publication or presentation. Any information we collect will be stored by the researcher in a secure location. The only people who will be able to see your data include members of the research team, qualified staff of Lindenwood University, and representatives of state or federal agencies.

Who can I contact with questions?
If you have concerns or complaints about this project, please use the following contact information:

Rachelle R. LaFave
[redacted]

Dr. Shelly Fransen
[redacted]

If you have questions about your rights as a participant or concerns about the project and wish to talk to someone outside the research team, you can contact Michael Leary (Director - Institutional Review Board) at 636-949-4730 or mleary@lindenwood.edu.

Appendix E

Interview Questions

<Teacher Education Professor>

Statement. *Colleges and universities today are faced with the challenge of shifting from traditional, teacher-centered approaches to student-centered approaches when educating students.*

1. How does this institution prepare its pre-service teachers to effectively educate students in a student-centered/blended learning environment? *(RQ 1) (pre-service instruction, behaviorism, constructivism, prepare, effective, blended learning, technology)*
2. What challenges have you faced in preparing teachers for the role of learning facilitator in a student-centered/blended classroom? *(RQ 1) (pre-service instruction, behaviorism, constructivism, student-centered, prepare, effective, blended learning, district technology, district resources)*
3. How are your pre-service teachers prepared to build pacing guides and curriculum according to the New Missouri Learning Standards? *(RQ 1) (pre-service instruction, prepare, effective, district technology, district resources)*
4. What types of projects are used to engage pre-service teachers in the process of using learning standards to guide pacing, curriculum, differentiated/personalized instruction? *(RQ 1) (pre-service instruction, behaviorism, constructivism, prepare, effective, technology, curriculum, NMLS, pacing, prepared)*
5. Please describe the training your pre-service teachers receive to enable them to build curriculum in an electronic format for use in blended learning environments.

(RQ 1) (pre-service instruction, behaviorism, constructivism, prepare, effective, technology, curriculum, NMLS, pacing, prepared)

6. What types of assignments do pre-service teachers complete to learn lesson planning/curriculum-building skills? *(RQ 1) (pre-service instruction, behaviorism, constructivism, prepare, effective, technology, curriculum, NMLS, content resources, prepared)*
7. What is the structure of the training, if any, pre-service teachers receive to effectively differentiate/personalize instruction? *(RQ 1) (pre-service instruction, behaviorism, constructivism, prepare, effective, technology, curriculum, NMLS, differentiation, personalized learning, prepared)*
8. How are pre-service teachers prepared for using formative assessment to organize small group and individual instruction? *(RQ 1) (pre-service instruction, behaviorism, constructivism, prepare, effective, technology, curriculum, NMLS, formative assessment, data-driven instruction, prepared)*
9. What electronic platforms, if any, are pre-service teachers taught to utilize as they build curriculum for use in the classroom? *(RQ 1) (pre-service instruction, behaviorism, constructivism, prepare, effective, technology, curriculum, content resources, NMLS, pacing, prepared)*

Appendix F

Letter of Participation

<Principal Interview>

Date:

Dear <Title First Name and Last Name>:

My name is Rachelle R. LaFave. I am a doctoral student at Lindenwood University, and I am conducting a research study titled *A Qualitative Study of the Preparedness of Novice Teachers to Teach Effectively in a Blended Learning Environment*.

I would like to invite you to participate in this study by taking part in a one-time interview. I have attached the Research Information Sheet and a copy of the interview questions. If you choose to participate, please respond affirmatively to this email message, and I will be in contact with you to schedule a day and time that are convenient.

Please contact me at [redacted] with any questions you might have.

Thank you,

Rachelle R. LaFave
Lindenwood University
Doctoral Student

Appendix G

LINDENWOOD

<Principal Interview>

Research Information Sheet

You are being asked to participate in a research study. We are conducting this study to examine the self-confidence of new teachers, who have been in service for five years or fewer, to deliver rigorous core content in a blended learning environment. During this study, you will take part in a one-time interview regarding preparation, orientation, and professional development of new teachers for work in a blended learning environment. It will take about 30 to 45 minutes to complete the interview.

Your participation is voluntary. You may choose not to participate or to withdraw at any time.

There are no risks from participating in this project. There are no direct benefits for you participating in this study.

> We are collecting data that could identify you, such as gender, subject matter taught, and years of service. Every effort will be made to keep your information secure and confidential. Only members of the research team will be able to see your data.

