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High School Teacher Self-Efficacy in Using Blended Learning and TPACK

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This is to certify that the doctoral study by

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Walden University
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Abstract

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EDS, Walden University, 2017

MSc, Central Connecticut State University, 2005

BEd, University of the West Indies, 1993

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Blended learning helps to improve teaching and learning in high school classrooms; however, there is minimal understanding of how teacher self-efficacy influences their use of blended learning in their teaching. The purpose of this qualitative case study was to generate a more in-depth understanding of how high school teachers within a rural school district perceive their self-efficacy to influence their implementation of blended learning and how they apply the TPACK model to guide their pedagogy. Bandura's self-efficacy theory and Koehler and Mishra's TPACK framework served as the conceptual framework for this study. Research questions addressed how high school teachers perceive their ability to implement blended learning, support received, technology integration, and their successes in using this model. Data were collected via interviews, observation protocols, and artifacts from 10 teachers from two high schools and were analyzed using inductive coding. Results revealed most teachers had high self-efficacy levels in their use of blended learning, noting colleagues and technology coaches helped teachers feel more confident with blended learning and technology use. In addition, proper lesson planning was shown to boost teachers' self-efficacy and confidence as well. Recommendations for future research include repeating and expanding sample size and sites, eliminating direct observations during COVID-19, and collecting more artifacts. The study concluded personal and environmental factors contributed to positive and negative teacher self-efficacy in using technology. This study has implications for positive social change for managing pandemic-related educational shifts and developing new ways to support teachers in their use of blended learning.

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Dedication

I dedicate this journey to my two daughters, Zawadi and Zarifa, my mother, Venece, and a few close friends. I dedicate this degree to the three of you, as you have been the inspiration and motivation I needed to achieve my goal of becoming a Doctor of Education. My daughters were my main reason and focus, my heartbeat, and the energy in my body that kept me going and not giving up. Let my journey be an example of hard work, sacrifice, strong will and dedication as you, my daughters pursue your dreams, and education. I plan to be there to be your inspiration and offer support during your journey the way you were for me. I love you all dearly.

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I want to thank God for giving me the strength and endurance to complete my doctoral journey. This journey would have been more rigorous if it wasn't for the support, encouragement, and help from my professors, family, friends, and colleagues. A special thank you to my friends Marcia Forbes and Willie Seabrook for their continuous encouragement throughout this journey.

Dr. Caldwell, I thank you for your patience, the valuable suggestions, availability, attention to detail, constructive criticism, recommendations, support, and dedication you gave during this process. Thank you again for helping me to accomplish my goal and reach a new height of accomplishment. Also thank you to my 2nd chair, Dr. Naffziger, my third committee members for helping me to reach this far in achieving my goal.

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Chapter 1: Introduction to the Study

The advancement of technology continues to influence the learning and teaching process. Technology is used to keep students interested in lessons (Huzzie-Brown, 2018; Johnson et al., 2016; Vogt, 2018). Students expect educators to present educational materials in creative ways which allow them to learn through discovery, collaboration, and interaction in ways that are fun and relevant to society, instead of the traditional model of teaching based solely on face-to-face instruction (Adekola et al., 2017; Dwiyogo, 2018; Hill, 2017; Meier, 2016). School districts continue to supplement classrooms by investing time and money in providing technology and needed tools in response to the emerging paradigm of blended programs (Silva, 2016; Sorbie, 2015; Willmann, 2017).

In implementing technology use in the classroom, teachers are expected to understand and include technological skills in their planning and daily instruction. I used Bandura's teacher self-efficacy (TSE) and technological pedagogical content knowledge (TPACK) model as the conceptual framework to understand how high school teachers perceive self-efficacy's influence on their use of blended learning and how they apply the TPACK model with their students. Understanding how teacher self-efficacy influences blended learning and the application of TPACK in their classroom might help to create learning opportunities for teachers who have not been fully using technology and blended learning strategies. Findings of this study can inform decisions about future blended learning programs and professional development by identifying how teacher self-efficacy

influences their use of blended learning and providing insight into new ways to support teachers to increase their self-efficacy and use of TPACK model.

Chapter 1 included a description of the topic of study, the need to study the problem, and potential positive social change implications of this research. I summarize important literature about blended learning and describe the gap in literature to show why the study is needed. The problem statement, purpose of the study, research questions, framework, nature of the study, definitions, assumptions, limitations, and significance of the study are also addressed in this study.

Background

Blended learning incorporates both asynchronous and synchronous computer-mediated communication methods and is defined as "the thoughtful integration of classroom face-to-face learning experiences with online learning experiences" (Saltan, 2017, p. 63). South Carolina's State Educational Technology Plan in reimagining education is to help districts and schools better develop, incorporate, and support technology in the teaching and learning process (Spearman, 2020). Technology integration in the classroom is possible due to the advancement of computers, interactive boards, Internet connections, and, more recently, one-to-one devices in classrooms with access to multiple educational applications, including blended learning models (Silva, 2016; Tondeur et al., 2017; Willmann, 2017).

To ensure equal access and enhancement of the teaching process, a rural high school district in South Carolina has issued every student a computer or tablet and is using a variety of technology programs to implement blended learning models such as

iReady, Pear Deck, Edgenuity, and Google Classroom in all content areas. More resources are being used to promote the success of this model within the rural school district through professional development. Teachers still have challenges including technology in their teaching (Kent & Giles, 2017). Factors that may affect the adoption and implementation of technology use in the classroom for teachers include their physical environment, training needs, software availability, beliefs related to teaching and learning, concerns regarding self-efficacy, and ability to effectively use technology (Baturay et al., 2017; Kent & Giles, 2017). Although many researchers have examined blended learning, self-efficacy, and the TPACK model in the classroom, fewer researchers have examined teacher self-efficacy influences within a qualitative context and how they apply the TPACK model in their classes.

Studies on teacher self-efficacy were mainly done within elementary and middle school environments and involved using quantitative methods (Cansoy et al., 2018; Hiett, 2017; Ortiz-Brewster, 2016; Özdemir, 2016). Despite state and district technology investments, teachers do not make effective use of them even with encouragement and support; teachers might still reject technologies in their classroom (Baturay et al., 2017). Changes in teachers' beliefs and their technological self-efficacy will impact instructional decisions and classroom users of educational programs. A study on teachers' technology self-efficacy mentioned that "Self-efficacy has been reported as a major component in understanding the frequency and success with which individuals use technology" (Kent & Giles, 2017, p. 1). Successful implementation of blended learning strategies in the classroom requires teachers to have efficacy, motivation, the right attitude, and make

some effort within the learning environment to use this model properly (Dangwal, 2017; El Miniawi & Brenjekjy, 2015).

Teacher self-efficacy influences their pedagogical beliefs which is reflected in the chosen teaching strategies. This choice is based on their teaching and learning concepts and even with examining a link between teachers' belief and the use of technology, the relationship between the two is still unclear (Tondeur et al., 2017). Conducting this study is necessary to contribute to the literature and teach reluctant teachers that the use of blended learning in schools helps students to overcome academic challenges and improve their independence and so should be incorporated in daily lessons. Learning outcomes of blended learning have been determined to be more effective than traditional face-to-face or fully online instruction (Owston, 2018). Teachers may reject implementing innovative technology strategies in their classrooms based on their beliefs. Bandura's theory of self-efficacy was used to help provide an understanding of how high school teachers' self-efficacy influences their use of blended learning and how they apply the TPACK model since it has inspired teachers to reexamine their knowledge and use of technology in their classrooms. It is unclear how teachers apply the TPACK model in their teaching based on research results. This study will not only add information regarding the gap in practice but will also aid administrators and teachers within the school sites and school district in terms of making future decisions regarding the use of blended learning and resources needed to support this model going forward.

Problem Statement

The problem is that there is minimal understanding of how high school teachers' self-efficacy influences their use of blended learning. The TPACK model was used to help understand how some high teachers implement blended learning with their students. Cansoy et al. (2018) concluded that there are limited number of studies done on teacher self-efficacy, while Wyatt (2015) believed that there has been a neglect in researching the topic of teacher self-efficacy beliefs and more research needs to be conducted on the topic. Teachers are expected to use technology to support lesson plans. Teachers need to be technologically proficient if they are to effectively incorporate technological programs into their lesson plans (Grants, 2018).

According to Manglicmot (2015), the most significant barrier to adopting and using technology in the classroom is the attitude of teachers. The TPACK model has inspired teachers to reexamine their knowledge and use of technology in the classroom, even though it is unclear how teachers apply the TPACK model. According to Baturay et al. (2017), teachers do not always make effective use of available technology in their classrooms. Even with encouragement and support from the school district, teachers might still reject the use of any technological application in their classes. Teachers are responsible for educational changes that happen during their students' learning experiences, which are influenced by what teachers do and think (Knapp, 2017; Lloyd, 2016; Whyte, 2017).

Some teachers are not prepared to use technology to support 21st century learning skills despite all efforts and investments made by school districts to equip teachers with

needed technological equipment in classrooms to help recreate and enhance the learning environment (Li, Worch et al., 2015; Mau, 2016; Mesecar, 2015; Thompson, 2015; Yildirim, 2015). Researchers support the use of technology within the classroom as a valuable asset and when used to help individuals to achieve, communicate, collaborate, and access needed information (Manglicmot, 2015; Mau, 2016; Thompson, 2015). Burch (2018) wondered why some teachers do not spend the extra time and energy to plan and use technology with their student. He also supports opportunities like professional development sessions to help teachers learn how to include technology in their teaching.

Purpose of the Study

The purpose of this qualitative case study is to generate a deeper understanding of how high school teacher self-efficacy is perceived to influence their implementation of blended learning. The TPACK model was used to help understand how teachers implement blended learning with their students. Blended learning can help students overcome academic challenges and improve their independence (Marshall-Stuart, 2018; Somera, 2018). Dangwal (2017) said teachers and students need to have the right attitude and be adequately prepared to ensure the success of blended learning implementation. Dwaik et al. (2016) said when students get opportunities to experience blended learning, the effectiveness of the learning and teaching process increases, due to the learning environment being interactive. The TPACK is a theoretical framework that involves teachers' use of information and communication technologies (ICT), which introduce new dimensions of teaching and learning through the use of the internet, computers, smartphones, and communication network (Marshall-Stuart, 2018). Content (CK),

pedagogy (PK), and technology (TK) are three primary focuses of the TPACK model. Regular professional development can help teachers who are uncomfortable using technological applications in their instruction become more proficient through modeling of lessons by other colleagues, thus developing positive self-efficacy as they adopt (Özdemir, 2016).

I intended to gain a better understanding of how teachers' self-efficacy influences their use of blended learning and describe how the TPACK model was applied in a blended learning setting after analyzing data collected from participants. Information relating to policy development, procedures, teacher training, and future educational models are provided in this research, thereby generating positive change. This information will be shared with administrators within the rural school high school in South Carolina and the instructional coaches at the district level. The goal of this study is twofold; it will contribute additional information related to blended learning, as well as aid the administration of this district in terms of making future decisions regarding the use of blended learning and resources needed to support teacher self-efficacy as well as application of the TPACK model. According to Kent and Giles (2017) teachers with high self-efficacy are more willing to integrate technology such as in blended learning during instruction, while teachers who are less confident with using technology generally refuse to implement any form of technological application in their instruction. With the provision of one-to-one computers to students and blended learning professional developments being offered by the school district regularly, addresses the need to provide

schools and district-level administrators with a better understanding of how teacher self-efficacy influences the use of blended learning and application of the TPACK model.

Findings of this study can inform decisions about future blended learning programs and professional development by identifying how teacher self-efficacy influences their use of blended learning and providing insights into new ways to support teachers to increase their self-efficacy and use of the TPACK framework. Decisions made from findings can influence professional development plans by identifying how teacher self-efficacy influences their use of blended learning. Implications of the findings may provide insight into new ways to support teachers to increase their self-efficacy and use of the TPACK model. The TPACK model of teacher knowledge indicates that complex interactions of pedagogical, content, and technological knowledge guide educators' decisions about curriculum, course design, and delivery of technology integrated lessons (Koehler et al., 2013; Mishra & Koehler, 2006).

Research Questions

I seek to understand how high school teachers perceive self-efficacy's influence on their use of blended learning and how they apply the TPACK model as they implement blended learning with their students. The following questions were used to address the purpose of my research:

RQ1: How do high school teachers perceive their ability to implement blended learning with their students?

RQ2: What support do they need to use blended learning effectively?

RQ3: How are high school teachers using blended learning in their instructional practices?

RQ4: What successes are high school teachers experiencing in terms of integrating technology and blended learning in their instructional practices?

Conceptual Framework

The two educational frameworks that contribute to this study are Bandura's self-efficacy theory and Koehler and Mishra's TPACK model. Self-efficacy is defined as "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1995, p. 2). TPACK is a technology integration framework that involves three types of knowledge categories and interactions as teachers integrate technology into curriculum: technological, pedagogical, and content knowledge (Shulman, 1986). Depending on the needs of students and the nature of the teaching and learning process, teachers may choose the most appropriate blended learning model in their classroom. There are two key components of blended learning and any selected model should be a combination of face-to-face and computer-mediated instruction (Dwiyogo, 2018; Rivera, 2017; Saltan, 2017; Somera, 2018). The TPACK model is a tool that can be used to assess teacher knowledge in the area of technology integration (Qasem & Viswanathappa, 2016), as well as support supports effective technology integration in classroom teaching and learning (Mishra & Koehler, 2006). Blended learning is being adopted by the k-12 educational system and is being considered to promote interactive learning experiences (Qasem & Viswanathappa, 2016). Teachers' decisions in the classroom regarding the use of technological applications are influenced

by their self-efficacy beliefs, and once their self-efficacy beliefs increase, frequency of use of technology will also increase during instruction (Wright & Akgunduz, 2018).

To implement blended learning successfully, teachers must understand and demonstrate proficiency in terms of integrating the three constructs of the TPACK model properly. The model offers the foundation for teachers to combine traditional classroom teaching with computer-mediated instruction to improve student learning (Shulman, 1986). Teachers need to incorporate different knowledge domains if they wish to be effective with their students. This includes knowing what students understand from different knowledge domains (Mukherjee, 2017). Bandura's self-efficacy theory relates to people's beliefs in terms of their own competency to use technology that influences their lives. A more thorough analysis of the conceptual framework is in Chapter 2.

If teachers do not feel equipped to use blended learning, this may lower their self-efficacy and negatively affect their efforts (Lloyd, 2016; Rivera, 2017). In addition to looking at teacher self-efficacy, this study will help administrators determine if teachers' use of blended learning is aligned with the TPACK framework. To collect data, I conducted in-depth interviews with questions focusing on teacher self-efficacy, blended learning, and application of the TPACK framework. Lesson plans were reviewed to determine how teachers are applying the TPACK framework to implement blended learning in their instruction.

Nature of the Study

This study is a qualitative case study that involved high school teachers' use of blended learning in classrooms in a rural school district in South Carolina. Qualitative

research is an appropriate methodology for this study because of its naturalistic approach that will increase understanding of the phenomena under investigation (Burkholder et al., 2016; Yin, 2018). I Selected the qualitative method based on the principal focus of investigating teachers' use of blended learning programs to support and improving their students' learning outcomes. Researchers use qualitative methods for case studies to describe interactions between a single person or entity, a group, a specific policy, community, or institution (Merriam & Tisdell, 2016; Ravitch & Carl, 2016). The purpose of this qualitative research was to gain a deeper understanding of a situation, which was done through the use of interviews, observations, and documentation. I was able to understand and describe teacher efficacy in terms of using blended learning and the support needed to increase usage, as well as if they are integrating technology effectively.

Interviews and classroom observations were two data collection instruments used to support this study. Approximately 10-15 high school teachers across all content areas were invited to participate. Permission was granted by the rural school district's Institutional Review Board to conduct interviews and observations. High school teachers were interviewed in order to get an understanding of their self-efficacy in terms of using blended learning. Classroom observations were conducted to determine how teachers are using the TPACK framework as they implement blended learning. Due to the COVID-19 pandemic, some teachers opted for an alternative to classroom observations. Lesson plans were reviewed to determine how teachers applied the TPACK framework to implement blended learning.

Definitions

The following terms are defined for the study:

Active learning: Learning activities which require critical thinking, problem-solving, gathering, and using information (Marshall, 2018).

Blended learning: This is the combination of traditional face-to-face instruction and online experiences to improve teaching and learning processes (Saltan, 2017).

Online learning: Virtual learning or instruction provided exclusively through the Internet (Marshall, 2018; Rivera, 2017).

Self-efficacy: Believing in one's capability to accomplish a task with competence (Bandura, 1995).

Technology self-efficacy: Believing in one's capability to use technology effectively (Manglicmot, 2015).

Traditional and face-to-face learning: Personal encounters between teachers and students through physical presence and dissemination of information (Rivera, 2017).

Assumptions

It was assumed that participants in this study were honest while being interviewed. I assumed all lesson plans collected for review would indicate daily implementation of technology usage. The other assumption is that teachers did not abruptly decide to include technology in their instruction because they were aware of my presence in their classroom. The sample population came from two high schools; therefore I assumed that the population could be generalized to represent a larger population. The number of participants in the study was assumed to be enough to provide

substantial data to help provide an understanding of how high school teacher self-efficacy influences their use of blended learning and how they apply the TPACK model as they implement blended learning with their students.

Scope and Delimitations

Data collection instruments should be designed to collect information to answer the research questions. The district offers several learning management systems and educational models; however, I chose to focus on blended learning because the district implemented a new programs in 2017 and had been providing monthly professional development. I included analyzed data after reviewing lesson plans supplied by participants. The study was restricted to two high schools within a rural school district in South Carolina, and participants were interviewed and observed once. Interviews involved personal perceptions of teachers' self-efficacy, and responses were based on experiences and beliefs. Past experiences, current environment, and personal beliefs can impact teachers' self-efficacy influences and willingness to use technology in their instruction. Dogar, et al. (2019) believed that one's social perception and behavior can be influenced by the way they view themselves and their capabilities to accomplish a task.

A total of 10 teachers from various content areas volunteered to participate in the study. Participants included two teachers from the Junior Reserve Officer Corps (JROTC) Department, two from the special education department, two from the Career and Technology Education (CATE) department, two from the mathematics department, one from the science department, and one from the physical education department. One

criterion for teacher participant selection was that each teacher should have worked in the district for at least one year.

Limitations

Consideration must be given to conditions that may limit the generalizability of the study. Participants in this study were expected to came from one high school because I also worked at that high school. As a result, I had easy access to participants. A small sample size limits generalizability to a larger population (Anglin, 2017; Burkholder et al., 2016; Ravitch, & Carl, 2016; Vogt, 2018). Teachers using technology and blended learning in their classrooms may not represent teachers in neighboring districts or other parts of the United States because activities may not reflect what happens in urban school locations. Other teachers from other high schools as well as elementary or middle school may not share the same beliefs as high school teachers who participated in this study. Other limitations that may affect the study would be classroom size, and traditional lecture type instruction which would restrict teachers implementing blended learning and using TPACK properly (McDavid et al., 2018) while being observed.

Significance

It is becoming increasingly necessary for schools to implement different types of learning modalities to increase student engagement, and blended learning is a model that offers a variety of learning options. This study adds to the current literature by addressing the experiences of teachers in a rural high school district that has recently invested funds into increasing use of technology by incorporating blended learning in all classrooms. This research supports professional education practice in the schools by offering

solutions to improve the use of blended learning in all classes. Dangwal (2017) said effective implementation of a blended learning program requires a large budget as well as highly motivated teachers and students for it to be successful. Blended learning provides new learning experiences for students to share and organize information or knowledge (Dangwal, 2017; Dwiyogo, 2018; Meier, 2016). This contributes to students exploring critical thinking, decision making, and developing and improving communication skills. The blended learning model is child-centered and helps in terms of creating rich experiences for students (Dangwal, 2017).

Stakeholders in districts that are interested in implementing blended learning programs may benefit from these findings by understanding what teachers need to use this model more reliably in their classrooms, as well as understanding if they are using programs correctly to integrate technology into content and pedagogy. Colton (2016) said the more support teachers receive, the more their self-efficacy will develop; therefore if teachers' support diminishes, then there will be a reduction in their self-efficacy, which may result in excuses, blames, or failures. Findings could lead to positive social change by making blended learning programs more accessible and useful to teachers trying to improve their traditional curriculum through the use of added technology.

Summary

This chapter included the topic of study, need to conduct research, and social change implications. A gap in practice related to teacher self-efficacy influences, blended learning usage, and TPACK application was identified. Background information about the topic was presented. Bandura's self-efficacy theory and Mishra and Koehler's

TPACK model were the conceptual frameworks. Blended learning programs are not new to K-12 education; however, limited information exists regarding teacher self-efficacy influences in terms of using blended learning and the TPACK with their students.

Chapter 2 includes the literature review and conceptual framework of this qualitative case study. The chapter contains a discussion of related research and literature regarding blended learning, self-efficacy, and the TPACK model. The literature review includes a discussion of self-efficacy theory, blended learning, and TPACK.

Chapter 2: Literature Review

The problem under investigation in this study is that there is minimal understanding of how high school teacher self-efficacy influences their use of blended learning and the TPACK model. The TPACK model was used to help understand how teachers apply blended learning in their classrooms with their students. A better understanding of teacher self-efficacy influences, and the use of blended learning should lead to additional information related to blended learning and the application of the TPACK model in their classroom. Data can be used by district administrators to make future decisions about the use of blended learning and resources needed to support teacher self-efficacy influences as well as the application of the TPACK model. The purpose of this study was to understand better how high school teacher self-efficacy is perceived to influence their implementation of blended learning and how they apply the TPACK model as they implement blended learning with their students.

I focused on teacher self-efficacy and influences on technology use in the classroom. I also address blended learning and technology use in education. Various concepts of blended learning, as well as barriers that may prevent teachers from implementing blended learning in classrooms with their students, are also discussed. The third area of the literature review is TPACK model application in the classroom. There are limited peer-reviewed articles on self-efficacy and the application of the TPACK model while implementing blended learning. I addressed self-efficacy, blended learning, and the TPACK framework separate to develop the literature review for this study.

The chapter includes an introduction, information regarding literature search strategies, and the conceptual framework. A literature review related to key concepts such as self-efficacy, teacher self-efficacy, blended learning, the TPACK model, and using technology is followed by a summary and conclusion. Teachers and administrators at the study sites need to understand how teacher self-efficacy influences blended learning and the application of the TPACK model with their students.

Literature Search Strategy

This chapter includes a description of literature search strategies to explain the research process and conceptual framework. To gather information for the literature review, I used the following databases:Walden Online Library, EBSCOHost, SAGE, Google Scholar, Google, ERIC, and ProQuest. The searches were narrowed down to full text and peer-reviewed journal articles. During the literature review searches, I restricted my search to include articles over a five year period.

The following key terms were used to search for information: *self-efficacy, teacher self-efficacy*, *self-efficacy theory, self-efficacy and technology, self-efficacy influences, teacher efficacy, self-efficacy development, teacher self-efficacy and blended learning, teacher self-efficacy or blended learning or e-learning or hybird or elearning or technology use, self-efficacy and technology in the classroom, self-efficacy and blended learning, self-efficacy and TPACK, perception, qualitative study, teacher perception of technology, blended learning, blended learning theory, blended learning benefits, blended learning in the classroom, blended learning technology, blended learning and TPACK application, blended learning development, blended learning*

models, blended learning strategies, TPACK, technology in the classroom, applying the TPACK model, TPACK in K-12 education, TPACK and self-efficacy, TPACK and blended learning, and *TPACK and technology in the classroom.* Most sources were published between February 2019 and May 2020. The literature review of this study addresses teacher self-efficacy and influences on technology usage in the classroom, blended learning, and the TPACK model.

Conceptual Framework

The phenomenon explored in this study was the implementation of blended learning and how high school teachers' self-efficacy influences use and application of the TPACK model. I address the conceptual framework along with primary writings by key theorists. I also address how the phenomenon has been applied and articulated in previous studies.

The conceptual framework was based on Bandura's self-efficacy theory and Koehler and Mishra's TPACK model. Self-efficacy involves one's capabilities to accomplish goals successfully or complete tasks to an acceptable standards under various conditions that influence the way people think feel and act (Bandura, 1977, 1993). Beliefs are considered to be manifested through four major processes: affective, cognitive, selective, and motivational effect (Kumar, 2019). According to Bandura (1997), cognitive effect involves the expectations of successes and failures people anticipate and devising ways of handling environmental demands. Motivational effect involves the setting of goals and results that are expected. Cardullo et al. (2021) agree with Bandura that people do self-reflect on their capabilities as they contributor to their communities. Reflection on

one's self-efficacy does facilitate behavioral change, which leads to the way people control and shape their environment (Bandura et al., 1996).

Cansoy et al. (2018) said teachers with high self-efficacy will do what it takes to achieve their goals while those with low self-efficacy will not work hard enough to meet any goals or deal with stress. Success comes when self-efficacy is high and performance suffers when self-efficacy is low because performance and behavior are impacted by one's self-efficacy (Aydın, 2019; Lane et al., 2019; Wilson, 2018). Teachers who belief more in themselves and their capabilities tend to work harder to ensure their students succeed by not being afraid to explore and try new concepts (Cardullo et al., 2021). Based on the experiences and circumstances in each teachers' life, their self-efficacy will be different and their behaviors, attitudes will have an effect on the learning outcome of their students (Menon et al., 2017; Montoya, 2018). The degree of complexity of tasks can also affect self-efficacy. Cardullo et al. (2021) agreed that teacher self-efficacy relates to teacher's beliefs in planning appropriately their lessons and teach to achieve their goals based on their capabilities and not what is expected at all times.

Sickel (2019) mentioned that The TPACK model helps to encourage teachers' use of technology. The TPACK model also guides teachers' on successful and functional technology integration within the educational field based on the connections between technology, pedagogy and content (Hill & Uribe-Florez, 2020; Simsek & Sarsar, 2019). In this case study, my goal was to undersatnd how teachers apply the TPACK model as they implement blended learning with their students. The TPACK model involves the use of technology in education to make the teaching process more effective. The TPACK

framework was introduced in 2006 by Punya Mishra and Matthew J. Koehler, which emerged from Shulman's pedagogical content knowledge (PCK) in 1986, when emphasis then was to incorporate content knowledge (CK) and pedagagical knowledge (PK) into one concept (Gilkes, 2020; Hsu et al., 2020; Simsek & Sarsar, 2019). Blended learning is an approach that involves a combination of face-to-face classroom and online learning (Rivera, 2017; Somera, 2018; Staker & Horn, 2012; Suana et al., 2019). The two frameworks support each other in terms of understanding how high school teachers' self-efficacy influences their use of blended learning and application of the TPACK model.

According to Keskin (2019), blended learning is a teaching method that is used to improve teaching through face-to-face interactions, online learning and various instructional technologies. Buwono and Ciptaningrum (2019) stated that one way to solve face-to-face classroom learning limitation is to include technology in the teaching and learning process by way of blended learning. The quality of teaching will not only improve with the use of blended learning online format, but teachers and students will improve their relationships and interactions as they work together. One of the contributing factors behind blended learning was the need to increase the academic performance output of students, thus the introduction of technology usage in the classroom (Asif et al., 2020). In a Blended learning environment, engagement and interventions should be measured at the same level to improve the blended learning design and help with understanding students' engagement or disengagement during instruction (Halverson, & Graham, 2019). This engagement and disengagement can be seen from the examination of data logs in relation to the time students spend on tasks.

The Blended Learning Engagement Framework emphasizes the emotional and cognitive energy being exerted during the engagement of students in the learning environment as they develop and learn new skills and information. Henrie et al. (2015) referenced cognitive energy as the learner's attention, effort and persistence, and time spent on tasks. Attention deals with processing resources, while effort and persistence relate to spending extra time on difficult tasks, meeting deadlines and completing all assigned task. Time spent on tasks relates to participating in discussion forums, completing assignments, reading, and reviewing required resources.

Literature Review Related to Self-Efficacy

Bandura's 1986 self-efficacy theory is associated with the social learning theory developed in his early work and is still being used by many researchers. Self-efficacy is defined as "people's judgments of their capabilities to organize and execute courses of actions required to attain designated types of performances" (Bandura, 1986, p. 391). Malinauskas (2017), and Hamidah and Said (2019) also mentioned that self-efficacy is a person's belief of themselves meeting and accomplishing various tasks and challenges. Bandura (1993) stated that teacher self-efficacy is the teacher's personal belief that they can reach all their educational goals by using their organizational and planning skills. This social learning theory was developed due to Bandura's interest in finding out more about how behavior changed (McKim & Velez, 2016). There are different types of learning styles and methods to help students increase their knowledge and teachers are expected to improve the quality of students' learning by selecting an appropriate learning methodology to complement or change their learning experiences in the desired direction

(Dwiyogo, 2018). Learning methods have evolved from traditional face-to-face lectures to include various types of learning media such as the internet, television, software, and personal experiences. Teachers should understand how technology can impact the teaching and learning process in their classrooms and Coyne et al. (2017) recommend that teachers need to increase their use of technology in order to meet the needs of the rising digital age. Coyne et al. stated that teacher reluctance is a barrier that exists in incorporating technology into lesson plans. This hesitation can be associated with not having enough time to learn new technology, the availability of working technology, training sessions, set teaching methods, environmental culture, and self-efficacy.

Bandura (1995) stated that teachers with greater cognitive resourcefulness, flexibility, outstanding classroom management skills, and are self-motivated are the ones with high-self-efficacy, and according to Bandura (1997), positive teaching can also be associated with positive teacher self-efficacy. Teachers should reexamine their teaching methods to include technology in their classrooms (Hall & Trespalacios, 2019). Teachers who are more technologically savvy and have high-self-efficacy will take on more challenging tasks, teach students with behavior issues, and use more technology with their students, thus giving them a better learning experience (Malinauskas, 2017; Shi, 2018; Walker & Shepard, 2011). The self-efficacy theory also relates to teachers believing in what they think they can do to improve their students' learning instead of believing in the actual levels of competence they themselves possess (Sharp et al., 2016; Tsui, 2018). Having a high self-efficacy can be advantageous for teachers because they

will spend more time to ensure their students' learning experiences are successful (Sharp et al., 2016; Wilson, 2018).

The qualitative case study on self-efficacy views conducted by Kukul and Karatas (2019), and Lane et al. (2019), reflect the ways teachers monitor, use, and interact with new information and experiences. They also stated that self-efficacy affects behavior, in that success is achieved from having a high level of self-efficacy, while failures are associated with having low self-efficacy. A correlation between self-efficacy, students, teachers' academic and instructional performances was also mentioned. This ties in with Bandura's (2006) notion of how people act and think, either with self-doubt or self-belief or giving up or moving forward and that different experiences and circumstances do affect self-efficacy. Understanding the development of self-efficacy may explain its impact on the teaching and learning process since teachers are being encouraged to use technology to improve their instruction (Aybek & Aslan, 2019; Hall & Trespalacios, 2019; Kukul & Karatas, 2019). However, due to low self-efficacy, some teachers are afraid to include technology in their classroom instruction due to their inability to use technology effectively (Bandura, 1997; Elstad & Christophersen, 2017; Mehmood, 2019).

Self-Efficacy Development

Bandura (1977a, 1986) suggested four sources of self-building experiences in his self-efficacy theory. The first two sources are mastery and vicarious experiences, while the third is verbal persuasion and the fourth dealing with the physiological and emotional states. The most powerful experience of all four is the mastery experiences, which is

successful attainment of one's goal or actions and the willingness to repeat such activities or tasks (Kontas, & Özcan, 2017; McKim, & Velez, 2016; Mehmood, 2019; Ünal et al., 2017; Wilson, 2018). The level of self-efficacy is likely to increase after a task has been completed successfully. During the vicarious experiences, individuals build their self-efficacy by observing others. They tend to judge or compare themselves to others based on their present and past performances. The more successful the observed person seemed, the more powerful the vicarious experiences and belief of similar success on the observer's path (Kontas & Özcan, 2017; Malinauskas, 2017; McKim & Velez, 2016; Mehmood, 2019; Ünal et al., 2017; Wilson, 2018).

The verbal persuasion deals with the level or rate at which self-efficacy will increase or decrease. If positive encouragement and motivations are received, then self-efficacy will increase, and the person will be empowered. The support shown will boost confidence and promote success (Kontas & Özcan, 2017; Malinauskas, 2017; McKim & Velez, 2016; Mehmood, 2019; Ünal et al., 2017; Wilson, 2018). The final source of self-efficacy is the physiological and emotional state, which deals with the inner state and is linked to one's stress, anxiety, mood, and fatigue. During the physical and emotional state, individuals tend to judge their actions under various conditions fostering either success or failure. Positive experiences of success will increase self-efficacy, and negative feelings linked to anxiety, stress, sweaty palms, and excessive nerves can reduce one's self-efficacy resulting in failures. Repeated failures will also lower one's self-efficacy (Kontas & Özcan, 2017; McKim & Velez, 2016; Mehmood, 2019; Ünal et al., 2017). Bandura believed that after a person assesses a certain situation and thinks a task

is too challenging and appears to be greater than one's perceived abilities, such an individual may not take the risk of task engagement due to the possibilities of failure. The same is true if the task seemed attainable, as individuals will participate on the likelihood of the task being a success (Malinauskas, 2017; Wilson, 2018; Wong et al., 2016).

Teacher Self-Efficacy

Teacher self-efficacy is one's belief in one's ability to complete a task successfully with relation to teaching students (Bandura, 1977, 1997; Gulistan et al., 2017; Mehmood, 2019; Wilson, 2018). Different studies indicated that teacher self-efficacy impacts student achievement in the classroom (Gulistan et al., 2017; Korte & Simonsen, 2018). Researchers also claimed that teacher self-efficacy triggers teachers' effectiveness, which reflects in their students' learning and academic achievement (Aybek & Aslan, 2019; Gulistan et al., 2017; Mehmood, 2019). Researchers are of the view that the feeling of being comfortable on one's job is contributed by one's self-efficacy which will eventually increase their commitment to the job and decrease stress (Aybek & Aslan, 2019; Gulistan et al., 2017; Korte & Simonsen, 2018; Mehmood, 2019).

Mehmood (2019) said teachers with high self-efficacy put more effort in preparing instructional materials and activities to motivate their struggling students, while teachers with low-self-efficacy tend to focus on other things like classroom management most of the time, as well as focusing negatively on the errors of their struggling students. Teachers with low self-efficacy do not spend time to motivate their struggling students; they instead become frustrated with them and then give up on them at a quicker rate. These teachers, at times will use work in a negative way to keep their students busy as a

form of classroom constraint. Whenever issues emerge in the classroom, teachers with high self-efficacy will address it immediately, in contrast to those teachers with low self-efficacy, who will ignore the issues to retain their comfort level in the classroom (Mehmood, 2019). According to Zilka et al. (2018), and Henriksen et al. (2019), activity choices, effort, and perseverance are being affected by self-efficacy in that more effort and energy are applied to tasks being carried out by people exhibiting a higher level of self-efficacy than those who have much lower efficacy. Zilka et al. and Henriksen et al. believe it is through this process of comparison with others that one often learns about oneself. Feedback given can influence a person's perception or their self-efficacy and encourage them to work towards success or helplessness (Abdelraheem, 2014; Hidayat Rafiola et al., 2020; Zilka et al., 2018).

A literature review of teacher self-efficacy indicated that the reduction of fear will increase life satisfaction and self-efficacy (Pace & Mellard, 2016), while another indicated that self-efficacy is a concept that relates to one's perception and whether one will achieve one's goal. Self-efficacy, according to Balentyne and Varga (2017) does influence students' success in a positive way and help teachers through their teacher training. Malinauskas, (2017) and Pace and Mellard (2016) agreed with Bandura's statement that the way people think, feel, and act is affected by their self-efficacy. Mehmood (2019) said new instructional methods were deemed important and were an instructional priority for teachers with high self-efficacy. Other results from other research mentioned a correlation of interdependency between teacher self-efficacy and instructional quality. There has been an increase in the number of students focusing on

the self-efficacy of students and teachers over the last few years. These studies look at areas like social self-efficacy (Alajbeg, 2018; Luo et al., 2019; Rogala et al., 2020; Saulius, & Malinauskas, 2019; Zullig, & Valois, 2018) teacher self-efficacy (Cansoy et al., 2018; Korte, 2017; Malinauskas, 2017; Peker et al., 2018), and teaching difficult students effectively due to having high levels of self-efficacy (Baleghizadeh, & Shakouri, 2017).

Literature Review Related to Blended Learning

The teaching and learning process has been impacted by the introduction of mobile technologies, mass media, television, computers, and the internet, providing access to learners to receive information, anytime and anywhere (Sulaiman, 2018). This effort of widening the educational experiences has given teachers the opportunity to decide which teaching strategy to use or format most suit their pedagogical context (Sulaiman, 2018). Many teachers have opted to include the use of technology in their instruction as a way of tailoring or providing a personalized form of learning in their delivery methods to meet students' individual needs and learning styles. They create opportunities for their students to achieve mastery and independence as well as giving constant feedback for students to know and understand their performance level, thus creating a blended learning experience (Sulaiman, 2018).

Blended learning is a strategy where students complete a section of work face-to-face with a teacher and the other portion of the lesson on the computer (Albhnsawy & Aliweh, 2016; Brodersen & Melluzzo, 2017; Rivera, 2017; Somera, 2018; Tang & Chaw, 2016; Wong et al., 2016). Over the years, blended learning had gained much attention

(Arnesen et al., 2019; Horn & Fisher, 2017), and first appeared in 1999 when the Interactive Learning Centers emerged due to internet access, and over the years, different researchers have listed various benefits and advantages. Educators and organizations began creating, managing, and transmitting online courses and classes through learning management systems (LMS) (Marshall-Stuart, 2018; Sorbie, 2015; Zeydel, 2019). There was a time when blended learning was mainly at the tertiary level due to the location of the institution and the inability of students to be physically present as well as due to limited funding and resources for the institution (Raymond, 2019). Qasem and Viswanathappa (2016) noted that "Early research indicates that blended learning is increasingly being adopted at all levels of education system" (p. 264). Arnesen et al., (2019); Mese, and Dursun, (2019); and Shamsuddin, and Kaur (2020) stated that over the years blended learning has gained much attention, while Abdelraheem (2014); Shamsuddin, and Kaur (2020) mentioned that blended learning enhances the collaboration, motivation, attitudes, interaction, and communication skills of learners. Research by Henriksen et al. (2019) found that after teachers were trained to use technology, their confidence increased, and their approach and willingness to use technology exhibited positive change. Sriwichai (2020) talked about teachers, learners, institutions, content, technology, and learning support as the six interconnected components of a blended learning system. Teachers have multiple roles like advisors, guides, facilitators, and moderators. Institutions should have needed infrastructure, and students need to have opportunities to collaborate with others as well as work alone. Both educators and learners should be sensitized about the challenges of technology and ways

to troubleshoot. All teachers should be trained and be willing to support students' learning in developing effective learning strategies.

Blended Learning Benefits

According to Henriksen et al., (2019) studies related to blended learning were done and compared with the traditional classroom settings, and the results indicated that students within the blended learning had higher achievement levels. These participants were more motivated and displayed better attitudes than those within the traditional classroom environment. Mese and Dursun (2019) stated that research findings show that blended learning is more effective than traditional education when both platforms were examined. Some benefits and advantages of blended learning include the ability to facilitate access to available resources, to be collaborative and interactive, to enhance learning opportunities, to capitalize on strengths, offer flexible schedules, motivate learners through communication, allow work at own pace, and to give feedback and grading (Davies, 2019; Somera, 2018). Across the educational sector, blended learning can improve the teaching and learning process (Archambault et al., 2016; Porter & Graham, 2016) and according to Rivera (2017), blended learning can help the Special Needs/Education population to some extent. Rivera, along with other researchers like Fazal, and Bryant (2019) and Shamsuddin, and Kaur (2020), mentioned that flexibility as a benefit could be facilitated in an inclusive environment to support special needs students. This flexibility allows special needs students in an inclusive setting to work on different content areas at different levels and targeted activities at the same time in the same classroom.

Dwaik, et al. (2016) investigated how blended learning influenced students' knowledge and changes their attitude and behavior toward technology use in an English Literature class. The findings show that blended learning increased the effectiveness of the learning and teaching process while giving students opportunities to work in an interactive learning environment. The flexibility that blended learning offers is said to motivate and increase students' learning in English due to opportunities students get to interact with teachers and peers through discussions, comments and chat activities (Tanduklangi & Lio, 2019). The findings from a study done by Fazal and Bryant (2019) show that students who are struggling academically and are also functioning below their peers could benefit from the implementation of blended learning. Fazal and Bryant placed the 413 students in the study into two groups to determine the effects of using the blended learning rotation station model. Each group of students receive different instructions; one group received blended learning practices and the other received face-to-face instruction, however, both groups did the same assessments. Based on the findings, the group receiving blended learning practices had more growth in their scores. The researchers also reported that blended learning models offer customized student learning and the ability for differentiation of instruction to accommodate the diverse academic levels of learners. Fazal and Bryant (2019) support the use of blended learning practices, and based on their research findings; they recommend that administrators support and encourage the adaptation of blended learning practices among their teachers to offer differentiated instructions to their students.

Sorbie (2015) focused on teachers' views of blended learning, and the influences blended learning has on the teaching and learning process in a qualitative case study. Analysis of the questionnaires, observations, and interviews revealed that blended learning promotes the teaching and learning process of the teachers who participated in the twelve schools studied. Seraji et al. (2019) stated that blended learning facilitates access to a variety of opportunities for learners, such as flexibility, improves the quality of learning, cost-effective, encourage learners to interact with each other and ensures active participation. Boelens et al. (2017) focused on the implications of blended learning in their study, which were about four environmental types such as flexibility, interaction, learning process, and active learning atmosphere. A closer look at the implications of flexibility would include factors like time, method, environment, and pace of learning. Another impact of blended learning is facilitating the learning process by getting learners to improve their self-efficacy, becoming engaged in self-regulation and organization, time management, having technological support, and being presented with a variety of learning activities (Seraji et al., 2019). Improved teacher and student relationship, learning flexibility, reduced administrative cost, and offering learning in a convient way are considered benefits of implementing blended learning (Antwi-Boampong, 2021; Buwono & Ciptaningrum, 2019). Teachers planning to implement blended learning need to consider these three areas; technology, class context, and pedagogical strategies according to Asif et al. (2020).

The Context/Framework of Blended Learning

A new trend within the educatioanl sector for teaching and learning is blended learning (Rahmat et al., 2019). Bleneded learning instructional outcomes are more effective (Varthis et al., 2016) than just the face-to-face learning environment. When blended learning is being compared to traditional learning environment, teachers use blended learnig to explore the gains and tradeoffs made (Eryilmaz, 2015). Studies related to blended learning uses learning theories, behaviorism, cognitivism, and constructivism as their framework (Garner & Oke, 2015; Picciano, 2017; Rajkoomar & Raju, 2016; Wong et al., 2016). These learning theories stated that once teachers understand how their students learn and become knowledgeable, they will be better able to plan appropriately to implement a blended learning environment. Learner-Centered teaching can be considered as the conceptual framework as it relates to instructional strategies in a blended learning model (Zeydel, 2019). The Weimer's (2013) framework applies to learner-centered teaching removing the teacher from being the center of focus to give all the information students need to a shift where the focus and responsibility of learning is now on the students.

The learner-centered teaching framework enlists teachers as facilitators who guides students to understand that they are now responsible for their own learning and need to do work to achieve their goal. The idea behind the instructional shift from teacher-centered to student-centered was to help students become college ready, when it's time to enroll (Weimer, 2013; Zeydel, 2019). In the process of learner-centered instruction, students work on teacher created assignments, interact with others, solve problems,

expand their knowledge through the discovery method as they cruised their way through the task to achieve their goals (Raymond, 2019; Zeydel, 2019). Studies have reported improvements in students' grade with the use of blended learning based on the shift from teacher-centered to student-centered instruction or learner-centered teaching (Bowering et al., 2017). Having the connection between blended learning and learner-centered instruction, students will benefit by developing self-direction and responsibility which are needed to succeed at the college level. Therefore, blended learning will contribute to students being more prepared as they take ownership of their and plan how, when, where and what to do as they learn learning (Horn & Staker, 2015; Jacobs, 2016; Rufatto et al., 2016; Zeydel, 2019).

The understanding of students' learning styles and preferences will help teachers to select the most appropriate instructional methods and materials which will have an impact on students' learning. (Brodersen & Melluzzo, 2017; Picciano, 2017; Rajkoomar & Raju, 2016). In blended learning, classroom instruction may be direct, indirect, collaborative or individualized and different teaching methods, assessment tools, wide ranges of media and materials are used to improve students' satisfaction and performance and students can learn anywhere, anytime and in the way they want to (Picciano, 2017; Rajkoomar & Raju, 2016; Tang & Chaw, 2016).

Blended Learning Model/Strategies

There are different learning options offered through a blended learning model or program. As blended learning continues to evolve, new kinds of learning experiences are being developed and explored, which are allowing more access to curriculum content.

These variations of strategies or models are based on the nature of the blend being implemented and the levels of technology integration in the course. The Replacement Model, the Supplemental Model, the Emporium Model, and the Buffet Model are four models identified in a 2003 investigation done of thirty (30) U.S. school project as reviewed by Derbel (2017). In the Replacement Model, the face-to-face lectures and notes are being placed online so students do not miss out, thus, giving access to those who may not be able to afford on-campus boarding, or they live too far to travel to classes on campus. For the Supplemental Model, students are being motivated by the extra resources they can access, which adds depth to the course as they strive to help students become a success. The Emporium Model creates opportunities for learners to get one-on-one aid in the face-to-face setting or receive additional support or materials from the resource centers if students are online. Based on the flexibility and freedom of the Buffet Model, institutions do not need to schedule certain classes on campus, and students can choose any combination of learning activities, whether it is online or face-to-face.

The blended learning applications use adaptive strategies to complement students' learning abilities (Brodersen & Melluzzo, 2017). Garner and Oke (2015) elaborated on four elements of blended learning that include time, space, fidelity, and humanness. As teachers plan for both online and face-to-face components of blended learning for their students' learning experiences, they need to consider the amount to time they want students to spend on each element. Time should also be considered for assessments and the level of rigor per lesson. Lesson designs should engage all the senses of the students'

instructional experiences. Teachers are encouraged to make connections with their students and build some level of relationship which covers the element of space. The face-to-face component delivers human affiliation based on the direct contact of the learning connections and experiences. The online humanness includes the relationships and connections made by the educator (Garner & Oke, 2015).

Teachers have at least four different models of blended learning that they may use to customize their teaching and learning: rotation, self-blended, flex, and enriched virtual. (Pace & Mellard, 2016). In the rotation model, students take turns moving around in learning modalities during instructional periods. There are four types of rotations that include lab rotation, station rotation, individual rotation, and flipped classroom. All these rotations involve students moving from one learning area to another (Pace & Mellard, 2016). Another review of literature revealed over 400 blended learning schools were being investigated and the results found that the rotation model, the flex model, the A La Carte model, and the enriched virtual model were the top four common models used (Derbel, 2017). The station rotation or rotation model is being described as having students moved through workstations on a fixed schedule to complete the various task, of which one component needs to be online. The flex model is delivered mainly online. Some activities are offline, giving students the flexibility to complete them as they see fit. They also get to have a face-to-face component, as well. The A La Carte model is done entirely online and complements existing brick-and-mortar experiences. Students can choose a combination of classes, whether online or face-to-face. The enriched virtual

model requires students to participate in face-to-face sessions with their teacher, then choose to complete the rest remotely.