We will do everything we can to protect your privacy. We do not intend to include information that could identify you in any publication or presentation. Any information we collect will be stored by the researcher in a secure location. The only people who will be able to see your data include members of the research team, qualified staff of Lindenwood University, and representatives of state or federal agencies.

Who can I contact with questions?
If you have concerns or complaints about this project, please use the following contact information:

Rachelle R. LaFave
[redacted]

Dr. Shelly Fransen
[redacted]

If you have questions about your rights as a participant or concerns about the project and wish to talk to someone outside the research team, you can contact Michael Leary (Director - Institutional Review Board) at 636-949-4730 or mleary@lindenwood.edu.

Appendix H

Interview Questions

<Building Principal>

Statement. *Modern education is in the midst of a transition from traditional, teacher-centered pedagogy to a student centered-approach in educating and preparing students for life in the 21st century. Today, we will focus on the blended learning environment and will discuss the challenges school administrators face as they prepare new teachers to work effectively in a blended learning classroom.*

1. How prepared do you feel your new teachers were, prior to service, to step into a blended learning classroom and deliver content effectively? *(RQ 1) (behaviorism, constructivism, teacher education, technology, student-centered, blended learning, differentiation, formative assessment, effective)*
2. How are your new teachers trained to build pacing guides according to the New Missouri Learning Standards? *(RQ 2) (staff training, district, orientation, building principal, pacing, prepared NMLS, collaboration, communication, support)*
3. Please describe the new teacher training your school district provides, specifically related to teaching in a blended learning environment. *(RQ 2) (staff training, district, orientation, blended learning, 1:1, prepared)*
4. Please describe the training your new teachers receive to enable them to build curriculum using the specific format expected in your building's blended learning environment. *(RQ 2) (staff training, building principal, curriculum, blended learning, technology)*

5. What methods, if any, are used to show your new teachers how to use formative assessment to drive instruction? *(RQ 2) (training, formative assessment, data-driven instruction, small group)*
6. Can you describe the training, if any, your new teachers receive to enable them to provide differentiated instruction? *(RQ 2) (training, differentiated instruction, small group, technology)*
7. What curriculum resources are in place for new teachers when they begin working in your building? *(RQ 2) (curriculum, core content, support)*
8. What type of continuous training, support, and guidance is employed, specifically related to curriculum and instruction in a blended learning environment? *(RQ 2) (training, support, mentoring, curriculum, technology, blended learning, instruction)*
9. What are the greatest challenges you face in providing continuous support for new teachers in a blended learning environment? *(RQ 1, RQ 2) (prepared, collaboration, time, work ethic, knowledge)*
10. What advice would you give to other administrators regarding staff training and support as they implement blended learning in their schools? *(RQ 1, RQ 2) (teacher education, prepared, organization, training, guidance, mentoring, supervision, curriculum, NMLS)*

Appendix I

Selection of Focus Group Participants

<Email Script>

(Date)

RE: <Name of Institution>

<Address of Institution>

Dear <Title, First name, and Last name>:

Thank you for agreeing to take part in my dissertation titled *A Qualitative Study of the Preparedness of Novice Teachers to Teach Effectively in a Blended Learning Environment.* The research process will involve an interview with yourself as well as a focus group discussion with three teachers from your building.

Please invite three novice, core content teachers who have been employed full time for no more than five years in a blended learning environment to participate in the study. Once your selections have been made, please email to me the contact information for each participant you have selected, and I will contact them to schedule the focus group.

Your participation in this study is greatly appreciated. Please contact me at [redacted] with any questions you might have.

Sincerely,

Rachelle R. LaFave
Doctoral Student at Lindenwood University

Appendix J

Letter of Participation

<Teacher Focus Group>

Date:

Dear <Title First Name and Last Name>:

My name is Rachelle R. LaFave. I am a doctoral student at Lindenwood University, and I am conducting a research study titled *A Qualitative Study of the Preparedness of Novice Teachers to Teach Effectively in a Blended Learning Environment*.

I would like to invite you to participate in this study by taking part in a one-time focus group. I have attached the Research Information Sheet and a copy of the interview questions. If you choose to participate, please respond affirmatively to this email message, and I will be in contact with you to schedule a day and time that are convenient.

Please contact me at [redacted] with any questions you might have.

Thank you,

Rachelle R. LaFave
Lindenwood University
Doctoral Student

Appendix K

LINDENWOOD

<Teacher Focus Group>

Research Information Sheet

You are being asked to participate in a research study. We are conducting this study to examine the self-confidence of new teachers, who have been in service for five years or fewer, to deliver rigorous core content in a blended learning environment. During this study, you will take part in a one-time focus group consisting of novice teachers to discuss preparation, orientation, and professional development of new teachers for work in a blended learning environment. It will take 45-60 minutes to complete the focus group.