Blended Learning and Online Learning/Implementation

Blended learning and online learning have both been defined by Horn and Staker (2017) as providing support in a flexible way to help students achieve mastery by using their voice and choice in how, when, where, and what they learn in a personalized approach in developing their interest, strengths, and needs. One contributing factor to online learning was the need to provide an educational service as a learning alternative to students experiencing disruptions, thus the term disruptive innovation. Online learning offers opportunities to students to do credit-recovery to help with program completion, while others do advanced programs. Those who are unable to attend school on a regular basis benefit from online alternative teaching and learning (Horn & Staker, 2017). According to Derbel, 2017 blended learning provides students access to materials online, still giving a teacher presence effect, allowing students to complete work at their own pace, thus resulting in opportunities for personalized learning. With disruptions or any changes in the educational system Horn and Staker (2017) suggested that blended learning allows access to all interested learners the best in-person teaching and learning of old and new paradigm. They continued to discuss blended learning and wondered if it was a blessing or curse due to disruption, which resulted in online learning happening outside the main classroom.

Blended learning is considered an effective teaching strategy that offers individualized support based on students' learning styles and instructional level

(Andreeva et al., 2018). The same notion has been supported by Keskin (2019) that blended learning offers the convenience learners received online during face-to-face contact. Saboowala and Manghirmalani Mishra (2021) elaborated on the Coronavirus pandemic and mentioned that the blended learning approach will be the best-fit pedagogies to use post pandemic. Blended learning research have indicated that students have been successful academically as well as shown improvements in their classroom environment.

Alzahrani and O'Toole (2017) investigated the views, attitudes, and experiences of 142 students via an online questionnaire on the implementation of blended learning. The data collected from this quantitative research provides teachers with information related to a deeper understanding of students' attitudes toward blended learning. The results determined that students had a positive attitude towards internet use in a blended learning environment. The results also supported the use of blended learning as well, because it requires teachers and students to have a positive mindset and be prepared to adopt new tools to improve the teaching and learning process. Anglin (2017) conducted a qualitative study of twelve K-12 classroom teachers who implemented technology in their classrooms. The results from the study indicated that their successful implementation was due to the teachers believing in the alignment of classroom practices with pedagogical beliefs in using technology for student-centered learning.

Eryilmaz (2015) also agreed with the notion that boosting up effectiveness of eudcation, existing convenience and increased access, as well as cost effectiveness are three recommendations for teachers to use blended learning. COVID-19 pandemic

severely affected the world and created an instant shift in the education system. One research examined the impact of this sudden shift caused and the effects on students' learning. The findings indicated that student performce was the worst during the pandemic period. However, students were not at a disadvantage even though they were fully online. Another study show that the test scores were lower for low functioning students who did online test (Finnegan, 2021). Technology infusion into the curriculum encourages learners to be active participants in the teaching and learning process, which can lead to success, which was the objective of the use of blended learning in the high school that is was being studied. Teacher competence is an important factor in the implementation of technology in the teaching and learning environment.

Blended Learning Barriers

The low adaptation or usage of blended learning within the teaching and learning process is one reason some teachers may not use blended learning. Teachers are more willing to use blended learning if they feel that they are being supported appropriately by administrators and when they think that much effort is not needed to incorporate technology (Antwi-Boampong, 2021). Attitudes towards technology usage, facilitating conditions, and perceived usefulness are a few reasons some teachers refuse to use technology. One study found that instructional, technical, and community concerns were categorized as challenges for teachers who were underutilizing technology in their instruction. The instructional aspect relates to the complexity of course or content, and interactions were seen as ineffective between teachers and students (Antwi-Boampong,

2021). A lack of instructional support from the administration resulted in teachers rejecting of using blended learning models in a study done by Asunka (2013).

Lack of instructional technology skills, extra workload to design coursework and modules, and lack of incentives were reported as barriers for implementing blended learning. More findings from other studies indicated that electronic power supply, reliable internet access also are barriers that hinder that adaptation of blended learning (Blankson, 2015). Some teachers still view teaching mainly as traditional face-to-face and so do not want to embrace blended learning due to its technology component/composite. They also do not like the time it takes to plan to like the time it takes to plan to incorporate technology by trying them out to ensure no delays for the class (Antwi-Boampong, 2021). Technical barriers include the selected learning management systems that some found to be complicated to use. Another barrier related to technology integration is time. To combat that collaboration with other colleagues by sharing ideas, knowledge and supporting each other will reduce individual prep time needed (Noonan, 2018).

Literature Review Related to TPACK Framework

As teachers get to understand their students' preferences, learning styles, and the selection of the most appropriate instructional materials, they also must understand and demonstrate proficiency in integrating technology in their blended learning classroom. Kukul and Karatas (2019) stated that people need three different skills to keep up with a technologically enriched society. The three skills include being computer literate, which is being able to use basic computer applications. The second skill is computer fluency,

which is to understand the working of the computer system, and the final skill is known as computational thinking. The final skill is to have the ability to solve specific problems with appropriate applications and computer techniques. This final skill allows the technology to reduce issues and or burdens, thus making life easier as people know how to use technology to solve some of their problems. Elstad and Christophersen (2017) mentioned that a positive attitude towards computer usage is due to the teacher's levels of computer experienced and the need to use it in their classrooms. Croteau (2014) conducted a study on technology usage with elementary students ranging from grades one to four. The information collected provided teachers with a deeper understanding of human learning and the acts of progress related to instruction, and engagement in the learning process. These results may lead to improved professional development sessions, policies will help with making informed decisions, and support being offered to teachers and students' needs. This reviewed study supports the need for understanding the research behind technology integration because incorporating technology in school has the possibility to improve education.

Effective technology integration in the classroom is supported through the TPACK framework (Koehler & Mishra, 2009; Lugar, 2017; Martin, 2016; Mishra & Koehler, 2006; Morris, 2018) which is an expansion of Shulman's (1986) pedagogical content knowledge (PCK) framework (Bruner-Timmons, 2018; VanDykGibson, 2016). The idea of the PCK framework was to support learning through content knowledge and pedagogical knowledge (Shulman, 1986). What Mishra and Koehler (2006) did was to add technology to Shulman's (1986) PCK idea which encouraged teachers to support

their teaching and learning by incorporating technology in their lessons and classroom (Bruner-Timmons, 2018; Campbell, 2016; Martin, 2016; Mau, 2016; Piotrowski & Witte, 2016). Content knowledge (CK), pedagogical knowledge (PK), pedagogical content knowledge (PCK), technology knowledge (TK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPCK) are the seven domains of the TPACK framework which relates to the teaching and learning process of teachers' use of technology in their classroom (Piotrowski & Witte, 2016; VanDykGibson, 2016).

The content knowledge (CK) represents how knowledgeable the teacher is in the content area. The pedagogical knowledge (PK) deals with the teaching and learning processes and practices. The pedagogical content knowledge (PCK) reflects the art of teaching, learning, the body of knowledge, and the reporting aspects. The technology knowledge (TK) considers the use of technology as the teacher sees fit. The technology content knowledge (TCK) deals with understanding the changes made to content with using certain kinds of technology. The technological pedagogical knowledge (TPK) deals with how technology impacts the teaching and learning environment, and technological pedagogical content knowledge (TPCK) deals with the multiple combinations of content, technological, contextual knowledge and pedagogical (Campbell, 2016; Morris, 2018; Noonan, 2018). Using the TPACK framework during the implementation of blended learning can help in understanding teachers' self-efficacy and proficiency in their content area as they provide quality teaching and learning experiences for their students (Lugar, 2017; Morris, 2018).

TPACK Efficacy and Teacher Efficacy

Joo et al. (2018) investigated the relationship between TPACK, teacher self-efficacy, perceived ease of use, and perceived usefulness for preservice teachers who intended to use technology, based on the Technology Acceptance Model (TAM) and found that teacher self-efficacy and perceived ease of technology were significantly affected by teachers' TPACK. The teachers' intension to use technology was also affected by their self-efficacy and perceived usefulness of technology use but not TPACK. Li et al. and Franklin (2016) also examined teachers' intension to adopt technology in their classroom based on factors such as technology, self-efficacy, perceived ease of technology and recommends further studies on the use of technology impact…, how teachers can use technology more in their classroom to be more effective with their students. Saudelli and Ciampa (2016) research findings on exploring the role of TPACK and teacher self-efficacy: an ethnographic case study of three iPad Language Arts classes indicated that all teachers' beliefs about mobile technology integration influenced their decision made related to their classroom instruction. Based on their findings, subsequent research was suggested to future researchers to use a larger sampling size to examine where and how teachers' mobile technology self-efficacy belief and TPACK influence their students' learning and achievement. El Miniawi and Brenjekjy (2015) conducted a quantitative research on the use of technology in the classroom and the attitudes of teachers toward technology integration. It was explained in the study that some teachers had competent technology skills but generally did not incorporate technology in their classrooms, even if they are available. The findings are an

indication of teacher self-efficacy and the decision made in not to use technology even though some level of competency exists alongside the availability of technology. Some teachers according to Fox (2018) belief they have a high technology efficacy, however, findings indicated that such reported efficacy was not evident in their lesson plans. Kopcha et al. (2014) research findings reported that teachers tend to exaggerate on their abilities and practices which turned out to be false or inflated reports given during interviews.

Technology Integration

The integration of technology in the teaching and learning process must not be seen as a stand-alone element, but as a unit that involves teacher efficacy, body of knowledge, and technology. The theories used in this study provided an understanding of how teachers' self-efficacy impacts the use of blended learning and the TPACK framework. Irish (2017), stated that teachers believe more enriching instructions and differentiation will take place with one-to-one devices and application. As teachers use blended learning with their students, they get to know their learning styles and preferences, enabling them to choose strategies that best suit their needs, thus making teaching and learning more meaningful. Students' needs are not static, administrators, students, and parents expect teachers to collaborate blended learning, the TPACK framework, and technology to increase usage and improve performance (Rajkoomar & Raju, 2016). Teachers with high teacher self-efficacy will motivate and improve their willingness to use technology, pedagogical knowledge, and take higher risk for success. Teachers with stronger and more positive self-efficacy may use more blended learning

and technology in their classrooms (Gulistan et al., 2017; McKim & Velez, 2016; Mehmood, 2019).

According to Simpson (2016), students' achievement has impacted the quality of the teaching force and that a well-prepared teacher can have a more substantial impact on their success rather than their background influences. Professional development (PD) has been credited in helping to foster self-efficacy and foster creativity through shared ideas and permissible risk-taking (Wilson, 2018). The results from Anglin's (2017) qualitative study indicated that all K-12 teacher's perceptions of technology integration were beneficial and useful in supporting their students' learning. Due to the teacher's beliefs in the alignment of classroom practices with pedagogical beliefs in using technology for student-centered learning, they all received a technology integration practices award. In another study conducted by Lin et al. (2017), to explore, the influences of blended learning pedagogy on students' learning achievement and attitude towards a particular subject found out that through their quasi-experimental method, the students in the blended learning experimental group were more motivated to learn, than the ones in the traditional classroom setting.

Educating technology users in appropriate pedagogical approaches is of importance. In studies conducted by Simsek, and Sarsar, (2019); Keser et al. (2015), of preservice teachers, secondary and high school teachers' views on TPACK competence and self-efficacy on how often they used technology in their content were investigated. It was described in the study that all teachers claimed to be competent in content knowledge. They were placed in two groups, of which one group received in-service

training on using technology in education, and the other group did not. It was discovered that the teachers' perceptions of self-efficacy on technology integration were an important factor and that students when technology and pedagogy are infused in the curriculum and used in the teaching and learning process. The in-service group of teachers' TPACK self-efficacy was much higher than the non-in-service group and they incorporated more technology usage in presenting their course subjects. Those who did not infuse technology in their course subject thought it was irrelevant and would interfere with the teaching and learning process. Based on the studies reviewed, teacher self-efficacy, using blended learning and the TPACK model all impact the teaching and learning process. Those three areas are relevant to this study because they explain how teacher self-efficacy, perceptions, and beliefs impact their willingness to use resources to help them achieve their goals. Implementing blended learning in the classroom provides a new alternative strategy to individualized, collaborate, use a wide range of media and materials to improve student satisfaction and performance through direct and indirect instructions. The TPACK's three domains of knowledge are also relevant because it guides what teachers need to integrate technology in their lessons properly and effectively.

Summary and Conclusions

The literature review in chapter 2 examined self-efficacy, blended learning, and the TPACK model in relation to teacher influences and usage with their students. There has been an increase in school districts moving towards blended learning to motivate and improve students' Learning (Archambault et al., 2016; Hiett, 2017; Porter & Graham,

2016); Rivera, 2017; Sorbie, 2015). Current research supports Bandura's (1995) notion that self-efficacy affects one's thought process in how they see themselves achieving their goals (Kukul, & Karatas, 2019; Lane et al., 2019; Mehmood, 2019). The TPACK model was created to support teachers as they plan and use technology effectively in their teaching process (Piotrowski, & Witte, 2016). For proper implementation of any technological use, teachers need to mentally prepare themselves to adapt using the available resources to improve their students' learning experiences. Elstad and Christophersen (2017) mentioned that a positive attitude towards computer usage is due to the teacher's level of computer experiences and the need to use technology in their classroom effectively.

Several researchers have examined blended learning in different contexts like wanting to find out how they can make blended learning environments more effective according to Mese and Dursun (2019) and Moskal et al. (2013). Others have researched blended learning strategies on the learning process as well as on how blended learning model influence physics teachers' attitude towards web-based instruction (Abdelraheem, 2014), students and teachers' perceptions on implementing blended learning towards students' self-efficacy in writing (Hamidah & Said, 2019) and in English (Altay and Altay, 2019; Yao, 2019). Other researchers like Kazu and Demirkol, (2014); Banditvilai, (2016); Purnawarman et al. (2016); Hamidah, and Said, (2019) have carried out studies on blended learning; however, those researches were not based on understanding how high school teacher self-efficacy influences their use of blended learning and how they apply the TPACK model.

A gap exists in the understanding of teacher self-efficacy, blended learning implementation, and the application of the TPACK model in the teaching and learning process. Raymond (2019) noted that "A lack of knowledge exists as to what extent a high school teacher's perception of blended learning influences his or her implementation decision" (p.4). According to Fazal and Bryant (2019), to help close the achievement gap in different content areas, educators have begun to adopt and use blended learning practices in their classrooms. Shamsuddin and Kaur (2020) stated that in terms of the desired learning outcome, little is known on how it is impacted by blended learning. The study was conducted to address any gap revealed in the literature relating to the understanding of the problem in this study. Joo et al. (2018) and Saudelli, and Ciampa (2016) recommend further studying of the TPACK framework of how teachers use technology in practice. Kavanoz et al. (2015) also made recommendations to provide another perspective on their quantitative research results in the form of a qualitative approach by using observation or interviews to investigate teachers' perceived Web or TPACK self-efficacy and their attitudes towards web-based instruction. Other subsequent phenomena included school support, culturally differences and teachers' anxiety (self-efficacy) about using technology in a technology-oriented learning environment through observation could also be used to further expand the results of the investigation of the relationship between TPACK, teacher self-efficacy, perceived ease of use and the intended use of technology based on Joo et al. (2018) technology acceptance model (TAM). Chapter 3 describes how the qualitative study was conducted to understand how high school teacher self-efficacy influences their use of blended learning and how they

apply the TPACK model as they implement blended learning with their students. Included is a description of the study's location, the participants' selection process, data collection methods, the analysis processes, and the findings.

Chapter 3: Research Method

The purpose of this qualitative case study was to generate a more in-depth understanding of how high school teachers' self-efficacy is perceived to influence their implementation of blended learning and how they apply the TPACK model as they implement blended learning with their students. As part of the research process, I explored the views of teachers concerning the influences of self-efficacy and support they need as well as the application of the TPACK model during implementation of blended learning with their students. This chapter includes information regarding the research design and rationale, my role, the methodology, data analysis plan, trustworthiness, ethical procedures, and a chapter summary. Chapter 3 also includes information on the population, sampling strategy, instrumentation, procedures for recruitment, participation, and data collection.

Research Design and Rationale

The research questions were as follows:

RQ1: How do high school teachers perceive their ability to implement blended learning with their students?

RQ2: What support do they need to use blended learning effectively?

RQ3: How are high school teachers using blended learning in their instructional practices?

RQ4: What successes are high school teachers experiencing in terms of integrating technology and blended learning in their instructional practices?

This study involved addressing how high school teacher self-efficacy influences blended learning implementation and their application of the TPACK framework. The phenomenon of this study was blended learning and teaching and learning in both online and traditional classrooms, self-efficacy and the TPACK model. Blended learning incorporates both asynchronous and synchronous computer-mediated communication methods and is defined as "the thoughtful integration of classroom face-to-face learning experiences with online learning experiences" (Saltan, 2017, p. 63). Boldea (2017) said blended learning is a method of learning that includes a mixture of physical and virtual resources to complement learning styles. Padmavathi (2017) agreed that the TPACK model is conceptual framework that guides teachers on how to use technology to effectively teach their students. According to Bandura (1995), self-efficacy is one's judgment about abilities to achieve a task successfully as they perform it.

Using the qualitative approach, a case study design was used to understand how high school teacher self-efficacy influences their use of blended learning and the TPACK model. Qualitative research is used to understand and describe a phenomenon or understand the way people interpret their experiences and make sense of their world (Burkholder et al., 2016; Ravitch & Carl, 2016). According to Yin (2018), a case study is a research method used to investigate a phenomenon in a real-world context. Observations and descriptions are used in qualitative research to understand a phenomenon. Observations, documents, interviews, artifacts, and other sources are instruments used to collect data when conducting a case study (Ravitch & Carl, 2016).

According to Burkholder et al. (2016) qualitative research is an appropriate methodology for this study because of its naturalistic approach that involves increasing understanding of the phenomena under investigation. Researchers use qualitative methods for case studies to describe interactions between a single person or entity, group, specific policy, community, or institution (Merriam & Tisdell, 2016; Ravitch & Carl, 2016). How and why questions are addressed through case study research (Knapp, 2017; Yin, 2018).

Role of the Researcher

This study involves qualitative research procedures and practices in terms of how high school teachers perceive self-efficacy's influence on their blended learning. I performed different roles throughout the study. These roles included being an observer, data collector, analyst, and interpreter. According to Yin (2018) the process of collecting data for research can be complicated and if the research process is not correctly followed, then the research can become worthless. As an observer, I scheduled and conducted interviews and observations. During the interview and observation sessions, I ensured participants were comfortable with both interview and observation sessions. A professional stance was maintained. Yin (2016) said researchers should use an appropriate tone during interviews as well as create a comfortable atmosphere throughout the interview process. Participants were reminded that participation was voluntary, responses would be kept confidential, and sessions would be recorded for later transcription. Copies of participants' lesson plans were collected and reviewed. Research

questions were validated based on the findings. After I recorded the interviews, I coded and analyzed information.

Participants in this study are high school classroom teachers, where most of them work within the same school. There is no personal relationship between participants and me. I am a special education teacher with no administrative role. The problem investigated was chosen due to the series of professional developments being offered to support blended learning. However, my beliefs regarding technology implementation to enhance the teaching and learning process could lead to bias. Therefore, to address researcher bias, member-checking and peer-review were used. Separating personal views of participants were necessary as I attempted to interpret responses that were provided during the data collection process.

Yin (2018) said researchers need to be truthful with information and avoid plagiarism and deceptions. I maintained a professional relationship with the participants throughout the study. Participants were made comfortable during the interview process and throughout the duration of each interview. They were also informed of the option to withdraw before beginning the interview. A professional atmosphere was maintained throughout the entire data collection process. Yin (2016) recommended establishing an appropriate tone during interviews and extending courtesy at the end.

Methodology

Participant Selection

The potential population pool of this study was approximately 15 high school teachers located in a rural school district in the Southern Region of the United States. The

potential pool of participants was to ensure the desired sample size of 10 to 12 teachers, should there be any withdrawals. Blended learning is the basis of this study because it was the district's professional development initiative for the 2018-2019 school year, and part of the strategic plan. Teacher self-efficacy influence is part of the base because one's attitude and belief can affect one's decisions in life to either do something or not. Yildiz Durak (2019) mentioned that teachers who believe in using technology in their classrooms have better opportunities for positive outcomes. Teachers who are less confident in using technology can gain more experience by using technology more so they can boost their confidence and beliefs. Baturay et al. (2017) stated that teachers are generally interested in learning to use technology for their personal use instead of using with students during instruction. Setiawan et al. (2018) mentioned that other teachers would become motivated to incorporate technology in their classroom if they become aware of other teachers using it in their instructional practices.

In understanding how teacher self-efficacy influences the use of blended learning and TPACK in the application of technology in the classroom, selection of participants used a small purposeful sample. In qualitative research, purposeful sampling is the primary sampling approach that is being used (Patton, 2015; Ravitch & Carl, 2016). Purposeful sampling refers to deliberately selecting the participants to participate in research, based on specific reasons to obtain answers to research questions (Patton, 2015; Ravitch & Carl, 2016).

The criteria for teacher participant selection at the chosen site required that they all are high school teachers and needed to be teaching in the district for at least one year.

The other criterion required the participants to have some formal training in using blended learning models. Another criterion required teachers to have personal access to technology in the classroom environment, and applications shared during monthly professional development (PD) sessions. Teachers also needed to know how to incorporate technology into the learning process. Educational programs should prepare teachers on how to integrate technology into the learning process, according to Setiawan et al. (2018). The district's PD sessions reflected indicator eight on the strategic plan to provide technology infrastructure to all teachers and students. Teachers received training on technology equipment, software, and were provided with resources to maintain existing technology. The Instructional Curriculum specialist organized the monthly PD sessions and recorded attendance. In ensuring participants met the criteria, only teachers who worked more than a year within the school district were considered eligible to participate in the research.

A purposeful random sample of 10 teachers volunteered and participated in this study. Creswell (2014) explained that a small sample size helps the researcher to provide an in-depth study. Ravitch and Carl (2016) stated that purposeful random sampling would avoid controversy about potential bias, even though the size may be too small for generalization or representation. Written letters and emails were provided and given to the participants detailing what the study was about, why they were selected, how the results will be reported and used in the future, and the benefits of participating in the study. Ravitch and Carl (2016) explained the importance of having a clear, reasoned, and

explicated reason for selecting participants regardless of strategy for selecting participants.

Instrumentation

A case study allows the researcher to collect different kinds of data to get a deeper understanding of an organization or person (Burkholder et al., 2016). One or more instruments were used to collect data as evidence in a case study (Ravitch & Carl, 2016; Yin, 2018). These data collection instruments may include artifacts, observations, archival records, documentation, and interviews (Burkholder et al., 2016; Ravitch & Carl, 2016; Yin, 2018). Using more than one method to collect data is known as triangulation (Marshall-Stuart, 2018; Ravitch & Carl, 2016; Yin, 2018). Using more than one data collection sources that can corroborate the same findings is encouraged through data triangulation (Yin, 2018). The data collection instruments and sources of evidence for this study include interviews, observations of each participant, and documentation, which were completed lesson plans. Three lesson plans from each teacher were requested for review for evidence of blended learning implementation in their instruction. Data collected were analyzed using coding and identifying themes as well as transcribing the interviews. The lesson plans were the documents collected for review. The review of the literature contributed to the formation of the data collection instruments. Yin (2018) stated that experienced researchers in developing sharper and insightful questions, conduct a review of literature beforehand.

Interviews

Interviews protocol, according to Yin (2018), is "One of the most important sources of case study evidence" (p. 118). Interviews provide participants' perspectives based on the explanations given from "how" and "why" questions (Yin, 2018). One-on-one interviews are encouraged by Creswell (2014) to be used with participants who are not afraid to share evidence. Conducting interviews according to Seidman (2006) is a way to get an understanding of other peoples' experiences and the meaning they make of it. I produced the interview protocol (see Appendix A), which relates to the guidelines to conduct interviews as mentioned by Yin (2014). Yin (2018) explained that "How" and "Why" questions are more favored ta asked in a case study, experimental, or historical research. Research questions need to have substance, form, and enough time to plan the questions so, they relate to what the study is about (Yin, 2018). It is important for researchers to develop appropriate open-ended questions for interviewees. Open-ended questions in interviews allow for rich details and new insight to be shared by the respondents and allow for free-flowing conversations (Rubin & Rubin, 2012; Yin, 2018).

Observation

I prepared a checklist (see Appendix B) to use during direct observation sessions. Teachers who participated in this study were informed orally in a discussion of the basic parameters of the research being undertaken. There were some teachers who opted out of being observed due to COVID-19 social distance protocol, so an alternative to observation protocol (see Appendix C) was administered instead. Teachers were notified of their freedom to participate or pull out from the research at any time. Yin (2018) also

emphasized that additional information about the topic can be provided through observational evidence. In this study, direct observation should add dimension for understanding how the teachers apply technology in their blended learning classroom. As with any research, there were threats to validity, such as internal threats. These threats related to the way participants were selected; the period of maturation based on the timeframe of data collection to data analysis. Another risk included the districts' mortality blended learning professional development initiative for a new school year. The dangers to internal validity were be minimized by using a random selection of a group of high school teachers. The data collected were analyzed as soon as they were collected.

Documentation: Lesson Plan

Documentation allows multiple opportunities for repeated reviews and obtaining the exact information being sorted. The documents collected were the lesson plans of the teachers that were interviewed. Rubin and Rubin (2012) referred to the examination of documents or anything appearing in print, as well as pictures and visual recordings as documentary analysis, which is another qualitative research approach. They recommended interviewing the creators of the documents, if possible, which would help to make the documents more useful in understanding their intentions. Documents collected are reflections of the authors and should be critically examined as they carry values and ideologies (Saldaña, 2016). At least three (3) lesson plans from each teacher were reviewed to see how teachers are implementing blended learning in their classrooms. The lesson plans indicated how often teachers use technology to meet the needs of their students during instruction.

Procedures for Recruitment, Participation, and Data Collection

Before collecting any data in this study, the research proposal and plans needed to be reviewed by Walden University's Institutional Review Board (IRB). This review must be done to ascertain permission to collect data and to identify any potential risks that may affect the participants. Before final approval from Walden's IRB, a letter of Cooperation was presented to the projected school district requesting permission to conduct the research. After receiving approval from the district and Walden's IRB the participants were provided with an invitation letter followed by a consent form. The prospective participants were required to acknowledge receiving the consent form. The form contained information about the right to withdraw from the study at any time without any consequences, the rationale for doing the study, the procedures within the study, participant rights of questioning, and how their identity will be protected.

After IRB approval and the returning of the signed consent forms from participants, contact was made, and the participants were asked to decide on the times that are convenient to them to participation in the interviews and observation sessions of the data collection process. Teachers chose where and when they wanted to be interviewed, whether in a conference room, their classroom during planning, and before or after work. The frequency of data collection did not interfere with the participants' daily work routines and responsibilities. The intended period to collect data is within a semester or six months period, as they are encouraged to participate at their convenience, withdraw at their will, and ask for clarity at any time by using the given contact information of the researcher. Yin (2018) encouraged the use of multiple sources to

collect data to create a more significant impact on the study. The identity of the participants has been protected, and pseudonyms were used in the field notes and data reports. The anonymity of the school and district was maintained throughout the study, just like the identity of the participants. Participants received a written thank you note after the completion of the analysis of data collection. They were given a $10.00 gift card as an appreciation for taking time out of their busy schedule to participate in the collection of data and member checking for analysis. To protect the information collected, the researcher will keep all the information in two places to protect the loss of data. Researched materials and other collected data will be stored on a flash drive as well as a personal password-protected laptop. The flash drive and laptop will be stored in a locked closet with keys within my bedroom once they are not in use. Participants were given the opportunity to remain in contact with the researcher if they had any follow-up queries or suggestions. They were asked if they were willing to be contacted again for any follow-ups that would be needed for clarity based on the data collected. The participants were asked at the end of the interview if they would be willing to do any follow-up interviews in the future if needed.

Data Analysis Plan

According to Yin (2018), the researcher needs to make sure that the analysis of the data is of the highest quality. He explained that all evidence should be interpreted, even the plausible rival interpretations should be investigated just like how the most significant aspect of the study should be addressed, and an understanding of the study's topic should be demonstrated. Creswell (2014) and Yin (2018) stated that data collection

evidence could come from more than one source such as interviews, documentation, observations, diaries of archival records, and physical artifacts. Research question one (RQ1) and research question two (RQ2) were answered based on the interview questions that are relate to self-efficacy to find out how high school teachers perceive their innate abilities influence their implementation of blended learning and the types of support they need. The answers can be used to inform decisions related to future teachers on how best to implement blended learning in their classroom. Research question three (RQ3) and question four (RQ4) were answered based on the examination of the documents collected, which related to how are high school teachers using blended learning in their instructional practices? Notes were taken during the observations from the researcher's produced checklist and in a notebook. The collected data was coded, and themes identified. In qualitative research, fieldnotes are considered primary data (Creswell, 2012).

Research semi-structured interview questions provided a two-way dialogue where the participants can feel free to ask questions for clarity. Direct observations, as well as reviewing documents, took place as part of the data collection process. The data was analyzed to understand and make sense of the data and decide if more data should be collected. Ravitch and Carl (2016); Seidman, (2006) stated that data analysis is merely making sense of the data collected, which, through analysis, turns into themes and, ultimately, findings did help to answer the research questions. The interviews were recorded, transcribed, and placed in an electric field journal. The dates and times of the interviews and direct observations were recorded on each protocol used. Recording the

times and date helped the organization of the participants files with their audio recordings and transcripts. This procedure adds credibility to this study as well as sharing the transcribed notes with the participants to check for accuracy.

After member checking of the transcripts, the coding process began with a focus on the perceptions held by the participants, as data collected were divided into segments and code being applied to each segment. Transcripts, according to Ravitch and Carl (2016) is not only a significant method to collect data, they, are also a way to provide data for interviews in real-time. Explanations and essential information are provided through the process of conducting interviews (Butin, 2010; Doody & Noonan, 2013; Rubin & Rubin, 2012; Seidman, 2006; Yin, 2018), which eventually becomes the vital evidence. The interviews were audio-recorded, after which the transcription of each response was completed. Following the transcription of the interviews, confidentially protection and contact information of the researcher. the participants were contacted to perform member-checking as they review the transcripts for accuracy. It is essential to do an audio recording during interviews to ensure accurate transcriptions (Creswell, 2014; Merriam, 2009; Yin, 2014). The printed transcripts from the interviews and the data from the classroom observations were used in the coding process. Coding helped to reveal patterns, things that are common, and any other information that stood out from the participants' responses. Meaning is given to data through the coding process by organizing and thinking about analysis (Ravitch & Carl, 2016; Saldaña, 2016). The coding process includes breaking down the data collected and organizing them into segments and labeling the segments (Creswell, 2012; Ravitch & Carl, 2016; Saldaña,

2016). The codes were grouped to help with writing rich descriptive categories. The themes were written using active verbs to describe how high school teacher self-efficacy influences their use of blended learning. The themes helped with the writing of the summary of findings. Themes emerged as a result of coding (Ravitch & Carl, 2016).

Themes were created from narrowed down codes to support the research questions, which were followed by the interpretation and summary of findings. Ravitch and Carl (2016) explained that at times, some of the analyzed data might not fit into what a researcher may consider a norm in a pattern, which may be seen as contradictory information. This type of data can be referred to as discrepant cases. Any data believed to be a discrepant case can be found the findings of the study as it is important to represent all data collected, as stated earlier as a recommendation by Yin (2018).

Trustworthiness

Ravitch and Carl (2016) used the terms validity or trustworthiness in relation to qualitative studies. Burkholder et al., (2016), and Patton (2002) referenced credibility, transferability, dependability, and confirmability to evidence trustworthiness of a qualitative study. In this study, the issue of trustworthiness was addressed by building a relationship with the participants and through various strategies, like collecting data, and the use of triangulation. Ravitch and Carl (2016) used the terms credibility or internal validity to relate to the instruments and data of the researcher.

Credibility

In this study, the data was collected through semi-structured face-to-face interviews with educators, which served as one of the primary set of data to answer the

research questions. Patrick (2016) and Merriam (2009) stated that the participants are the source of data collected, which eventually leads to the alignment of the research findings. Member-checks, peer reviews, and triangulation were recommended by Merriam as appropriate strategies to establish credibility. The participants who participated in this study were the ones who have met the selection criteria. Triangulation, according to Burkholder et al. (2016), involves verifying a claim using multiple sources, such as the review of documentation and observations to obtain different perspectives.

Member checks or participant validation or respondent validation, according to Burkholder et al. (2016), Lincoln, and Guba (1985), and Ravitch and Carl (2016) are considered the most important validity measure for credibility and involves participants' feedback of emerging findings. Peer review or peer debriefing involves having another person not involved in the study to review and ask the researcher questions to clarify conclusions and alert any bias that may emerge (Burkholder et al., 2016). According to Patrick (2016), peer review is having qualified and knowledgeable persons examining the findings of the study. The analysis of data was be measured against the TPACK model to get a deeper understanding of teachers' perceptions of how self-efficacy influences their use of blended learning in their classroom with their students.

Transferability

Merriam (2009) and Ravitch and Carl (2016) described transferability as the study's findings being applicable or transferable to other situations and still have context-specific richness. To establish transferability, strategies such as having detailed and thick

descriptions of the data so that readers will be able to capture the core experiences instead of wanting to replicate the design and findings.

Dependability

Dependability, as defined by Merriam (2009), is the ability of the research findings to be replicated, while Ravitch and Carl (2016) described it as having consistent and stable data over some time. To achieve the dependability of qualitative research, Merriam (2009); Ravitch and Carl (2016) referenced strategies like triangulation, audit trials, peer review, and having a solid research design. Peer review is when a qualified and knowledgeable person examines the findings of the study (Patrick, 2016). Engaging others in the data analysis process to obtain the perspectives of others will help with the validation of the study is encouraged by Ravitch and Carl (2016). Audit trail refers to keeping a research journal of any issues or ideas that may happen during the data collection process and analysis.

Confirmability

To establish confirmability, Merriam (2009) recommended reflexivity as a strategy. Ravitch and Carl (2016) stated that using triangulation and external audits, and researcher reflexivity processes are ways to achieve conformability as well. Using the interview approach, along with the selected traditional qualitative method used in this study should establish confirmability. In relation to the reflexivity of this study, any identified biases and assumptions concerning the teacher's use of blended learning and the application of the TPACK mode will be explained.

Ethical Procedures

Ethical practices were established to protect the treatment of human participants included in any form of research. To ensure competency and understanding of the treatment of human participants in research a web-based training offered by the National Institutes of Health (NIH) entitled "Protecting Human Research Participants" was completed in 2016. Before any data was collected, an application was submitted to Walden University's IRB for approval. After approval, permission was requested from the principal of the selected research sites in order to gain access to the teachers.

In addressing ethical concerns, and after all identified changes in the proposal were corrected, approved, and all other requested permission granted, then the participants were provided with consent forms to participate in the study. The consent forms included the rights of the projected participants to either accept or refuse to participate at any time without consequences, confidentially protection, and contact information of the researcher. After the forms were returned, contact was made to schedule the individual interviews and observations. Participants were reminded again of their right to participate or not to participate, or if they choose to withdraw early at the beginning of the data collection process.

Confidentiality of the treatment of data includes the following: a) assigning pseudonyms and codes to each participant and the interview transcripts and report of the study notes. b) keep data collected under lock and key at home. c) electronic data are being stored on a password-protected personal laptop. Backup copies of electronic files are being stored on a flash drive as well as an external hard drive and put away after each

use in a locked compartment. Only the researcher has access to all the data. During member checks, participants were allowed to access their interview transcripts. All data collected will be kept for five years under lock and key and then be destroyed as required by the university.

The university would rather a researcher not to conduct research at one's own place of employment without explained reason and approval. However, should there be any issues in reaching the participants from other selected locations, then the researcher may request to collect data from teachers at the researcher's worksite. As a self-contained special education teacher, I would not have free access to the teachers' weekly lesson plans and would not be allowed to enter a classroom for observation without receiving permission at first. As a self-contained teacher, I would be with my students most of the day, with only ninety (90) minutes for planning during the day. There could be a possibility that the participants have different planning periods, and a schedule would need to be done to get the interviews completed. Currently, I do not have an administrative post or responsibilities as a faculty member other than my regular teaching assignment. Incentives were utilized only because teachers took time away from their planning sessions as well as staying after work or arriving extra early before work begins to participate in the interview sessions.

Summary

Presented in this chapter are the study's purpose, research design, and rationale, the role of the researcher, methodology which entails participant selection, instrumentation, procedures for recruitment, participation, and data collection, and data

analysis plan. Trustworthiness and ethical procedures are also included in this chapter. As discussed in this section, case study was the research design, and the study's methodology is qualitative. An application to conduct this study and collect data was submitted to the IRB for approval. Once approval was granted, appropriate contact was made with the study's site and participants requesting permission to interview and observe the randomly selected participants based on met criteria. Issues related to validation, and confidentiality considerations were addressed.

Chapter 4 includes descriptions of the findings, which include the setting, data collection, data analysis, results, and evidence of trustworthiness. Each research question was addressed in relation to findings. To depict the results more clearly, codes, and themes are presented.

Chapter 4: Results

The purpose of this qualitative case study was to gain insight regarding how high school teacher self-efficacy influences their use of blended learning and the TPACK model. Data collection was nontraditional due to the COVID-19 pandemic and related restrictions. Data collection methods involved conducting interviews with 10 teachers face-to-face and through the Zoom, artifacts such as lesson plans and classroom observation forms for face-to-face observations, and an alternative classroom observation protocol for teachers who were not available for face-to-face observations (see Appendix C). Data provided insight into high school teachers' views concerning the influences of self-efficacy, support they needed, and application of the TPACK model during their implementation of blended learning with their students. The following questions guided the study:

RQ1: How do high school teachers perceive their ability to implement blended learning with their students?

RQ2: What support do they need to use blended learning effectively?

RQ3: How are high school teachers using blended learning in their instructional practices?

RQ4: What successes are high school teachers experiencing in terms of integrating technology and blended learning in their instructional practices?

This chapter includes the setting, demographics of participants, data collection and analysis details, a summary of findings, and themes found during data analysis in relation to the research questions. Evidence of trustworthiness was discussed in relation

to procedures that were used during the study. The issues of trustworthiness include credibility, transferability, dependability, and confirmability.

Setting

This qualitative study took place in a school district in the southeastern United States during the 2020-2021 school year. This school district has two pre-K-8 schools, one K-8 charter school, 22 elementary schools, six middle schools, six high schools, and three special programs. Participants were selected from two of the high schools within the district and region. Before starting the data collection process, I received approval from the district IRB department. Upon request for potential participants, I was able to speak to a few teachers face-to-face, during which some agreed to be participants. I hand-delivered and emailed official invitation letters to potential participants. Those who decided to participate in the study emailed their responses and were subsequently emailed the consent form between December 2020 and February 2021. Three teachers refused the invitation, and two of the teachers who agreed to participate withdrew, so I had to recruit new participants. All participants acknowledged their intent to participate in the study by replying to their responses through email.

During the time of the study, the country was experiencing the COVID-19 pandemic, and schools within the southeastern region and throughout the country offered various learning environments for teachers, parents, and their children. Due to the pandemic, social distancing of six feet was always recommended for individuals, as well as the wearing of masks indoors and outdoors. My school district offered hybrid learning at the start of the 2020-2021 school year during the first semester, then later switched to

traditional and online learning environments during the second semester. The Zoom platform was used for conducting classes online for those who selected online only as well as hybrid days when everyone stayed home for school. Due to social distancing, most of my interviews were done via Zoom through a comfortable semi-structured conversational format at participants' convenience before and after work hours as well as during their planning time. Most teachers opted to complete the alternative observation protocol instead of having an in-person observations to reduce contact for safety reasons. No class was interrupted during direct observations. In the demographics section, information regarding teacher participants' demographics and characteristics that were relevant to the study are provided.

A total of 10 teachers from various content areas volunteered to participate in the study. Participants included four males and six females from six different content areas. Content areas were not entered in any table to also prevent participant from being easily identified by race or having three or less participants within the department. The other criteria were that they all should have had some formal training in using blended learning and needed to have access to technology in the classroom environment during monthly professional developments sessions. The participant pool included five Caucasian teachers, of which four were females. The other five teachers were African American, of whom three were males and two were females. To ensure confidentiality of participants' identities in this study, I replaced their real names with pseudonyms (see Table 1).

Table 1

Demographics

Participant's Name	Gender	Race	Years in District	Grade Taught
Teacher 1	M	African American	13	11 &12
Teacher 2	F	Caucasian	17	10 - 12
Teacher 3	F	African American	28	10 - 12
Teacher4	F	Caucasian	15	9 - 12
Teacher 5	M	African American	7	9 - 12
Teacher 6	M	Caucasian	7	9 - 12
Teacher 7	F	Caucasian	2	9 - 12
Teacher 8	F	African American	11	9 - 12
Teacher 9	M	African American	15	9 - 12
Teacher 10	F	Caucasian	4	9 only

Data Collection

All participants were teaching at the high school level for at least a year within the district. Participants had some formal training with using blended learning models, personal access to technology in the classroom environment, and were knowledgeable about how to incorporate technology into the learning process. Before I began to collect any form of data, I had to receive IRB approval. Upon receiving final IRB approval, I contacted teachers in person and by email to introduce myself and my study and its purpose as well as ask them to reach out to me if they were interested in participating in the study. I contacted 15 teachers in total, of which three withdrew their interest stating that other personal matters came up and they would not be able to participate again. The other two showed no interest. All teachers who agreed to participate were emailed a copy of the consent form. The 10 teachers responded with the required language "I consent,"

after which I made arrangements via email to conduct interviews at a date and time that was convenient for each participant.

The study's location was a rural school district in the southern region of the United States. Teachers were from two different high schools within the district. Interviews were completed at an average of one to two each week. The first three interviews and first set of classroom observations were done in December 2020 before the Christmas break. Interviews and observations were conducted from January 7 to February 11, 2021. The alternative to classroom observation protocol and lesson plans were the last documents collected in March 2021.

Interviews

In describing how data were recorded, all 10 interviews were conducted and recorded via Zoom during early mornings before the school day began, after dismissal, during planning, and at nights. Only one teacher agreed to do an in-person interview, which was also conducted via zoom due to needing the transcription tool for transcribing the interview later. One teacher was interviewed while being home under quarantine. The interviews were done between December 2020 and February 2021 for an average of 25 minutes each. I utilized the transcript feature within Zoom to help with the transcription as well as the saved audio to replay during transcribing the interview to ensure the captured transcripts were accurate. The interviews were configured and saved to the computer at the end of the zoom meetings, after which they were removed and placed on an external, password-protected hard drive and locked away until needed for

transcription. The transcribed interviews were also stored on the same external saving device in a folder with the name of each teacher.

A semi-structured interview protocol was used during the interview (see Appendix A). The participants received the questions to review in the invitation letter. I took some notes during the interviews. At the end of each interview, I reminded the participants that three copies of their lesson plans were needed for observation as part of the data collection for this study. Participants were also reminded that they could withdraw at any time.

Artifacts

In describing how the artifacts were recorded as they were collected, I conducted two observations using the observation protocol (see Appendix B) via Zoom and two in person. One class had all students home participating via Zoom, and the other class had some students physically in the classroom, and the others were home online. Notes were taken on the observation protocol based on the classroom environment, tools teachers used, technology issues observed, ease of technology usage, their instructional strategies and interaction with students. The teachers who opted not to be observed were given an alternative to classroom observation protocol, which took them longer than I expected to return because they had to complete by either typing or writing in their responses. They had to filled out the instrument based on their past teaching experience using technology in their classrooms. The lesson plans were emailed and obtained electronically. Only one teacher hand-delivered all three lesson plans. There were no variations in the data

collection, neither were there any unusual circumstances encountered during the collection of the lesson plans.

The few variations in data collection occurred from the plan presented in Chapter 3, that include the number of participants to be invited, criteria adjustments, a change in the interview process, COVID-19 restrictions in relation to direct classroom observations, and observation protocol adjustment. The first variation in data collection that was presented in Chapter 3 was that the pool of participants would be about twenty people. Due to the COVID-19 restrictions, only fifteen teachers were invited of which only ten accepted the invitation and consented to participate. The IRB application process took place during the unprecedented time of COVID-19, when all teachers and students were under quarantine and attending school virtually or hybrid and as such the original criteria had to be adjusted. The original criteria were that teachers needed to be working within the district for at least a year, have blended learning experiences, and have either received technology training from district professional development sessions or through personal efforts. However, due to the current COVID-19 Pandemic, the district had decided to begin school virtually, which would have hindered my ability to observe a blended learning environment. Therefore, adjustments to the criteria were made by widening the population recruitment to high school teachers with blended learning experiences within the district and/or neighboring districts.

The interviews were to be held face-to-face in reserved conference rooms, instead due to an unusual circumstance, which turned out to be COVID-19 they were held via Zoom in the comfort of some classrooms and homes before school begins, during

teachers' planning, after school, and while being home at nights. Plans were still being made to conduct observations, however, the alternative to a face-to-face observation was to have participants describe what their blended learning environment was like before the pandemic existed. The observations were to be direct observations where I would enter the physical classroom and watch as they teachers teach using a blended learning model as well as include technology in the instruction. However, due to the unusual COVID-19 circumstance, I was only able to do two direct classroom observations. Two of the observations were done via Zoom as teachers shared their screen and allowed me to visit a few breakout rooms to see what was taking place. Those unusual circumstances encountered in data collection were related to COVID-19 and the changes that affected the traditional learning environment and instructional practices. Teachers and students had to make meaningful and needed adjustments.

My communications were done through emails and all interviews were done on Zoom. Upon return to the building, movements were restricted, and everyone were required to wear a mask. During the direct observations, I had to remain 6 feet away from the students and teachers as I observed. Teachers had to find creative ways to carryout instruction, use technology, and motivate students to learn in a restructured learning environment during the COVID-19 unusual circumstances.

Data Analysis

Triangulation

Using more than one method to collect data is known as triangulation (Marshall-Stuart, 2018; Ravitch & Carl, 2016; Yin, 2018). Using more than one data collection

sources that can corroborate the same findings is encouraged through data triangulation (Yin, 2018). Enhancing the information collected by using more than one source is how Lambert (2013) define triangulation. The strategy of triangulation was demonstrated by using more than one source to collect data for this study, which included interviews, observations, and artifacts to gain insight into how high school teacher self-efficacy influences their use of blended learning and TPACK. In this study I used information from ten interviews, five classroom observations, five alternative classroom observation protocol, and three lesson plans from each participant. I designed the interview protocol to be aligned with the research questions. The instrument was reviewed by more than one expert with professional degrees to ensure alignment as well as to verify its validity. Before I could contact participants to be interviewed, I had to obtain two approvals from IRB committee. According to Butin (2010), "The triangulation of data does not mean that there has to be agreement across data sources" (p. 121). He also stated that it was not always necessary to have data triangulation since using in-depth interviews, document analysis, and other methods of collecting data can also lead to the same outcome and add a firmer base for the conclusion. Butin (2010) further stated that data with conflicting results may generate the most vital results. Table 2 shows the steps taken during triangulation.