Your participation is voluntary. You may choose not to participate or to withdraw at any time.

There are no risks from participating in this project. There are no direct benefits for you participating in this study.

> We are collecting data that could identify you, such as gender, subject matter taught, and years of service. Every effort will be made to keep your information secure and confidential. Only members of the research team will be able to see your data.

We will do everything we can to protect your privacy. We do not intend to include information that could identify you in any publication or presentation. Any information we collect will be stored by the researcher in a secure location. The only people who will be able to see your data include members of the research team, qualified staff of Lindenwood University, and representatives of state or federal agencies.

Who can I contact with questions?
If you have concerns or complaints about this project, please use the following contact information:

Rachelle R. LaFave
[redacted]

Dr. Shelly Fransen
[redacted]

If you have questions about your rights as a participant or concerns about the project and wish to talk to someone outside the research team, you can contact Michael Leary (Director - Institutional Review Board) at 636-949-4730 or mleary@lindenwood.edu.

Appendix L

Interview Questions

<Novice Teacher>

Novice Teachers (1-5 years of experience):

Statement. *Modern education is in the midst of a transition from traditional, teacher-centered pedagogy to a student-centered approach to educating and preparing students for life in the 21st century. Today, we will focus on the blended learning environment and will discuss the challenges new teachers face as they learn to teach effectively in a blended learning classroom.*

1. How prepared did you feel you were, prior to service, to step into a blended learning classroom and deliver content effectively? *(RQ 1) (prepared, teacher education, blended learning, student-centered, constructivism, behaviorism, technology, curriculum, insecurities, confidence, content)*
2. Can you describe the methods used to teach you how to effectively implement the New Missouri Learning Standards when building pacing guides and organizing core content in your curriculum? *(RQ 1) (prepared, teacher education, technology, curriculum, content resources, NMLS)*
3. Please describe the training you received as an education major that enabled you to plan lessons and build curriculum in an electronic format for use in blended learning environments. *(RQ 1) (prepared, teacher education, technology, curriculum, blended learning, NMLS)*
4. What type of training, if any, did you receive to effectively differentiate/ personalize instruction? *(RQ 1) (pre-service instruction, behaviorism,*

constructivism, prepare, effective, technology, curriculum, NMLS, differentiation, personalized learning, prepared)

5. What electronic platforms, if any, were you taught to utilize for building curriculum to use with your future students? *(RQ 1) (pre-service instruction, behaviorism, constructivism, prepare, effective, technology, curriculum, content resources, NMLS, pacing, prepared)*
6. Please describe the new teacher training your school district provided for you, specifically related to teaching in a blended learning environment. *(RQ 2) (training, support, mentoring, curriculum, technology, blended learning, instruction)*
7. Please describe the training you received to enable you to build pacing guides and curriculum utilizing the specific format expected in your building's blended learning environment. *(RQ 2) (staff training, district, building, orientation, blended learning, 1:1, prepared)*
8. From where do you get your curricular materials, such as lessons and content materials? *(RQ 3) (prepared, technology, curriculum, content resources, NMLS)*
9. What methods, if any, were you shown by your district/building for using formative assessment to differentiate and drive instruction? *(RQ 2) (training, formative assessment, data-driven instruction, small group)*
10. What are the greatest challenges you face in receiving continuous support for teaching in a blended learning environment? *(RQ 1, RQ 2, RQ3) (training, support, mentoring, curriculum, technology, blended learning, instruction, prepared, resources, teacher education, behaviorism, constructivism)*

Vita

Rachelle R. LaFave obtained her Associate of Arts degree in Elementary Education from Crowder College in 2003 and attended Missouri Southern State University for her undergraduate degree, obtaining a Bachelor of Science degree in Elementary Education in 2005. She attended Arkansas State University where she earned her master's degree in Curriculum and Instruction and Educational Administration in 2013. She obtained additional certification for middle school science in 2007 and for special education in 2019.

Rachelle began her career in education with the McDonald County R-1 School District in 2005 where she taught junior high science for nine years. She then moved to Neosho, Missouri, and taught middle school math and science for five years. Rachelle moved to East Newton R-VI School District where she taught high school special education and science for two years before returning to Neosho Middle School as an innovations teacher in 2020.