Table 2

Triangulation Steps

Steps Taken	Descriptions
Step 1: Interview	• Design interview protocol • Get protocol approval • Record, then transcribe • Group responses by research questions.
Step 2: Member Checking	• Transcribed interviews • Shared documents with interviewees to confirm accuracy.
Step 3: Coding	• Hand code individual transcript. • Software coding • Cross-coding • Use categories and themes to finalize coding process.
Step 4: Classroom Observation	• Observe teachers via zoom and in person. • Take notes • Analyze data
Step 5: Alternative to Classroom Observation	• Review documents collected • Compare with notes from the classroom observation.
Step 6: Lesson Plan	• Collected three lesson plans form each participant. • Review for technology incorporation in lessons.
Step 7: Findings	• Analyze all data. • Compare and contrast data • Compile and present findings • Make recommendations.

Upon approval and contacting participants, I conducted the interviews, by recording the responds, and then transcribing them. I took notes during the interview and classroom observations. During the analysis of the interviews, I grouped the responses by

research questions. I first conducted individual coding of the transcripts by hand and software before cross-coding. I also conducted five classroom observations to watch teachers teach via Zoom and in person. I first reviewed the classroom observation and compared it with the alternative classroom observation responses. I used content analysis for the lesson plans. I reviewed the interview transcripts, the observations protocols, notes, and lesson plans to develop appropriate evidence as stated by Ravitch and Carl (2016) that triangulation is used to increase the validity of a study to ensure that the results can be trusted. Using triangulation is an appropriate way to ensure the study is credible (Merriam, 2009) which created the opportunity for member checking of the transcription summary for participants to review for edits or to clarify original thoughts. Triangulation, according to Burkholder et al. (2016), involves verifying a claim by using multiple sources, such as the review of documentation and observations to obtain different perspectives. The triangulation process enabled me to represent participants' views correctly as well as to validate findings thus enabling the study's credibility and dependability (Burkholder et al., 2016). The findings from the different instruments used to collect data for this study were consistent. Using triangulation, having experts reviewed and approved my instruments, contributed to, and increased the study's dependability, reliability, credibility.

Interviews

The interview data was the first data source to be analyzed for codes, categories, and themes using a mix of open inductive coding using line-by-line, phrases, and sentences relevant to the research questions. The second set of the data source to be

reviewed using codes and content analysis for things that are common among participants were the classroom observation protocol and the alternative to classroom observation protocol to match the already interview codes. The lesson plans were the third set of data to be analyzed by using content analysis. The focus was on how teachers used technology in their implementation of blended learning.

Upon completing all the interviews, I began the transcription manually in Microsoft word. I used member checking by asking the participants to check the interview transcripts for accuracy once the transcriptions were completed. As soon as the validations were completed, I began the coding process. A manual approach as well as the Quirkos data analysis program were used to move inductively from coded units to larger representations to include categories and themes. Saldaña, (2016) stated that one or more coding methods can be used to describe the data's phenomena depending on the study's nature and goals. Yin (2018) recommendations to researchers are to play with the data while searching for patterns and having a specific goal in mind while reviewing the data with the hope of discovering a new concepts or themes beneficial to the study. The first step in the coding process was to read through the transcripts to remind me of what was said using pre-determined codes. Braun and Clarke (2021) mentioned coding reliability approach as a process in which evidence are identified during coding for themes and focuses on coding frames or codebooks. The second step was to read over the transcripts and then assign codes line-by-line, phrases, and sentences. In the third step I used rows and columns to organize the responses of the participants under each research question to get a broader view of their responses related to each question. Another step

taken, was creating a table to represent the codes, and themes based on the interview as shown in Table 3. The final step was to create a codebook (see Appendix D) representing codes, categories, themes, descriptions, and some quotes from participants. According to Braun and Clarke (2021), the codebook approach provides a more detailed coding process which involves the use of charts or maps to present the investigated data.

Table 3

Codes and Themes Based on Interviews

RQ Codes	Themes
• Humans must adapt to changes. • Being forced to use technology. • Technology use is the new norm	Beliefs
• Comfort level • Geeky • Fearless and willing to try anything. • Become computer literate. • Ease of technology usage. • Role Models • Personal technology exploration	Self-Efficacy
• COVID-19 pandemic. • Daily usage expectation. • Technology integration during personal studies. • Prepare students for real world.	Influenced
• Available mentor • Learning from others • Learning by trial and error • Professional development • Continuous education • Individual research	Training
• Technology Usage • Pandemic • Teaching experiences-past and present • Capabilities • Teacher Knowledge	TPACK

• Preparation time • Stakeholders • Students • Preparation Time	Support
• Face-to-face • Virtual • Instructional practices • Flexibility	Blended Learning
• Technology Applications • Infused with teenager's lifestyle • Practices	Implementation
• Instructional model • Teaching and Learning	Learning Platform
• Positive • Negative	Impact
• Recommendations • Teacher Encouragement • Self-Evaluate	Reluctancy
• Technology Tools • Lesson Success • Innovation • Resolution • Content Area • Culture.	Technology Integration Success

The data revealed that before the COVID-19 pandemic teachers and students were face-to-face and teachers would conduct their instruction and give notes and then at some point during the lesson students would have the opportunity to use technology or an application to complete some tasks independently. During the pandemic, the major noticeable change was the delivery of the instructional environment. Under quarantine

conditions and social distance recommendations from the Center of Disease Control (CDC) teachers now had to teach through the Zoom platform either from home, from an empty classroom or through the hybrid learning approach and use Google Classroom as the district mandated Learning Management System (LMS). As teachers continued their teaching, they found that the professional development received to use both Zoom and Google Classroom were very helpful in their transition to using the new platforms during the quarantine periods as they continued using the same digital tools that were available before that pandemic with their students. “I would say that it helped, because when we started with the virtual it was a challenge,” Teacher 5 explained. “I remember doing trainings in Zoom back in March, which I used today,” Teacher 1 explained, “so each component was very helpful in implementing blended learning.” Teacher 3 said “The more you spend time with it, the more comfortable you get.” Teacher 4 stated “I attend every possible training there is.” Teacher 6 said “It definitely made me a lot more confident.” Some of the digital tools used during instruction includes Khan Academy, iReady, Ed puzzle, Go Formative, Achieve 3000 Math and Reading, Kami, Google Forms, Remind, Camera, websites, Vocaroo, Boxlight, YouTube, videos and Edgenuity. The coding process was done over several weeks as shown in Table 4, which helped the me to review the data repeatedly, subsequently leading me to identify patterns related to the phenomena of interest. Table 4 shows the timeline for the data analysis and coding process.

Table 4

Data Analysis and Coding Process Timeline

Date	Steps taken
February 8, 2021	• Completed the full transcriptions for two interviews.
February 14, 2021	• Completed and submitted 1st coding sample/draft for review.
March 3, 2021	• Transcribed another interview
March 7, 2021	• Completed coding two interviews now
March 14, 2021	• Submitted transcribed interview coding for review.
March 21, 2021	• Transcribed three more interviews
March 28, 2021	• Coded another two transcribed interviews.
April 4, 2021	• Completed coding another two interviews
April 11, 2021	• Completed transcribing two more interviews
April 18, 2021	• Completed transcribing all interviews. • Completed coding all interviews • Submitted all transcriptions and codes to blackboard.

Other than an inductive coding choice, researchers are encouraged not only to use documented coding methods but are to develop their own coding methods as well as their own analytic processes (Saldaña, 2016). Selecting a coding method and predetermined list of codes beforehand to complement the study's goals are acceptable foundation principles according to Saldaña. Mention was also made by Saldaña, (2016) that participants interview responses contributed to the data being collected and the coding represents their experiences rather than the researcher's insights. Both positive and negative perceptions, self-efficacy, attitudes towards implementing blended learning, technology usage, support received from stakeholders emerged in the codes. As I read through the transcripts the codes revealed that even though a few teachers thought that

the instructional platform was forced upon them during the pandemic, the common code of technology indicated teachers' perception of technology to be essential. The teachers believed that technology was very essential especially during the pandemic so the teaching and learning process can continue during the quarantine periods of some teachers and students while and connecting with the ones who were face-to-face in the building. Teacher 10 stated that "These kids have not been in a place in their life where technology wasn't available," and that "The implementation of technology is absolutely essential." Teacher 2 believed that technology is a good thing to use every day even though some may be reluctant to use any type of technology. Teacher 7 stated that it is important to use technology and that due to access, children need to learn how to use them in different settings. Teacher 3 mentioned that "I think we live in a highly technological era…. I didn't really resonate with this until recently, but a lot of them weren't even born when the first technology pieces came out. So that's all they know is technology and the latest technology and the updated technology, so to teach without technology we will be doing them a disservice because that's how they learn, that's what they know, that's what they associate with."

About seventy percent of teachers did their own technology research and training to improve themselves in addition to the trainings provided by the school or district. Teacher 4 said "I spend a lot of time online. I'm not one of those teachers who leave my tablet behind. My tablet is always with me and in the peak hours, I'm always online researching for my lesson." She continued to say, "I attend every possible training there is, and I do it on my own time." Teacher 3 stated that she used to train teachers to use

technology and that in the beginning she “invested a lot of time learning the ins and outs of it.” “I have done research, actually purchased and taken extra courses to help me teach different information for my technology class,” said Teacher 6, who uses technology every day to teach. Teacher 10 said “I don't like to give things to my kids unless I really think it's going to be helpful for them. So, I'll usually go in on the teacher side and the student side to kind of see what it's going to be like on both ends.”

Saldaña, (2016) mentioned that the coding process should be as if the researcher is making new discoveries and connections about the participants, their process, and the investigated phenomenon. The inductive coding process is an appropriate method of coding for educational, qualitative studies especially for individuals learning to code. It is appropriate also since participants’ verbatim concepts are the primary goals of which meaning are depicted in representing the participants voices. Other common codes were platform usage, blended learning, and google classroom which indicated the learning platform that connects teachers and students to continue the teaching and learning process while under quarantine and being out of the school building during the first two months of the 2020-2021 school year. All teachers mainly gave responses based on what they were currently during the pandemic. All had to use zoom and google classroom during the pandemic to teach and connect with students as both teachers and students were home for school and work. Teacher 9 mentioned “The district invested in zoom for the classroom, and a bunch of other things that I’m not too familiar with because I stopped with zoom and stick with Google Classroom.” Teacher 9 also posted the recording from his lessons to Google classroom so students who were absent can view them and keep up

with the class. When Teacher 1 was asked what influenced his decision to use technology and become involved with using a blended learning model, his response was “I would say the pandemic, pretty much. March 13, we were home, and we still had to continue teaching, so I took a little approach to technology by using Google Classroom. Before all, my instruction was based on face to face, and they would take notes based on what I had on the board." Teacher 8’s answer to the same question was “It was not a personal decision. It was a district decision and that was really forced upon us…my kids are better with pencil and paper.”

Observations

The classroom observation and alternative to classroom observation protocol yielded data on how teachers incorporate technology in their classroom instruction before and during the pandemic to keep students engaged while being at home. Before the COVID-19 pandemic began all teachers used the Boxlight smartboard to connect to their laptop and project the information for students to see. Tables 5 and 6 represent the pre-pandemic data collected from those teachers who opted to fill out the alternative to classroom observation protocol.

Table 5

Classroom Observation Protocol

Observed Activities	Yes	No	Comments
Use of groupings: Individual, pairs, more than two.	X	X	Yes: Pairs, more than two No: Whole class and Individual work.
Participants	4	1	
The teacher used technology during instruction.	X		

Participants	5		Teacher demonstration. Share work with students, Screen share, project games.
Student activities required technology usage.	X		Student submitted responses, present work, record self, use camera, and Google classroom.
Participants	5		
Lesson/activity involved individualization of technology usage.	X		Do research, games, share screen, insert link in work, laptop, use camera to demonstrate and participate.
Participants	5		
The teacher gave explicit instructions on how to use an appropriate technology tool to complete activities.	X		All teachers demonstrated where, what and how to find the information and complete activities.
Participants	5		
The teacher showed confidence in using technology to teach.	X		Zoom: teachers used breakout rooms and moved between rooms. Teacher switched from one activity and technology use to the next with ease.
Participants	5		
Was the classroom environment equipped with technological devices for each student?	X		Student laptop, cellphones, mobile hotspots for some students Zooming in.
Participants	5		
Did the teacher give feedback via technology only____, verbal only____, or both____?			Verbal only: 2 Participants. Both: 3 Participants Verbal praise, thumbs up, observation, tangible gifts, class bucks, and making recommendations.

Teacher 6, used computer Labs, varying sensors for gathering different sets of data, cameras for documentation. Teacher 8, used iReady, Khan Academy, and kami in Google classroom. Teacher 6 used Google classroom for students to access assignments, tests, and quizzes. Teacher 9 used the internet, remind, and Google Classroom. Teacher 2 only hooked up her laptop to the Boxlight to project the content. The data from the observations done during quarantine revealed that the teachers shared their Boxlight as a

second screen for all students to the content and used their laptop screen to see their online students via Zoom. Some of the digital tools used during instruction that were observed included YouTube, videos, break-out rooms, Go Formative, Booklet, Google classroom, Desmos, Imitator, Kahoot, Cellular phone, Sounds, Spreadsheets, camera. Teacher 4 used the camera to show the online student what the in-person students were doing in the kitchen. She also demonstrated to all students how to use their cell phones to upload to Google Classroom. Teacher 7 used interactive videos, motivational videos, games, and Google classroom in which students got to do their independent work. Since Teacher 7 is a Physical Education teacher, students had to have their cameras on and needed to be seen doing their exercises, especially when different students need to pin themselves for all to see them doing their assigned physical activity. Teacher 10 demonstrated using an online application before games are played on Booklet with Math students. The teacher also used the Go Formative website during instruction, students were referred to the digital notebook posted in Google classroom, and after instruction, students went to complete individual and team activities online independently.

Teacher 1 had virtual and in-person students in his classroom when I went to observe. The whiteboard was shared with the virtual students during the demonstration on how to solve a mathematical problem step by step. Both virtual and in-person students were questioned as the teacher checked for understandings, after which the virtual students were sent to the break-out room, where the teacher joined one after the other to give individual attention as they complete their independent work. Teacher 3 also had virtual and in-person students and had to share the Boxlight screen via Zoom for all

students to see the same content. All students were directed to Google Classroom to access their posted work, which was a fillable chart done in Google Docs, which the teacher projected on the screen. During instructions the students had to fill in the different areas on their documents by using the virtual notebook provided to help refresh their memory. After the interactive instruction and discussion, the same content was used to play a game of Kahoot. Students could use their computers or phone by entering the access code. Music was also played to help motivate students and keep them alert. Teacher 5 filled out the alternative to classroom observation protocol and stated that students did not need to share technology during instruction, however, it took that teacher a while before developing confidence in using technology with students. Most of the participants did not feel confident at all times while using technology to teach (see Table 6).

Table 6

Alternative to Classroom Observation Protocol

Activities	Yes	No	Comments
Use of groupings: Individual, pairs, more than two.	X	X	Yes: Whole class, grouping with more than two. No: Individual for small classes and different academic levels.
Participants	4	1	
Did most of the students' activities require more than one technology to complete?	X	X	Yes: Music, internet, computer, Google, Interactive box light, games. No: Only one technology needed to complete activity.
Participants	2	3	
Did student activities required individualized use of technology, or did they share?	X		Individualized, They did not need to share. District issued mobile hotspot to some students.
Participants	5		

Did you feel confident at all times while using technology to teach?	X	X	No: Confidence increased with consistent use. Internet disruptions contributed to low confidence.
Participants	1	4	
Was the classroom environment equipped with technological devices for each student?	X		Yes: The district is one-to-one with student computer/iPads.
Participants	5		
How did you generally give feedback to your students: select one: via technology only____, verbal only____, or both____?			Verbal only: 1 Participants. Both : 4 Participants

As shown in table 5 above, of all teachers who filled out the alternative to classroom observation, four gave both verbal and oral praise as well as requiring their students to work in groups after a whole class discussion. The participants included music, internet, computer, Box light smartboard and games in their classroom on a daily basis. Students were allowed to work on their own computers, even during group activities, as they were given interactive documents. The district issued each student their own computer as well as mobile hotspot for those who did not have internet at home.

Lesson Plans

Content analysis was also used to review the lesson plans of the teachers to reveal when and how they incorporate technology in their daily instruction. There was no significant difference between how teachers included technology in their plans before or during the pandemic. Seven of the ten teachers incorporated technology in all three lesson plans. The other three teachers included technology in only one of the plans. Zoom was added to the lesson plans, which happened to be the platform the district used during the pandemic. Teachers used Google Classroom to post their work for the students.

Videos, YouTube, PowerPoint, Kahoot, internet, and electronic notes were used to enhance their instructions. Some of the student activities as shown in Table 7 below included collaborative group work, PowerPoint, individual work, Khan Academy, Remind, Quiz, Quizzes, Quizzlets, infographics, camera to perform for teacher, websites, DVD, discussion, create projects, Edpuzzle interactive video, iReady, design and develop a board game (see Table 7).

Table 7

Lesson Plan Summary

Lesson Plan Components	Summary
Participants' inclusion of technology in lesson plan.	Seven included technology in all three plans. Three included one technology in one plan.
Technology Instructional Applications	Video, YouTube, PowerPoint, Kahoot, Internet, Laptops, Electronic Notes, Khan Academy, Quizzlet, Camera, Webdites, Edpuzzle.
Student Activities	PowerPoint, Infographics, Collaborative Group work, Individual work, Remind, Quiz, Quizzes, Quizzlets, camera use, websites, DVD, discussion, create projects, Edpuzzle interactive video, iReady, design and develop board games.
Learning/Teaching Platform	Zoom, Google Classroom

Ravitch and Carl (2016) stated that when coding and analyzing data, researchers should not push to change any collected information based on preconceived notions, but should instead look for, and consider discrepant data by thoroughly examining it, and its meaning in the context of the research being conducted. It is the researcher's responsibility to record any negative cases or discrepant cases in the final analysis, even if the information was a less likely influencer on the understanding of how high school

teachers' self-efficacy influences their use of Blending Learning and TPACK. During the coding and analysis of the participants' data, no such outliners or negative cases were identified.

Results

This qualitative case study has four research questions. The result of this study is organized by the research questions with emerging themes from the coded data. Table 3 in the data analysis represents the codes and themes from the interviews and are broken down below in Table 8, Table 9, Table 10, and Table 11 based on research questions for further discussions.

RQ1

During the interview, I asked about five questions to get an answer for research question 1, which was how do high school teachers perceive their ability to implement blended learning with their students? The emerging themes were *beliefs, self-efficacy, and influence* and are represented in Table 8. The first interview question seeks to find out the teachers' beliefs on using technology in different learning activities with their students and how often do they include technology usage in their lessons. Table 8 shows the codes and Themes based on RQ1.

Table 8

Codes and Themes based on RQ1

RQ1: - Codes	Themes
• Humans must adapt to changes. • Being forced to use technology. • Technology use is the new norm	Beliefs

• Comfort level • Geeky • Fearless and willing to try anything. • Become computer literate. • Ease of technology usage. • Role Models • Personal technology exploration	Self-Efficacy
• COVID-19 pandemic. • Daily usage expectation. • Technology integration during personal studies. • Prepare students for real world.	Influenced

Beliefs

Teacher 2 mentioned that she was forced to use technology with her students, even though she believes that it is a good thing to use technology every day. Teacher 6's response was, "My classes are basically technology classes. We use different programs to teach different goals and different outcomes," therefore, used technology in his class daily. Teacher 4 said she uses technology in every lesson and believed heavily in using technology with her students. The other seven teachers all believed that technology is essential and that is all students know and interact with; therefore, teachers need to infuse their lessons in line to what teenagers like and know, as technology has become the new norm. Due to the COVID-19 pandemic, all the teachers are required to use technology with the students every day; however, not all teachers included technology in their instruction daily. Teacher 8 stated that she prefers paper and pencil for her students, Teacher 2 did not like to use technology, and she used it occasionally before the pandemic. Teacher 1 noted that he began using technology every day with the students due to the pandemic. Teacher 5 and Teacher 9 used it in their program occasionally

before the pandemic. All the other teachers stated in the interview that they used technology every day in their instruction with their students.

Self-Efficacy

The codes that emerged from self-efficacy are comfort level, geeky, fearless and willing to try anything, become computer literate, ease of technology usage, role model, and personal technology exploration. The theme focused on how high school teachers perceive their ability to implement blended learning with their students. Of the ten teachers interviewed, only two teachers were not comfortable using technology and one not willing to use technology to teach. Teacher 2 stated, "I don't really like to use technology, it's almost like it's being forced on you to use it." She continued to say, “I repeat, I’m not a fan of technology, it has been forced upon me.” This was evident in the three lesson plans that were reviewed. She also stated that all teachers had to become computer literate in an effort to use the recommended application for instruction at the beginning of the pandemic shut down when everyone had to remain at home. Teacher 7 also mentioned that she would probably not use technology at all if it was not forced upon her. Teacher 1 mentioned that the blended learning model allowed students to work without him seeing his students face-to-face as he usually does. He used interactive applications to help students get a better understanding of the math concepts that are more hands-on. Teacher 7, Teacher 6, Teacher 9, Teacher 10, and Teacher 4 mentioned that they had role models during their studies at college, which led them to become comfortable and confident with using technology in their instruction now. Nine of the teachers explored on their own before using a new application during instruction and

loved using technology during instruction. Teacher 7 stated that going virtual has pushed her to expand her use of technology through different applications, and she said, "I love using the technology….I'm pretty comfortable with it in the classroom."

In implementing blended learning, Teacher 9 uses Zoom to record his lessons and post them for students to have access to them anytime. He said, "If a student can't remember something I said in class, they have the recording they can go back to." Teacher 9 also mentioned that with blended learning, "Teachers can teach more people online as they can face-to-face." He also mentioned that he had to get used to implementing blended learning in the beginning. Teacher 4, Teacher 10, Teacher 6, and Teacher 7 considered themselves fearless and willing to try anything with their students to ensure a successful outcome. Teacher 3 referenced that the district's decision to shut down the schools and go virtual forced all teachers to use technology in their instruction. Other teachers mentioned their level of confidence in using technology in their instruction and how they prepare for their students. Teacher 3 stated that blended learning has "caused me to constantly change, constantly reflect on what I'm doing with the new group that I have, so it's caused me to monitor and adjust a whole lot more." Teacher 4 and Teacher 10 considered themselves to be Geeky and always are searching for new ideas to include in their instruction. For Teacher 4, she keeps her computer with her all the time, exploring new ways to conduct instruction online during the pandemic as she continues to prepare students for the real world.

Influence

The question "What influenced your decision to use technology and become involved with using a blended learning model?" was asked during the interview, and four teachers indicated that the COVID-19 pandemic and the school district influenced their decisions to use technology and become involved with a blended learning model. "Our decision was influenced by the school district, of course, because of the COVID-19 pandemic," Teacher 5 reported. "It was a district decision, and that was really forced upon us because of COVID-19." "It was forced upon me," was Teacher 2's response. She also mentioned that she now must use technology due to the pandemic because she usually does not use technology with her students. Teacher 3 mentioned that the district had some forceful influence on her using technology as well. She also indicated that the students and the uncertainty of the COVID-19 pandemic. At least three of the teachers were influenced due to practices seen and used by past instructors or cooperating teachers during their educational training studies and practicum. One of the three was influenced by her love for technology as well.

RQ2

RQ2 was: What support do they need to use blended learning effectively? RQ2 is represented in Table 9 with themes like *training, TPACK, and support.* Codes include *available mentors, learning from others, learning by trial and error, professional development, continuous education, individual research, technology usage, pandemic, teaching experiences, capabilities, teacher knowledge, preparation time, stakeholders, and students*. Table 9 shows the codes and themes based on RQ2.

Table 9

Codes and Themes based on RQ2

RQ2: - Codes	Themes
• Available mentor • Learning from others • Learning by trial and error • Professional development • Continuous education • Individual research	Training
• Technology Usage • Pandemic • Teaching experiences-past and present • Capabilities • Teacher Knowledge • Preparation time	TPACK
• Stakeholders • Students • Preparation Time	Support

Training

In response to the interview question relating to what type(s) of invested time have you put into learning how to incorporate blended learning and technology in your classroom, all ten teachers responded that they had spent a minimum of one to two hours a day to explore independently, attend monthly professional developments organized by the technology department, as well as consulting with colleagues. Teacher 1 said, "Just explore independently," as well as "learning from my wife,"…. "and just learn based on trial and error." Teacher 2 said, "Independently, I would try to do it, and I have a very good mentor…If I'm not quite sure, I can feel that I can go to her, and she will help me." She continued to say, "We have technology training too." Teacher 7 attended district-

organized monthly induction seminars where new applications are present. "So, each month, I'm getting at least some new type of application that I can bring into the classroom." Teacher 7 mentioned. "I've gone on my own and just researched different things that kids might benefit from for my class." was also something Teacher 7 said and did. Teacher 6 said, "I've done research, I've actually purchased and taken extra courses to help me teach different information." Teacher 3 mentioned, "In the beginning, I spent a lot of time exploring independently because the technology courses were not readily available like they are now, just at our fingertips." Teacher 10 and Teacher 4 spend a lot of their time exploring independently doing research, communicating, and sharing with other colleagues. Teacher 4 even joined a Facebook content area group where she gets plenty of ideas for her classes.

TPACK

This theme focuses on one of the interview questions, which asked teachers how has the time spent during their learning process influenced their belief in their capabilities in using technology in their classroom? All ten teachers had a positive attitude about the time spent during their learning process and their capabilities in using technology in their classroom. For example, Teacher 3 stated, "The more you spend time with it, the more comfortable you get because I got comfortable." Teacher 9 mentioned, "I've learned to embrace, adopt, and make sure that what I'm doing all the students get the same benefit from it." Teacher 7 also stated, "I'm pretty comfortable with it in the classroom. Teacher 8's remark was, "it has changed my belief about technology." Teacher 10's response was, "I've just gotten more confident." Teacher 5 mentioned that the training sessions helped

as it was challenging at first, and he was not in favor of it, but due to exploring the technology and consulting with colleagues, he eventually embraced the idea more to make it work. Teacher 6 explained, "Oh, it definitely made me a lot more confident." "It made it easier for me to teach my classes," he added. Teacher 4 simply stated, "Well, I think it boosts my confidence." Teacher 7 and a few other teachers generally do a test run before presenting any new ideas or applications to their students. "I like to test and make sure that it's going to work," remarked Teacher 7. Teacher 10 stated, “I’m known as the tech girl, so I’ll look into things and determine if it’s even worth it to look into further. I don’t give things to my kids unless I really think it’s going to be helpful.” Even Teacher 2 who does not like to use technology was very positive by saying “It has been good; my abilities have increased a lot.” She continued to say, “I think the training sessions have been beneficial because I feel more confident and more in-tune with the students.” The teachers also spoke about the training sessions they had in preparation to transition fully online due to the COVID-19 pandemic emergency lockdown. Teacher 10 spoke about doing extra research, “I did a whole bunch of the online ones like the hyper docs and the Google training that we had for COVID, last year.”

Support

The question how supported do you feel the district administration, building administration, colleagues and technology department were in your implementation of blended learning, was asked and the following codes emerged; stakeholders, students, and preparation time. The views varied as to the support each teacher received from the stakeholders, however most of the teachers about seventy percent agreed that their

colleagues and the technology coach were the most supportive, helpful and easily accessible stakeholders. Teacher 6 stated, “My colleagues are more supportive, especially the ones that have classes like mine, that is technology base, just because they know what I am going through, I know what they are going through.” He further stated, “The technology department gives the same amount as my colleagues, they have done a fantastic job of making sure we have the right materials, to make technology more accessible to our students.” Teacher 9 agreed with the previous statement and added that “the technology coach did well.” Teacher 2 also acknowledged the technology coach and colleagues and further stated “Colleagues are more helpful to me than the district and building administration team." Teacher 7 had more interactions with the district administration due to monthly sessions she had to attend, and therefore, she thought the district was very helpful to her based on the number of resources she had access to because of attending those sessions. She added, “I know I can go to them for resources if I ever need anything." Teacher 9 expressed his feeling about the support received from the building administration in the following words, “As far as the building administration, too much training, can we just learn one.” Teacher 3 believed that the technology coach was most supportive.” The teachers agreed that the district administrators' involvement had to do with recommending and purchasing applications, programs and setting up the training sessions for teachers to become knowledgeable of the fact. Teacher 8 mentioned that the district does the groundwork and then takes action by getting the resources and sending them down the pipeline until it teachers the teachers, so they all were very supportive. Teacher 10 thought the district was very supportive, by her statement, "I think

this district, in particular, was really like set on technology like we had a really nice technology budget too." Three teachers mentioned that their students were supportive in that they would give feedback about a new program, application, or techniques to the teachers as to the viability, difficulty level, or ease of manipulation and comprehension and if it's worth being part of the instruction.

RQ3

RQ3 was: How are high school teachers using blended learning in their instructional practices? Responses indicated how teachers use the blended learning model in their instruction as well as the technology applications they used to implement blended learning. The emerging themes represented in Table 10 include *blended learning, implementation, and learning platform*. The codes are *face-to-face, virtual, instructional practices, flexibility, technology applications, infused with teenager's lifestyle, practices, instructional model, and teaching and learning*. Table 10 shows the codes and themes based on RQ2.

Table 10

Codes and Themes Based on RQ3

RQ2: - Codes	Themes
• Face-to-face • Virtual • Instructional practices • Flexibility	Blended Learning
• Technology Applications • Infused with teenager's lifestyle • Practices	Implementation
• Instructional model • Teaching and Learning	Learning Platform

Blended Learning

With the theme of blended learning, teachers were not too sure how to answer the interview question since most students were not in the physical school building due to the state-mandated change for school districts to offer a fully virtual environment, hybrid or a traditional setting due to the COVID-19 pandemic. The school district implemented the use of Zoom for the virtual connectivity and Google Classroom as the main or primary learning management system. The responses covered how teachers use blended learning and what happened in their instruction. Teacher 6 used lab rotation and assigns work to be completed at home for an in-class discussion. He stated, “So usually with my class, I like to go through a lesson and basically lead then step by step to a certain point and then from there they can venture out on their own, doing their own research to complete projects and assignments." Teacher 2 also used the rotation model.

Teacher 8 mentioned that with using virtual and blended learning, “you infuse so much more into your instructions.” Teacher 1 used the blended learning model with his in-person class as well as with the students at home on the Zoom platform. He said that all students received the same information, then they go to Google Classroom and use interactive applications to figure out solutions for themselves. He remarked, "I let the students try to use interactive applications so that they can get a better understanding of the math concepts that are more tangible, like more hands-on." Teacher 7 stated that due to her having some of her Physical Education classes online, blended learning has been hard for her to do. “I’m trying to keep them balanced so that we’re doing all the same stuff. It just looks a little bit different based on how I’m delivering that content to them.”

She and Teacher 4 used group projects which allowed students to collaborate both virtually and face-to-face, then share their end results with the class. Teacher 9 used Google Classroom as his learning management system for blended learning. "Google Classroom allows me to post-reading ahead of time as they don't have textbooks at home. Even with students who are academically challenged, now we can have one-on-one without them been embarrassed," and so he used the break-out rooms in Zoom to help clear up misconceptions, which is like a flipped classroom. "It works like virtual office hours," commented Teacher 9. Teacher 5 and Teacher 10 used the blended learning rotation model. Teacher 5 stated, "The curriculum is already blended as it is with our different instruction areas." Teacher 10 mentioned, "I do kinda like rotation" when she was asked about the kind of blended learning model she used. Teacher 3 also used station rotation and lab rotation which were also observed. She, along with Teacher 1, Teacher 8, Teacher 4, and all the other teachers, used interactive applications and programs in their blended learning environment. Only about three teachers used recovery credit programs and allowed students to use their cellphones to submit responses.

Implementation

The codes include *technology applications, infused with teenagers' lifestyles, and practices,* which addressed the technology applications that teachers included in their instruction to implement blended learning. A variety of technology applications and programs that are not for a particular content only have been used by the teachers during their instructional time, which were not limited to Dyknow, Boxlight MimioBoard, Google Forms, Kahoot, YouTube channels, Khan Academy, Edgenuity, Google

Classroom, Zoom, Go formative, Near-pod, videos, websites, camera, microphones to name a few were used. Content-specific technology tools include iReady Math and Reading for Special Education, Codehs, animation design, and gaming for Careers and Technology Education class. Flexible skeletons were used in a science class during observation. Teacher 6 echoed, "There is a lot of YouTube channels that I used to help supplement game development, animation designs, and others." Teacher 7 expressed using YouTube in her Physical Education class for “all different types of workout videos” so her student can “have access to using them outside of my classroom.” Teacher 5 and Teacher 9 both used the camera a lot for student presentations. "The students are required to upload a digital or a video copy of something that they may have done" in their class for grade submission of presentation. Teacher 1 uses active inspire, interactive calculator in his math class as well as “Kahoot, it’s an interactive game.” Teacher 8 and Teacher 4 also used interactive videos to demonstrate and model during instruction. At least nine of the ten teachers used videos on a regular basis as well as digital assessments that gives instant feedback to their students. Teacher 3 mentioned that she uses "anything that I can keep my hands on to enhance the learning and to get students to be more engaged." The list of technology applications mentioned during the interview was also listed on the observation forms, and about seven of the lesson plans were reviewed.

Learning Platforms

The teachers reflected on their instructional model and what they did pre-pandemic, and how they are handling their virtual classroom as well as the traditional setting to continue the teaching and learning process during such an unprecedented time

in their teaching career. Teacher 1 remarked that "humans must adapt to changes, so they can prepare students for the real world." He mentioned that before the pandemic, all his instructions were face-to-face, and due to the pandemic, he has to continue teaching even though instruction shifted to online. Before the COVID-19 pandemic, all students attended school on a daily basis; however, teachers and students had to switch to Zoom and use the Google Classroom during the shift from the traditional learning environment to fully virtual, then to options that include hybrid, traditional, or fully virtual based on state-mandated regulations to combat the spread. Teacher 6 had two hybrid classes and one virtual and used varying sensors for gathering different sets of data and cameras for documentation. Teacher 7, Teacher 8, Teacher 3, Teacher 4, Teacher 9, Teacher 5, and Teacher 1 all had to teach students who were sitting in their classroom as well as those who Zoomed in from home at the same time. Teacher 4, Teacher 5, Teacher 7, and Teacher 5 had students creating videos of themselves completing assignments and submitting them for class viewing. Teacher 2's students eventually transferred to in-person since they were in a moderate to severe special education classroom. Teacher 10 had separate classes that were either fully virtual or fully in-person.

RQ4

Emerging themes include *impact, reluctancy, and technology integration* which can be seen in Table 11. The codes are *positive and negative impact, recommendations for reluctant teachers, teacher encouragement, self-evaluate, technology tools, lesson success, innovation, resolution, content area, and culture*. The responses represent the successes high school teachers experience due to using blended learning and integrating

technology in their instructional practices. Table 11 shows the codes and themes based on RQ4.

Table 11

Codes and Themes Based on RQ4

RQ4: - Codes	Themes
• Positive • Negative	Impact
• Recommendations • Teacher Encouragement • Self-Evaluate	Reluctancy
• Technology Tools • Lesson Success • Innovation • Resolution • Content Area • Culture.	Technology Integration Success

Impact

The themes relate to how the selected technology tools impacted classroom instruction and were broken down into positive and negative codes as they related to teachers' reactions to technology selection and issues. Some of the comments made during the interview were more positive and had alternative ways of dealing with any negative issues. Teacher 1 expressed that “the tools support visual learners,” and Teacher 9 also agreed with and added that “technology is sound and typing too” and that students can communicate by typing their response if their microphone does not work. The teachers also used the remind application to inform students if there is a connectivity issue with Zoom. It was through trial and error at times that they knew if the technology is suitable for their instruction and students. Some of the teachers tested the tools before

using them with students. Teacher 7 said, "It's more of a trial-and-error type of thing sometimes," and Teacher 10 generally reviews the applications by “going in on the teachers and the student side to see what it’s going to be like on both ends.” She continued to state that “usually when websites are hard to navigate, it is when they don’t understand.” So, she created an instructional manual in google slides with pictures and audio, so both visual and auditory students benefit. Teacher 1 suggested the need to “monitor and adjust, try to have a plan B or backup plan.”

Other teachers stated that students do inform them of the difficulty level and report what they like and do not like about the tools. This student feedback helps gauge teachers in their planning, and they reevaluate and restructure their instruction. Teacher 3 even added "the ease in which instruction occurs during class," in relation to the amount of time it takes to use the technology complete the given task helps her know whether the technology is helpful and then she will "go back, and I reflect and try to restructure things," she stated. Teacher 8 mentioned that the negative impact contributes to "Loss of instructional time," especially for those online because for those present, she uses the "emergency lessons that's already been run-off." Teacher 6 uses his "alternative lesson plans" because he has days when the computers do not work for his class, "so I try to adjust my lessons to a non-technology base lesson," he added. Teacher 4 had transmission quality and connectivity issues with Zoom, and to resolve the issue, she reconnected or cut the classes short and redirected students to Google Classroom to already posted work for any loss of connectivity.

Reluctancy

For this theme, the focus is on the recommendations, encouragements that were made in relation to teachers who are reluctant to use technology in their classroom regularly. All the teachers recommended that reluctant teachers need to try it. Teacher 1 recommended, "just take baby steps and try to stay positive as you learn, crawl before you walk." Teacher 7's suggestion was, "don't shut it out completely before you've actually given it a chance." Teacher 3 recommended "team teaching with a teacher who uses it flawlessly" and suggests "definitely the continuance of training that is effective for the reluctant teachers." She also recommended the observation of a teacher using technology in a model class. Teacher 6, a technology teacher, recommended that reluctant teachers try using gamification in their classes to help supplement their teaching. Teacher 8 said those teachers need to keep up with what is current in the education field; even though they may be reluctant to use technology, "they will just have to either sink or swim because technology is trending now". She continued to state that she was reluctant at one point in her self-evaluation but got on board, and she tried it, and "now I really see what I was missing by not using my technology training to my full advantage." She continued to say she "was being stubborn and didn't want to do it because I'm old fashion." "I was working much harder then, but now I am working smarter," due to her using technology in her instruction. Teacher 10 encouraged teachers "to just try one thing," "pick one thing, try it figure it out, and have your kids do it repeatedly," "even if they are more comfortable teaching without technology," they need to "do stuff outside their comfort zone to learn and grow" she continued to say. Teacher

2, who has expressed over and over her reluctance, even recommended that reluctant teachers need to try. Her statement continued, "I have to do it if I want to be successful and to go ahead." She also reported that she is becoming more confident as she uses technology to teach.

Technology Integration Success

The final theme addresses a lesson the teachers thought was successful due to blended learning and the integration of technology in their lessons. The interactive application that Teacher 2 used with her moderate to severe students with disabilities helped them to follow basic instruction independently as they identify, point, and circle an image or alphabet being taught previously by being accurate three out of three tries. Most of the teachers associated learning and success of instructional content once the students were able to present the materials independently in their own words. Teacher 8 stated that being able to make real-life connections contributes to the success of the lesson.

Teachers used informal assessments, break-out rooms, small groups within groups, and allowed discussions to encourage learning from each other. Teacher 6's lesson success had to do with the level of engagement his students were involved in and the required output, "They were able to do research themselves and actually produce the goals." Teacher 4 and few other teachers use a game at the end of their lessons as a quick form of assessment to get immediate feedback from students. Teacher 4 believed motivating her students to do better contributes to her lesson success, "so I look at that as actually the sole purpose of teaching, not just measuring." Teacher 10 described her

successful lesson when her student had to use the correct terminology to describe a word through written communication without including the correct answer and find their matching pair. She mentioned that the lesson was engaging and allowed students to develop written communication, focus on descriptive words, and increase their knowledge of the content vocabulary. Teacher 3 recommended the use of no more than two or three different application or technology pieces in a blended learning session to avoid confusion but instead encourage cohesiveness.

Evidence of Trustworthiness

To strengthen the trustworthiness of a study, evidence is to be maintained as well as using two or more sources to collect data (Yin, 2018). Ravitch and Carl (2016) stated "Validity, in qualitative research, refers to the ways that researchers can affirm that their findings are faithful to participants' experiences" (p. 186). The quality and rigor of a study also help with increasing trustworthiness and adhere to certain standards like credibility, transferability, dependability, and confirmability (Ravitch & Carl, 2016). This study addresses all four standards directly as it relates to conducting qualitative research in an effort to strengthening its validity or trustworthiness. Each area is addressed below.

Credibility

According to Ravitch and Carl (2016) triangulation is used to enhance a study's validity, which is one way to ensure that the data presented can be trusted. One of the methods I used to collect data was through semi-structured interviews done mainly through Zoom with the ten teachers who volunteered to participate in the study due to the pandemic and social distance protocol. This study established credibility through the

triangulation process as I provided each teacher with a copy of their interview transcript for member checking, thus creating the opportunity for them to edit, clarify their original thoughts, correct errors, give feedback and provide additional comments.

Transferability

To establish transferability, teachers were selected through purposeful random sampling to understand how teacher self-efficacy influences the use of blended learning and TPACK in the application of technology in the classroom. The participants were contacted mainly through emails where they received the invitations, consent forms, Zoom link, interview transcription, and member checking. Thick descriptions of the study are presented by detailed descriptions of the setting, participants, the purpose of the research, the use of more than one data collection instrument, and the findings of the study. The participants were given pseudonyms to maintain privacy and protect their identity.

Dependability

To achieve the dependability of this qualitative research, I used strategies such as triangulation, including a solid research design and any non-conforming data, and make observation notes. I also kept an audit trail of the interview and the other data collected. I used open-ended semi-structured interview questions that were aligned with the research questions for participants to provide in-depth responses. Dependability relates to data stability and is similar to reliability in quantitative studies (Ravitch & Carl, 2016).

Confirmability

Conformability in a qualitative case study is equivalent to the quantitative concept of objectivity (Ravitch & Carl, 2016). The ethical guidelines of the IRB were adhered to in the selection of participants. Notes were taken throughout the data collection process and were reviewed during the coding, recording, and analyzing of data. As an educator with an educational technology degree, I was not in a position to be part of this study, and I had to be very careful not to include my personal biases. The interview questions reflected the research questions and the study's purpose. The transcripts from the interviews were mainly hand-coded, and as the data was being read over and over, I kept an open mind and focused on the participants' responses, what their lesson plans revealed and what was observed in relation to technology usage in answering the research questions. Triangulation of the data went through a series of coding, follow-up questions to clarify some of the participants' responses

Summary

The observation protocol revealed that there were no significant differences between the way teachers included technology lesson plans before or during the pandemic. Most of the teachers felt confident in using and including technology with their students. Only one teacher was very reluctant to use technology with students. Most of the participants received more support from their colleagues and the technology coach than from the administration. Most of the teachers increased their own technology skills and pedagogy by doing their own research and trying out applications before using them with their students. Due to the pandemic, all the teachers had to completely switch from

the traditional face-to-face environment to fully virtual and then to a hybrid model and also had to use a specific application to connect with students on a daily basis. The teachers used various applications like Google Classroom, Edgenuity, YouTube, PowerPoint, Go Formative, Zoom, Khan Academy, Kahoot, Ed puzzle, iReady, and the camera on their computers. Seventy percent of the teachers included technology usage in all three lesson plans that were analyzed. The other 30% included technology in only one of their lesson plans.

The teachers' responses to the interview questions were geared towards what they were doing and how they used technology with their students. The successes teachers reported in relation to using blended learning in their instructional practices relate to how they used the blended learning applications, tools, and resources to engage their students during the pandemic while working remotely. Teachers used the DyKnow applications to monitor their students remotely to ensure they were on the required applications being used during instruction and assigned work. The Zoom allowed teachers to use break-out rooms, small groups, which helped students to learn from each other through discussion before regrouping as a whole class. Teachers used educational games to motivate and keep students engaged. The camera was utilized daily and enabled students to physically perform for the entire class and teacher to see. Some teachers made e-notebooks for their students to use as well as educational videos to explain and demonstrate content and assigned tasks. The use of Google Forms was also utilized and made grading easier for teachers. Teachers were able to involve parents more because they were home with the students and were easily accessible for a quick meeting or direct dissemination of

information. During the instructional time, some teachers use interactive applications that students had to follow along and remain focus, so they are able to respond appropriately within the application before access is removed by the teacher due to lesson progression. Teachers gave students projects to create virtually and then share with the entire class. Teachers reported that some applications used offered students immediate feedback and the use of games to reinforce the lesson at the end.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this qualitative case study was to generate a deeper understanding of how high school teacher self-efficacy was perceived to have influenced their implementation of blended learning. The TPACK model was used to help understand how teachers implement blended learning with their students. The data collection process included interviewing 10 teachers within the district. I collected three lesson plans from each teacher for a review of how they include technology in their instructions and conducted classroom observations; however, due to COVID-19 restrictions, some teachers opted out of direct classroom observations and instead filled out an alternative to face-to-face observation describing what their blended learning environment was like pre-pandemic. My awareness increased after analyzing data and I was able to describe teachers' efficacy in terms of using blended learning, the support they received, and how they integrated technology within content and pedagogy knowledge.

Findings of this study suggested that most participants had a positive attitude in terms of their ability to implement blended learning with their students. Technology coaches and colleagues are two main supporters of all stakeholders in terms of encouraging effective use of blended learning among teachers. Adequate technology resources, programs, and trainings have been made available by the district for teachers to use and receive training to use technology and implement blended learning. Findings suggest that adequate planning to integrate technology and blended learning contributed to teachers experiencing successes in terms of their instructional practices.

This chapter includes interpretations of findings and a description of limitations of the study. Recommendations for further research and practice and implications are also discussed. The conclusion sums up the main points in the chapter.

Interpretation of the Findings

In this study, I sought to generate a deeper understanding of high school teacher self-efficacy in using blended learning and TPACK by using observation protocols, interviews, and artifacts to obtain responses to 12 themes derived from a total of four questions relating to how their self-efficacy influences their use of technology. Bandura's self-efficacy theory and Koehler and Mishra's TPACK model are the two conceptual framework that guided this study. Findings revealed that environmental work-related and personal factors played major roles in teachers' positive and negative self-efficacy in terms of implementing technology in blended learning environments, especially during the COVID-19 pandemic. Montoya (2018) said teachers' self-efficacy is different based on their circumstances. Cansoy et al. (2018) said those who believe more in their capabilities will work hard to achieve goals, while those with low self-efficacy will not make much effort or may not be capable of handling stress. Wilson (2018) said professional development has contributed positively to foster self-efficacy and creativity through shared ideas and permissible risk-taking. Adequate planning to integrate technology and blended learning have contributed to teachers experiencing successes in their instructional practices. According to Simpson (2016), a well-prepared teacher can have a significant influence on student success.

I identified three different themes addressing each of the research questions. Most teachers answered the interview questions with the COID-19 pandemic in mind, which may have led to responses that were not fully related to blended learning as it was before the pandemic. According to Gardner (2020), the COVID-19 pandemic caused shifts in learning environments from traditional face-to-face and blended courses to fully online learning.

RQ1 and RQ2

The first six themes relating to RQ1 and RQ2 are beliefs, self-efficacy, influence, training, TPACK, and support related to how high school teachers perceive their ability to implement blended learning with their students and the support they receive. Environmental work-related factors had to do with the COVID-19 pandemic and how it influenced immediate adjustments teachers and students had to make to prevent the spread as well as continue the teaching and learning process. The district provided training and made the Zoom platform available for connectivity and Google Classroom for blended learning and technology use. Fuhrer (2021) said to implement a new learning program, professional development is recommended so teachers can establish best practices. This study supports that idea as the district provided training sessions for teachers to establish best practices during learning platform and learning environment changes.

Most teachers revealed a high level of self-efficacy as they expressed their beliefs in and comfort with using technology with their students before and during the pandemic. Teachers did their best to still offer blended learning environments even when they

switched to total virtual environments at the beginning of March 2020. They believed that technology is the new norm and now an embedded way of life for their students, so they need to teach and reach students where they are. The teaching and learning delivery environment during the pandemic influenced ways lessons were brought to students and how goals would be achieved. Observations revealed that teachers were using technology other than the camera in classes. Lesson plans also supported comfort levels of teachers based on daily use in their plans.

Personal factors like not liking technology, feeling overwhelmed due to excessive training, past experience, and student training were factors in terms of teacher reluctance to use technology. The few teachers who were reluctant to use technology before the pandemic had no choice but to begin using it due to the existing COVID-19 health crisis and quick changes and shifts made to the learning environment. However, with consistent access to training and the help of colleagues, all teachers were able to support each other. Dieli (2020) said it is critical that teachers receive support when adopting new innovations like online instruction to achieve success. This support is needed from the beginning to through the stages of implementation and full adaptation, which includes financial support as well. In this study, it was evident that teachers were well supported by district administrators, building administrators, and other faculty members through the provision of training, resources, and collaboration.

Teachers spent personal time getting familiar with technology tools and applications they plan to use in their instructions to ensure success. Irish (2017) said teacher should not just use technology by itself because it’s expected to be used, but

should involve teacher efficacy, a body of knowledge, and technology. The self-efficacy of reluctant teachers was low as evidence in their lesson plans not involving technology at all or once or twice in their lessons based on the three weeks of reviewed plans. They also complained about being forced to use technology and said they would rather not use it in their lessons if they had a choice. Bandura (1991) said successes and failures are based on planning and motivation which is reflected in people's actions based on their belief in their abilities. This view is supported by this study based on what was expressed by teachers who wished they did not have to teach with technology.

RQ3 and RQ4

The second six themes relating to RQ3 are blended learning, implementation, learning, impact, reluctancy, and technology integration success. RQ3 was: How are high school teachers are using blended learning in their instructional practices? Teachers' use of blended learning varied before and during the pandemic in terms of the use of different applications that were suitable for a cross section of subjects. Teachers had to adjust their teaching strategies, models, and methods when they switched from the traditional environment to fully online due to the COVID-19 pandemic. The rotation model, which allows students to switch activities was mostly used by teachers. According to Hiett (2017) the rotation model is the most central model of blended learning as at least one of the rotations involves online learning. During the pandemic, it would be appropriate for teachers to engage in the flex model of blended learning since students' instruction is delivered mainly online. The A La Carte model can also be done entirely online and complements traditional experiences (Horn & Fisher, 2017; Horn & Staker, 2015). Some

of the tools and applications that were used to keep students meaningfully engaged were Khan Academy, iReady, Edgenuity, Google Classroom, Videos, Quizziz, Kahoot, and Ed-puzzle. Cumberland (2019) said instructional strategies implementation offers teachers the flexibility to teach students what is needed to promote success. Mokhtari (2019) said educational technology applications and tools help to increase self-efficacy and learner outcomes.

Teachers reported to have both positive and negative impact with and from technology usage. The negative impact had to do with the failures of technology, thus resulting in a shift of lesson plans or cancelled class. Despite the negative impacts, teachers have reported more success in their classrooms with their students, by going above and beyond to ensure that the technology tools and strategies were appropriate and would be beneficial to the students individualized or cooperative learning during the unprecedented time because of the shift in the traditional learning environment. Personalized learning is enabled by how effective the tools were used in a blended learning environment (Somera, 2018). The findings also revealed that adequate planning to integrate technology and blended learning have contributed to teachers experiencing successes in their instructional practices.

Limitations of the Study

There were three projected limitations in this qualitative study, which were outlined in Chapter 1. Another limitation emerged due to the COVID-19 pandemic which led to changes in the criteria for participants and data collection instrument. The first limitation relates to the small purposeful sample size, which consisted of ten teachers,

four males and three females from six different content areas. This selection limits generalization to blended learning and technology integration at other high schools within the district and state as well as other content areas. The small size according to Anglin, (2017); Burkholder et al., (2016); Ravitch, and Carl (2016), and Vogt, (2018). The second limitation stated in Chapter one relates to not all subject areas requiring technology integration daily and during direct observation during instruction technology use may not be properly observed. The pandemic limited the number of classrooms that could be observed face-to-face. Two observations were conducted online via Zoom. Also, teachers using technology and blended learning in their classroom may not represent teachers in neighboring district due to varying activities being reflective of what's happening locally, and teachers may not share the same belief and self-efficacy. The third limitation is that teachers may be engaged most of the time in traditional pedagogy and classroom space restricting the implementation of blended learning. The emerging limitation: COVID-19 pandemic caused changes to the criteria, opening the data collection site to more than one high school and teachers in neighboring districts having blended learning experience.

Recommendations

The purpose of this qualitative case study was to generate a deeper understanding of how high school teacher self-efficacy is perceived to influence their implementation of blended learning. Recommendations for further research that are grounded in the strengths and limitations of this study and the literature reviewed by Chapter 2 were made in relation to the findings. The study was limited to 10 teachers and two high schools.

The first recommendation is to repeat this study by using more participants and extend the study's site to include more than two schools using either qualitative or quantitative research method. This expansion to my research will help in providing an avenue for comparison of the results and add to the literature. Williams-Buffonge (2021) conducted a study that included one setting with a focus on one college recommended that all colleges within the Caribbean region should be included in the setting or site should the research be repeated. In research conducted by Harrison (2021) one of the recommendations for expansion of the study done was for an in-depth qualitative or quantitative study to be done using more that the study's twelve (12) participants.

The findings from the interviews revealed that most teachers had a high self-efficacy level and did a lot of preparation before using any form of technological tools or application during instruction. In studies on teacher self-efficacy (Bandura et al., 1996; Cardullo et al., 2021; Humphries et al., 2012) mentioned that one benefit of blended learning includes the willingness of teachers to try new concepts and are also willing to remain committed to the education of children. This study includes findings from data collected from observation protocols and an introduced alternative to observation due to the pandemic. A recommendation due to the COVID-19 pandemic would be to eliminate the direct observation and have all the teachers fill out the alternative to observation based on how they have used blended learning in the past with their students. In recent research, email interview responses were used to collect data, however, one recommendation made by the researcher was that the email interview responses should be removed if someone else decides to repeat the study to offer enrichment to the study

(Harrison, 2021). Another data collection method was the collection and reviewing of three lesson plans from each teacher. A recommendation would be to review a month's lesson plan for all the participants to establish a pattern of how teachers plan to include and use technology in their classroom.

Implications

This case study identified the factors that generated a deeper understanding of how high school teachers' self-efficacy is perceived to influence their implementation of blended learning. The potential impact for positive social change, especially during this unprecedented time led to a shift in the teaching and learning environment. Research conducted by Harrison (2021) stated that the pandemic forced a change in the way teachers conduct their instruction and use technology. Cardullo et al., (2021) research findings indicated that before teachers can feel confident in using technology with their students at any time, they first need to explore the learning tools and environment. Due to this environmental shift, reluctant teachers believed they were forced to use technology with their students. Findings from a prior study mentioned that within days, a significant shift in education took place due to the COVID-19 pandemic. The study's findings also indicated that due to the quick shift to remote learning, teachers felt underprepared, mentally drained, and overwhelmed as they try to adjust themselves to remote teaching (Cardullo et al., (2021). Findings from another study stated that transitioning from one teaching/learning platform, teachers need more professional development and time to absorb the changes in an effort to develop confidence to use technology in their classroom (El Firdoussi et al., 2020; Zeydel, 2019).

Administrators can help all teachers especially these reluctant teachers with the transition from traditional to learner-centered blended learning environment much smoother and stressless by providing recorded professional developments and trainings of new learning applications and platform usage for repeated personal review when needed. One recommendation from research conducted by El Firdoussi et al., (2020) supported teachers being given adequate preparation time as well as having access to educational resources so they can be ready for high-quality digital learning environment. Building administrators can have teachers who are more comfortable and proficient with using technology regularly be observed by teachers with low self-efficacy to help them develop positive self-efficacy as they begin to use technology more in their instruction.

An implication of this study can provide new ways to support teachers especially reluctant teachers to increase their self-efficacy and use of TPACK framework. The literature recommended that district and administrators offer teachers some time to collaborate and share their ideas with each other virtually or in person. This strategy will provide more support in meeting the demands of blended learning and virtual learning (McKinley, 2021). The literature on self-efficacy indicated that teachers who experience early successes will help their self-efficacy to improve, while a reduction of self-efficacy will occur for those teachers who experience less success (Bandura, 1977). The changes made by the district administrators to the teaching and learning environment due to COVID-19 can help them with future decisions on how a transitional shift can affect teachers and how they use blended learning and traditional resources to support the teaching and learning environment going forward. This information will help other

school administrators with such transition making future decisions on the use of blended learning and resources needed to support teacher self-efficacy influences and the use of technology. Another suggestion from research stated that in an effort to support teachers, provisions can be made to allowed teachers to join each other Zoom classes to observe their organizational skills, communication skills, and the use of technology. (McKinley, 2021). Another implication for positive social change includes the approaches teachers will take based on the identified work and personal factors that influence their self-efficacy in this study regarding their capabilities and technology usage to improve their plans to positively impact their decisions to include and technology more in their lesson plans and classroom instruction. The way teachers used technology in the teaching and learning process was due to the level of access they have (Grundmeyer & Peters, 2016; O'Neal et al., 2017).

Conclusion

In summation, this chapter includes the reiteration of the purpose and nature of the study and why it was conducted. The key findings were summarized followed by the interpretation of findings. A description of the study's limitations along with recommendations for future research and potential impact for positive social change were presented. During the data collection process of this study, the COVID-19 pandemic caused the world to alter its normal operations within all sectors of society. This unprecedented pandemic shifted the traditional face-to-face learning environment to fully online in the initial shutdown, then later adjusting to either hybrid, fully online or fully traditional face-face-to-face with social distancing and wearing of mask.

Related to the framework for this qualitative case study environmental work-related factors and personal factors played major roles in teachers' positive and negative self-efficacy to implement technology in their learning environment especially during the COVID-19 pandemic. Key findings also included stakeholders' support and teachers having adequate resources to continue instruction despite the shift in the learning environment. Findings also indicate that adequate planning to integrate technology can boost teachers' self-efficacy and confidence, which will contribute to them experiencing classroom success and be more willing to use blended learning and TPACK without feeling pressured.

References

Abdelraheem, A. Y. (2014). Enhancing students' learning and self-efficacy through blended learning in a teachers' program. *Journal of Educational Technology*, *10*(4), 29-39.

Adekola, J., Dale, V. H., & Gardiner, K. (2017). Development of an institutional framework to guide transitions into enhanced blended learning in higher education. *Research in Learning Technology*, *25*.

Alajbeg, A. (2018). Correlation between the level of victimization and the quality of family interaction, school attachment, and social self-efficacy. *Journal of Contemporary Educational Studies/Sodobna Pedagogika*, *69*(3).

Albhnsawy, A. A., & Aliweh, A. M. (2016). Enhancing student teachers' teaching skills through a blended learning approach. *International Journal of Higher Education*, *5*(3), 131-136.

Altay, I. F., & Altay, A. (2019). A systematic review of studies on blended learning in EFL environment. *International Journal of Curriculum and Instruction*, *11*(1), 125-140.

Alzahrani, M. G., & O'Toole, J. M. (2017). The impact of Internet experience and attitude on student preference for blended Learning. *Journal of Curriculum and Teaching*, *6*(1), 65-78.

Andreeva, N. M., Artyukhov, I. P., Myagkova, E. G., & Akkasynova, Z. K. (2018). Organizing blended learning for students on the basis of learning roadmaps. *Journal of Social Studies Education Research*, *9*(2), 47-64.

Anglin, M. S. (2017). *Technology integration by general education teachers of English language learners* (Doctoral dissertation, Walden University). http://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=5370&context=dissertations

Antwi-Boampong, A. (2021). An investigation into barriers impacting against faculty blended learning adoption. *Turkish Online Journal of Distance Education*, *22*(3), 281-292.

Archambault, L., Kennedy, K., Shelton, C., Dalal, M., McAllister, L., & Huyett, S. (2016). Incremental progress: Re-examining field experiences in k-12 online learning contexts in the United States. *Journal of Online Learning Research, 2*(3), 303-326. https://www-learntechlib org.ezp.waldenulibrary.org/primary/p/174116/

Arnesen, K. T., Graham, C. R., Short, C. R., & Archibald, D. (2019). Experiences with personalized learning in a blended teaching course for preservice teachers. *Journal of Online Learning Research, 5*(3), 275-310.

Asif, M., Edirisingha, P., Ali, R., & Shehzad, S. (2020). Teachers' practices in blended learning environment: Perception of students at secondary education level. *Journal of Education and Educational Development*, *7*(2), 286–306. https://doi.org/10.22555/joeed.v7i2.19

Asunka, S. (2013). Overcoming barriers to instructor adoption of a learning management system: The case of Regent University College in Ghana. In Cases *on educational technology implementation for facilitating learning.* https://doi.org/10.4018/978-1-4666-3676-7.ch014

Aybek, B., & Aslan, S. (2019). The predictive power of the pre-service teachers' self-efficacy beliefs upon their preparedness to teach. *International Education Studies, 12*(9), 27. https://doi.org/10.5539/ies.%20v12n9p27

Aydın, İ. S. (2019). Improvement of preservice Turkish teachers' perceived writing self-efficacy beliefs. *Educational Sciences: Theory & Practice, 19*(1), p. 78-94. https://doi.org/10.12738/estp.2019.1.0269

Baleghizadeh, S., & Shakouri, M. (2017). Investigating the relationship between teaching styles and teacher self-efficacy among some Iranian ESP university instructors. *Innovations in Education and Teaching International, 54*(4), 394–402.

Balentyne, P., & Varga, M. A. (2017). Attitudes and achievement in a self-paced blended mathematics course. *Journal of Online Learning Research, 3*(1), 55-72.

Banditvilai, C. (2016). Enhancing students' language skills through blended learning. *Electronic Journal of e-Learning, 14*(3), 220-229.

Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1977a). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215. https://doi.org/10.1037/0033-295x.84.2.191

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational behavior and human decision processes,* 50(2), 248-287. https://doi.org/10.1016/0749-5978(91)90022-l

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 117-148. https://doi.org/10.1207/s15326985ep2802_3

Bandura, A. (1995). *Self-efficacy in changing societies,* NY: Cambridge University Press. https://doi.org/10.1017/cbo9780511527692.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York, NY: W.H. Freeman.

Bandura, A. (2006). Guide for constructing self-efficacy scales. *Self-Efficacy Beliefs of Adolescents,* 5, 307-337

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). "Multifaceted impact of self-efficacy beliefs on academic functioning", *Child Development*, Vol. 67 No. 3, pp. 1206-1222.

Baturay, M. H., Gökçearslan, Ş., & Ke, F. (2017). 'The relationship among pre-service teachers' computer competence, attitude towards computer-assisted education, and intention of technology acceptance,' *Int. J. Technology Enhanced Learning*, Vol. 9, No. 1, pp.1–13.

Blankson, H. (2015). The impact of e-learning on teaching and learning in cape coast polytechnic. *African Journal of Applied Research*, 1(1), 262–272. https://doi.org/10.1525/aeq.1992.23.1.05x1104l

Boelens, R., De Wever, B., & Voet, M. (2017). Four key challenges to the design of blended learning: A systematic literature review. *Educational Research Review*, 22(4), 1-18. doi: https://doi.org/10.1016/j.edurev.2017.06.001

Boldea, A. L. (2017). Blended learning methods used in studying computational astrophysics. In *Conference proceedings of» eLearning and Software for Education «(eLSE)* (Vol. 3, No. 01, pp. 315- 321). Editura Universităţii Naţionale de Apărare „Carol I".

Bowering, E. R., Mills, J., & Merritt, A. (2017). Learning how to learn: A student success course for at risk students. *Canadian Journal for the Scholarship of Teaching and Learning*, 8(3), 1-14. Retrieved from https://doi.org/10.5206/cjsotlrcacea.2017.3.12

Braun, V., & Clarke, V. (2021). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research*, *21*(1), 37-47. http://doi.org?10.1002/capr.12360

Brodersen, R. M., & Melluzzo, D. (2017). Summary of research on online and blended learning programs that offer differentiated learning options. REL 2017-228. *Regional Educational Laboratory Central*.

Bruner-Timmons, J. (2018). *Teachers' Participation in Learning by Design Activities, Their Technological, Pedagogical and Content Knowledge, and Technology Integration in an Inner City School*. (Doctoral dissertation, Walden University).

Burch, Z. A. (2018). *Faculty Perspectives on Redesigning Classrooms with Active Learning Technology Tools* (Doctoral dissertation, Walden University).

Burkholder, G. J., Cox, K., & Crawford, L. (2016). *The scholar-practitioner's guide to research design* (1st ed.). Laureate Publishing, Inc.

Butin, D. W. (Ed.). (2010). *The education dissertation: A guide for practitioner scholars*. Corwin Press., 121

Buwono, M. A., & Ciptaningrum, D. S. (2019). Suggested blended learning models to teach English for senior high school teachers in Indonesia. *Online Submission*. http://doi.org/10.24071/lltc.2018.08

Campbell, R. C. (2016). Primary teachers' perspectives on ipad integration: barriers, challenges, and successes.

Cansoy, R., Polatcan, M., & Parlar, H. (2018). Research on teacher self-efficacy in Turkey: 2000-2017. *World Journal of Education*, 8(4), 133-145.

Cardullo, V., Wang, C. H., Burton, M., & Dong, J. (2021). K-12 teachers' remote teaching self-efficacy during the pandemic. *Journal of research in innovative teaching & learning.*

Colton, C. C. (2016). *Exploration of Transformational Leadership and Teacher Self-Efficacy in Integrated Arts Schools* (Doctoral dissertation, Grand Canyon University).

Coyne, J., Lane, M., Nickson, L., Hollas, T., & Potter, J. P. (2017). Assessing pre-service teachers' attitudes and self-efficacy in using technology in the classroom. *Teacher Education and Practice*, *30*(4), 637-652.

Creswell, J. W. (2012). *Qualitative inquiry and research design: Choosing among five approaches (*3rd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W. (2014). *Research design: qualitative and quantitative approaches*. 4th ed. Thousand Oaks, CA: Sage

Croteau, J. L. (2014). *Online Formative Assessments as Predictors of Student Academic Success*. ScholarWorks.

Cumberland, K. M. (2019). *Examining General Educators' Instructional Practices Teaching Mathematics to K-8 Students with Disabilities* (Doctoral dissertation, Walden University).

Dangwal, K. L. (2017). Blended learning: An innovative approach. *Universal Journal of Educational Research*, *5*(1), 129-136.

Davies, R. J. (2019). Students' and teachers' perceptions of Moxtra as an online space for blended learning. *JALT CALL Journal*, *15*(2), 3-22.

Derbel, F. (2017). Blended Learning: Concept, emerging practices and future prospects. *In European Conference on e-Learning* (pp. 142-149). Academic Conferences International Limited.

Dieli, A. L. (2020). *Success Stories: Community College Teachers Using Technology to Engage Online Students* (Doctoral dissertation, Walden University).

Dogar, Y., Bedir, F., Bedir, D., Erhan, S., & Sen, I. (2019). Investigation of the self-efficacy and occupational attitude of students of the recreation Department of Tourism and Sport Sciences Faculties of Gazi and Atatürk Universities, Turkey. *Educational Research and Reviews*, *14*(2), 44-50

Doody, O., & Noonan, M. (2013). Preparing and conducting interviews to collect data. Nurse Researcher, 20(5), 28-32. doi:10.7748/nr2013.05.20.5.28. e327

Dwaik, R., Jweiless, A., & Shrouf, S. (2016). Using blended learning to enhance student learning in American literature courses. *Turkish Online Journal of Educational Technology-TOJET, 15*(2), 126-137.

Dwiyogo, W. D. (2018). Developing a blended learning-based method for problem-solving in capability learning. *Turkish Online Journal of Educational Technology- TOJET, 17*(1), 51-61.

El Firdoussi, S., Lachgar, M., Kabaili, H., Rochdi, A., Goujdami, D., & El Firdoussi, L. (2020). Assessing distance learning in higher education during the COVID-19 pandemic. Education Research International, 2020. https://doi.org/10.1155/2020/8890633

El Miniawi, H., & Brenjekjy, A. (2015). Educational technology, potentials, expectations, and challenges. *Procedia-Social and Behavioral Sciences, 174*, 1474-1480. doi.org/10.1016.2015.01.777

Elstad, E., & Christophersen, K. A. (2017). Perceptions of digital competency among student teachers: Contributing to the development of student teachers' instructional self-efficacy in technology-rich classrooms. *Education Sciences, 7*(1), 27.

Eryilmaz, M. (2015). The effectiveness of blended learning environments. *Contemporary Issues in Education Research (CIER), 8*(4), 251-256.

Fazal, M., & Bryant, M. (2019). Blended learning in middle school math: The question of effectiveness. *Journal of Online Learning Research*, *5*(1), 49-64.

Finnegan, M. (2021). The impact on student performance and experience of the move from face-to-face to online delivery in response to COVID-19: a case study in an Irish higher education institute. *All Ireland Journal of Higher Education*.

Fox, A. (2018). *Middle School Teachers' Technology Integration* (Doctoral dissertation, Walden University).

Fuhrer, C. (2021). *Instructional Strategies that Foster High School Students' Achievement in Blended Learning* (Doctoral dissertation, Walden University).

Gardner, L. (2020, March 29). COVID-19 has forced higher ed. to pivot to online learning. Here are 7 takeaways so far. *The Chronicle of Higher Education*.

Garner, B., & Oke, L. (2015). *Blended learning: Theoretical foundations*. Indiana Wesleyan University.

Gilkes, A. L. (2020). *Teachers' Knowledge and Self-Efficacy Beliefs as Factors Affecting Technology Integration Practices*. ScholarWorks.

Grants, P. (2018). US Department of Education. *Retrieved from*.

Grundmeyer, T., & Peters, R. (2016). Learning from the learners: Preparing future teachers to leverage the benefits of laptop computers. Computers in the Schools, 33(4), 253-273. doi: 10.1080/07380569.2017.1249757

Gulistan, M., Athar Hussain, M., & Mushtaq, M. (2017). Relationship between Mathematics teachers' self-efficacy and students' academic achievement at secondary level. *Bulletin of Education and Research*, *39*(3), 171-182.

Hall, A. B., & Trespalacios, J. (2019). Personalized professional learning and teacher self-efficacy for integrating technology in K–12 classrooms. *Journal of Digital Learning in Teacher Education*, *35*(4), 221-235.

Halverson, L. R., & Graham, C. R. (2019). Learner engagement in blended learning environments: A conceptual framework. *Online Learning*, *23*(2), 145–178. https://doi-org.ezp.waldenulibrary.org/10.24059/olj.v23i2.1481

Hamidah, J., & Said, I. (2019). Implementing blended learning toward students' self-efficacy in writing class: students and teachers' Voice. *Journal of English Education and Teaching*, *3*(3), 270-286. https://doi.org.ezp.waldenulibrary.org/10.33369/jeet.3.3.270-286

Harrison, C. D. (2021). Student Perceptions of Community of Inquiry in Blended Developmental Courses During the Covid-19 Pandemic (Doctoral dissertation, Walden University).

Henrie, C. R., Halverson, L. R., & Graham, C. R. (2015). Measuring student engagement in technology-mediated learning: A review. *Computers & Education*, 90, 36–53. https://doi:10.1016/j.compedu.2015.09.005

Henriksen, D., Mehta, R., & Rosenberg, J. (2019). Supporting a creatively focused technology fluent mindset among educators: Survey results from a five-year inquiry into teachers' confidence in using technology. *Journal of Technology and Teacher Education*, *27*(1), 63-95. Waynesville, NC USA: Society for Information Technology & Teacher Education. Retrieved May 4, 2020

from https://www-learntechlib-org.ezp.waldenulibrary.org/primary/p/184724/.

Hidayat Rafiola, R., Setyosari, P., Ligya Radjah, C., & Ramli, M. (2020). The effect of learning motivation, self-efficacy, and blended learning on students' achievement in the industrial revolution 4.0. *International Journal of Emerging Technologies in Learning,* 15(8), 71–82. https://doi-org.ezp.waldenulibrary.org/10.3991/ijet. v15i08.12525

Hiett, B. (2017). An examination of blended learning and the traditional classroom using achievement scores. (Doctoral dissertation, Walden University).

Hill, G. A. (2017). The 'tutorless' design studio: A radical experiment in blended learning. *Journal of Problem Based Learning in Higher Education*, *5*(1).

Hill, J. E., & Uribe-Florez, L. (2020). Understanding secondary school teachers' tpack and technology implementation in mathematics classrooms. *International Journal of Technology in Education*, *3*(1), 1-13.

Horn, M. B., & Fisher, J. F. (2017). New faces of blended learning. *Educational Leadership*, *74*(6), 59–63.

Horn, M. B., & Staker, H. (2015). *Blended: Using Disruptive Innovation to Improve Schools.* San Francisco, CA, USA: Jossey Bass.

Horn, M. B., & Staker, H. (2017). *Blended: Using disruptive innovation to improve schools*. John Wiley & Sons.

Hsu, C.-Y., Liang, J.-C., & Tsai, M.-J. (2020). Probing the structural relationships between teachers' beliefs about game-based teaching and their perceptions of

technological pedagogical and content knowledge of games. *Technology, Pedagogy & Education*, *29*(3), 297–309. DOI: 10.1080/1475939X.2020.1752296

Humphries, C. A., Hebert, E., Daigle, K., & Martin, J. (2012). "Development of a physical education teaching efficacy scale", Measurement in Physical Education and Exercise Science, Vol. 16 No. 4, pp. 284-299.

Huzzie-Brown, A. (2018). *Beliefs vs behavior of elementary teachers integrating technology in mathematics* (Doctoral dissertation, Walden University).

Irish, S. J. (2017). *A teacher retrospective of a decade of one-to-one devices* (Doctoral dissertation, Walden University).

Jacobs, J. (2016). High school of the future: Cutting edge model capitalizes on blended learning to take personalization further. *Education Next*, 16(3), 45-50. Retrieved from http://educationnext.org

Johnson, A. M., Jacovina, M. E., Russell, D. G., & Soto, C. M. (2016). Challenges and solutions when using technologies in the classroom. In *Adaptive Educational Technologies for Literacy Instruction* (pp. 13-30). Routledge.

Joo, Y. J., Park, S., & Lim, E. (2018). Factors influencing preservice teachers' intention to use technology: tpack, teacher self-efficacy, and technology acceptance model. *Journal of Educational Technology & Society*, 21(3), 48–59.

Kavanoz, S., Yüksel, H. G., & Özcan, E. (2015). Pre-service teachers' self-efficacy perceptions on Web Pedagogical Content Knowledge. *Computers & Education*, *85*, 94-101. https://doi.org/10.1016/j.compedu.2015.02.005

Kazu, I. Y., & Demirkol, M. (2014). Effect of blended learning environment model on high school students' academic achievement. In *Turkish Online Journal of Educational Technology - TOJET* (Vol. 13, Issue 1, pp. 78–87).

Kent, A. M., & Giles, R. M. (2017). Preservice teachers' technology self-efficacy. *SRATE Journal*, *26*(1), 9-20.

Keser, H., Karaoglan Yilmaz, F. G., & Yilmaz, R. (2015). TPACK competencies and technology integration self-efficacy perceptions of pre-service teachers. *Online Submission*, *14*(4), 1193-1207.

Keskin, S. (2019). Factors affecting students' preferences for online and blended learning: Motivational vs. cognitive. *European Journal of Open, Distance and E-Learning (EURODL)*, *22*(2), 72-86. DOI: 10.2478/eurodl-2019-0011

Knapp, W. (2017). The impact of TPACK and teacher technology efficacy on social studies teachers' use of technology in the classroom.

Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology & Teacher Education*, *9*(1), 60.

Koehler, M. J., Mishra, P., & Cain, W. (2013). What is technological pedagogical content knowledge (TPACK)? *Journal of Education, 193(3),* 13-19. doi: 10.1177/002205741319300303. Retrieved from http://www.jstor.org/stable/24636917

Kontas, H., & Özcan, B. (2017). adapting sources of middle school mathematics self-efficacy scale to Turkish Culture. *International Journal of Evaluation and Research in Education*, *6*(4), 288-294.

Kopcha, T. J., Ottenbreit-Leftwich, A., Jung, J., & Baser, D. (2014). Examining the TPACK framework through the convergent discriminant validity of two measures. *Computers & Education*, 78, 87-96. doi: 10.1016/j.compedu.2014.05.003

Korte, D. S. (2017). *The influence of social support on teacher self-efficacy in novice agricultural education teachers* (Doctoral dissertation, University of Missouri—Columbia).

Korte, D. S., & Simonsen, J. C. (2018). Influence of social support on teacher self-efficacy in novice agricultural education teachers. *Journal of Agricultural Education*, 59(3), 100-123 https://doi.org/10.5032/jae.2018.03100

Kukul, V., & Karatas, S. (2019). Computational thinking self-efficacy scale: development, validity, and reliability. *Informatics in Education, 18*(1), 151-164.

Kumar, S. (2019). an investigation of teachers' attitudes, concerns and self-efficacy toward inclusive education in STEM Classrooms. *Online Submission*.

Lambert, M. (2013). *A Beginner' s Guide to Doing Your Education Research Project*. Sage.

Lane, L. J., Jones, D., & Penny, G. R. (2019). Qualitative case study of teachers' morale in a turnaround school. *Research in Higher Education Journal*, *37*.

Li, K., Li, Y., & Franklin, T. (2016). Preservice teachers' intention to adopt technology in their future classrooms. *Journal of Educational Computing Research*, *54*(7), 946–966. https://doi-org.ezp.waldenulibrary.org/10.1177/0735633116641694

Li, L., Worch, E., Zhou, Y., & Aguiton, R. (2015). How and why digital generation teachers use technology in the classroom: An explanatory sequential mixed methods study. *International Journal for the Scholarship of Teaching and Learning*, *9*(2), 9.

Lin, Y. W., Tseng, C. L., & Chiang, P. J. (2017). The Effect of Blended Learning in Mathematics Course. *Eurasia Journal of Mathematics, Science & Technology Education*, *13*(3).

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, California: SAGE Publications, Inc.

Lloyd, S. H. (2016). P*reschool teachers' attitudes and beliefs toward science* (Doctoral dissertation, Walden University).

Lugar, D. J. (2017). *Identifying professional development needs of high school teachers tasked with online course design* (Doctoral dissertation, Walden University).

Luo, Y., Permzadian, V., Fan, J., & Meng, H. (2019). Employees' social self-efficacy and work outcomes: Testing the mediating role of social status. *Journal of Career Assessment*, *27*(4), 661–674. https://doi-org.ezp.waldenulibrary.org/10.1177/1069072718795401

Malinauskas, R. K. (2017). Enhancing of self-efficacy in teacher education students. *European Journal of Contemporary Education*, *6*(4), 732-738.

Manglicmot, T. M. (2015). *Relationship between teacher self-efficacy, outcome expectations and the level of technology integration in secondary classrooms*. The College of William and Mary.

Marshall, D. D. (2018). *Blended Learning as an Instructional Strategy to Improve Academic Performance* (Doctoral dissertation, Walden University).

Marshall-Stuart, D. D. (2018). *Blended learning as an Instructional Strategy to Improve Academic Performance* (Doctoral dissertation, Walden University).

Martin, J. G. (2016). Exploring *college instructors' integration of technology into their curriculum*. (Doctoral dissertation, Walden University).

Mau, D. (2016). A *case study of middle schools teachers' perceptions of the use of classroom websites* (Doctoral dissertation, Walden University).

McDavid, L., Parker, L. C., Burgess, W., Robertshaw, B., & Doan, T. (2018). The combined effect of learning space and faculty self-efficacy to use student-centered practices on teaching experiences and student engagement. *Journal of Learning Spaces.* 7(1), 29-44.

McKim, A. J., & Velez, J. J. (2016). An evaluation of the self-efficacy theory in agricultural education. *Journal of Agricultural Education*, *57*(1), 73-90.

McKinley, C. S. (2021). Secondary Educator Experiences Managing Digital Resources (Doctoral dissertation, Walden University).

Mehmood, N. (2019). Factors impacting EFL teachers' self-efficacy: A theoretical perspective. *English Language Teaching*, *12*(4), 39-48.

Meier, D. (2016). Situational leadership theory as a foundation for a blended learning framework. *Journal of Education and Practice, 7*(10), 25-30.

Menon, D., Chandrasekhar, M., Kosztin, D., & Steinhoff, D. (2017). Examining preservice elementary teachers' technology self-efficacy: Impact of mobile technology-based physics curriculum. *Contemporary Issues in Technology and Teacher Education*, *17*(3), 336-359

Merriam, S. B. (2009). *Qualitative research a guide to design and implementation*, San Francisco, CA: Jossey-Bass.

Merriam, S. B., & Tisdell, E. J. (2016). Designing your study and selecting a sample. *Qualitative research: A guide to design and implementation*, 73-104. doi:10.1177/0741713616671930

Mese, C., & Dursun, O. O. (2019). Effectiveness of gamification elements in blended learning environments. *Turkish Online Journal of Distance Education*, 20(3), 119–142.

Mesecar, D. (2015). Education technology in the every student succeeds act. *American Action Forum.* Retrieved from https://www.americanactionforum.org/insight/education-technology-in-the-every-student-succeeds-act.

Mishra, P., & Koehler, M. (2006). TPACK: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.

Mokhtari, A. (2019). *Mobile-based assessment and Iranian college students' motivation, self-efficacy, and academic performance* (Doctoral dissertation, Walden University).

Montoya, D. E. (2018). *Self-efficacy of novice and experienced special education teachers of english learners*. (Doctoral dissertation, Walden University).

Morris, L. M. (2018). P*rofessional development for one-to-one mobile technology programs*. (Doctoral dissertation, Walden University).

Moskal, P., Dziuban, C., & Hartman, J. (2013). Blended learning: A dangerous idea?. *The Internet and Higher Education, 18,* 15-23.

Mukherjee, M. L. (2017). *Elementary teachers' perceptions of self-efficacy when using a scripted reading* (Doctoral dissertation, Walden University).

Noonan, A. (2018). *Middle school teachers' technology integration* (Doctoral dissertation, Walden University).

O'Neal, L. J., Gibson, P., & Cotten, S. R. (2017). Elementary school teachers' beliefs about the role of technology in 21st Century teaching and learning. Computers in the Schools, 34(3), 192-206. doi: 10.1080/07380569.2017.1347443

Ortiz-Brewster, B. (2016). *Examining US middle school students' achievement in a blended learning environment*. (Doctoral dissertation, Walden University).

Owston, R. (2018). Empowering learners through blended learning. *International Journal on E-Learning, 17*(1), 65-83. Waynesville, NC USA: Association for the Advancement of Computing in Education (AACE). Retrieved December 30, 2018 from https://www.learntechlib.org/primary/p/177966/.

Özdemir, M. (2016). An examination of the techno-pedagogical education competencies (TPACK) of pre-service elementary school and preschool teachers. *Journal of Education and Training Studies, 4*(10), 70-78.

Pace, J. R., & Mellard, D. F. (2016). Reading achievement and reading efficacy changes for middle school students with disabilities through blended learning instruction. *Journal of Special Education Technology, 31*(3), 156-169. doi:10.1177/0162643416660837

Padmavathi, M. (2017). Preparing teachers for technology based teaching-learning using TPACK. *Journal on School Educational Technology*, *12*(3), 1-9.

Patrick, W. P. (2016). *Teacher perception of technology as a conduit to acquiring critical thinking skills*. (Doctoral dissertation, Walden University).

Patton, M. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA:Sage.

Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). Thousand Oaks, CA: Sage.

Peker, M., Erol, R., & Gultekin, M. (2018). Investigation of the teacher self-efficacy beliefs of math teachers. *MOJES: Malaysian Online Journal of Educational Sciences, 6*(4), 1-11.

Picciano, A. G. (2017). Theories and frameworks for online education: seeking an integrated model. *Online Learning, 21*(3), 166-190.

Piotrowski, A., & Witte, S. (2016). Flipped learning and TPACK construction in English education. *International Journal of Technology in Teaching and Learning*, *12*(1), 33-46.

Porter, W. W., & Graham, C. R. (2016). Institutional drivers and barriers to faculty adoption of blended learning in higher education. *British Journal of Educational Technology*, *47* (4), 748- 762.

Purnawarman, P., Susilawati, S., & Sundayana, W. (2016). The use of Edmodo in teaching writing in a blended learning setting. *Indonesian Journal of Applied Linguistics*, *5*(2), 242-252.

Qasem, A. A. A., & Viswanathappa, G. (2016). Blended learning approach to develop the teachers' TPACK. *Contemporary Educational Technology*, *7*(3), 264-276.

Rahmat, H., Mashudi, R., Razak, M. H. A., Hamid, N. H. A., & Rahmat, N. (2019). The readiness of MMU lecturers towards the implementation of blended learning. *e-Bangi*, *16*(1).

Rajkoomar, M., & Raju, J. (2016). A framework using blended Learning for innovative teaching and learning. *Res Rev J Educ Stud*, *2*, 1-9.

Ravitch, S. M., & Carl, N. M. (2016). *Qualitative research: Bridging the conceptual, theoretical, and methodological*. Thousand Oaks, CA: Sage Publications.

Raymond, S. (2019). *High School Teacher Perceptions of Blended Learning*. ScholarWorks.

Rivera, J. H. (2017). The blended learning environment: A viable alternative for special needs students. *Journal of Education and Training Studies*, *5*(2), 79-84. doi:10.11114/jets.v5i2.2125

Rogala, A., Szczepaniak, M., Michalak, N., & Andersson, G. (2020). Internet-based self-help intervention aimed at increasing social self-efficacy among internal migrants in Poland: Study protocol for a randomized controlled trial. *Internet Interventions, 21*. https://doi-org.ezp.waldenulibrary.org/10.1016/j.invent.2020.100322

Rubin, H. J., & Rubin, I. S. (2012). *Qualitative interviewing: The art of hearing data*. SAGE Publications.

Rufatto, R., Dickin, H., Florescu, A., Lorch, C., Bremigan, R., & Lorch, J. (2016). Learner-centered pedagogy in a liberal arts mathematics course. *Primus*, 26(9), 863-877. Retrieved from http://www.tandfonline.com/loi/upri20

Saboowala, R., & Manghirmalani Mishra, P. (2021). Readiness of in-service teachers toward a blended learning approach as a learning pedagogy in the post-COVID-19 Era. *Journal of Educational Technology Systems*, *50*(1), 9–23. https://doi-org.ezp.waldenulibrary.org/10.1177/00472395211015232

Saldaña, J. (2016). *The coding manual for qualitative researchers.* SAGE Publications.

Saltan, F. (2017). Blended learning experience of students participating pedagogical formation program: Advantages and limitation of blended education. *International Journal of Higher Education*, *6*(1), 63-73.

Saudelli, M. G., & Ciampa, K. (2016). Exploring the role of TPACK and teacher self-efficacy: An ethnographic case study of three iPad language arts classes. *Technology, Pedagogy and Education*, *25*(2), 227-247. DOI: 10.1080/1475939X.2014.979865

Saulius, T., & Malinauskas, R. K. (2019). Students' experiences of philosophy classes in higher education: A case study. *European Journal of Contemporary Education*, *8*(4), 879-888.DOI: 10.13187/ejced.2019.4.879

Seidman, I. (2006). *Interviewing as qualitative research: A guide for researchers in education and the social sciences*. Teachers college press.

Seraji, F., Attaran, M., & Azizi, S. M. (2019). Blended learning researches in Iran: several fundamental criticisms. *Digital Education Review*, (36), 190-206.

Setiawan, I., Hamra, A., Jabu, B., & Susilo, S. (2018). Exploring a teacher educator's experiences in modeling TPACK to create English language multimedia in technology courses. *Journal of Language Teaching and Research*, *9*(5), 1041-1052.

Shamsuddin, N., & Kaur, J. (2020). Students' learning style and its effect on blended learning, does it matter? *International Journal of Evaluation and Research in Education*, *9*(1), 195-202.

Sharp, A. C., Brandt, L., Tuft, E. A., & Jay, S. (2016). relationship of self-efficacy and teacher knowledge for prospective elementary education teachers. *Universal Journal of Educational Research*, 4(10), 2432-2439.Shulman, L. S. (1986). Those

who understand knowledge growth in teaching. *Educational Researcher, 15*4-14. doi:10.3102/0013189X015002004

Shi, H. (2018). English language learners' strategy use and self-efficacy beliefs in English language learning. *Journal of International Students*, *8*(2), 724–741. Retrieved from https://search-ebscohost com.ezp.waldenulibrary.org/login.aspx?direct=true&db=eric&AN=EJ1180874&site=eds-live&scope=site

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*4-14. doi:10.3102/0013189X015002004

Sickel, J. L. (2019). The great media debate and TPACK: A multidisciplinary examination of the role of technology in teaching and learning. *Journal of Research on Technology in Education,* 1-14.

Silva, T. B. (2016). *The effects of the i-Ready computer assisted instruction program on the reading and fluency achievement of first graders* (Doctoral dissertation, California State University, Stanislaus).

Simpson, J. (2016). Authentic learning – does it improve pass rates and student satisfaction? *Journal of Perspectives in Applied Academic Practice*, *4*(2), 62–70.

Simsek, Ö., & Sarsar, F. (2019). Investigation of the self-efficacy of the teachers in technological pedagogical content knowledge and their use of information and communication technologies. *World Journal of Education*, *9*(1), 196-208.

Somera, S. L. (2018). *Educator experiences transitioning to a blended learning environment in k-6 public.* (Doctoral dissertation, Walden University).

Sorbie, J. I. (2015). *Exploring teacher perceptions of blended learning*. (Doctoral dissertation, Walden University).

Spearman, M. M. (2020). 2020–24 South Carolina educational technology plan: empowering education with technology.

Sriwichai, C. (2020). Students' readiness and problems in learning English through blended learning environment. *Asian Journal of Education and Training*, *6*(1), 23-34.

Staker, H., & Horn, M. B. (2012). Classifying K-12 blended learning. *Innosight Institute*.

Suana, W., Distrik, I. W., Herlina, K., Maharta, N., & Putri, N. M. A. A. (2019). Supporting blended learning using mobile instant messaging application: its effectiveness and limitations. *International Journal of Instruction*, *12*(1), 1011–1024.

Sulaiman, N. A. (2018). Implementing blended learning and flipped learning models in the university classroom: A case study. *Teaching English with Technology*, *18*(4), 34–47.

Tanduklangi, A., & Lio, A. (2019). Classroom action research in teaching English for senior high school students through blended learning in Kendari of Indonesia, *Journal of e-Learning and Knowledge Society*, v.15, n.1, 169-182. ISSN: 1826-6223, e-ISSN:1971-8829 DOI: 10.20368/1971-8829/1579

Tang, C. M., & Chaw, L. Y. (2016). digital literacy: a prerequisite for effective learning in a blended learning environment? *Electronic Journal of E-Learning*, *14*(1), 54-65.

Thompson, D. J. (2015). *Elementary school teachers' perceptions of the process of integrating technology.* (Doctoral dissertation, Walden University).

Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: a systematic review of qualitative evidence. *Educational Technology Research and Development, 65*(3), 555-575.

Tsui, C. (2018). Teacher efficacy: a case study of faculty beliefs in an English-medium instruction teacher training program. *Taiwan Journal of TESOL*, 15(1), 101-128: DOI:10.30397/TJTESOL.201804_15(1).0004

Ünal, E., Yamaç, A., & Uzun, A. M. (2017). The effect of the teaching practice course on pre- service elementary teachers' technology integration self-efficacy. *Malaysian Online Journal of Educational Technology*, 5(3), 39-53.

VanDykGibson, J. L. (2016). *K-12 Educational technology implementations: A Delphi Study* (Doctoral dissertation, Walden University).

Varthis, S., Randi, A., & Tarnow, D. P. (2016). Prevalence of interproximal open contacts between single-implant restorations and adjacent teeth. *International Journal of Oral & Maxillofacial Implants, 31*(5).

Vogt, S. (2018). *Middle school teachers' use and perceptions of digital game-based learning*. (Doctoral dissertation, Walden University).

Walker, L. R., & Shepard, M. (2011). Phenomenological investigation of elementary school teachers who successfully integrated instructional technology into the

curriculum. *Journal of Educational Research and Practice, 1*(1), 23-35. DOI:10.5590/JERAP.2011.01.01.02

Weimer, M. (2013). *Learner-centered teaching: Five key changes to practice* (2nd ed.). San Francisco, CA: Jossey-Bass.

Whyte, M. L. (2017). *Middle school literacy teachers' perceptions of their self-efficacy to teach reading standards* (Doctoral dissertation, Walden University).

Williams-Buffonge, N. A. G. (2021). *Caribbean Lecturers' Self-Efficacy and Their Perceived Barriers to Technology Adoption* (Doctoral dissertation, Walden University).

Willmann, K. L. (2017). *Examining the integration of technology in the early childhood classroom.* (Doctoral dissertation, Walden University).

Wilson, K. (2018). *Teachers' experiences that influence their self-efficacy to foster student creativity* (Doctoral dissertation, Walden University).

Wong, K. T., Hamzah, M. S. G., Goh, P. S. C., & Yeop, M. A. B. (2016). Blended e-learning acceptance as smart pedagogical tools: An initial study in Malaysia. *Turkish Online Journal of Educational Technology-TOJET, 15*(4), 25-31.

Wright, B., & Akgunduz, D. (2018). The relationship between technological pedagogical content knowledge (TPACK) self-efficacy belief levels and the usage of web 2.0 applications of pre-service science teachers. *World Journal on Educational Technology: Current Issues, 10*(1), 52-69, 70-87.

Wyatt, M. (2015). Using qualitative research methods to assess the degree of fit between teachers' reported self-efficacy beliefs and their practical knowledge during teacher education. *Australian Journal of Teacher Education (Online)*, *40*(1), 117-145.

Yao, C. (2019). A case study of Chinese adult learners' English acquisition in a blended learning environment. *Australian Journal of Adult Learning*, *59*(1), 115-135.

Yildirim, N. (2015). Professional readiness level of candidate teachers: a qualitative evaluation. *Journal of Education and Training Studies*, 4(3), 72-81. doi:10.11114/jets.v4i3.1232

Yildiz Durak, H. (2019). Modeling of relations between K-12 teachers' TPACK levels and their technology integration self-efficacy, technology literacy levels, attitudes toward technology and usage objectives of social networks. *Interactive Learning Environments*, 1-27.

Yin, R. K. (2014). *Case study research design and methods* (5th ed.). Thousand Oaks, CA: Sage Publications, Inc

Yin, R. K. (2016). *Qualitative research from start to finish* (Second). *New York: The*.

Yin, R. K. (2018). *Case study research and applications*. d*esign and methods.* 6th edition. Thousand Oaks, California: Sage Publishing

Zeydel, K. (2019). *Instructional Strategies Within a Blended Learning Model for At-Risk Students* (Doctoral dissertation, Walden University).

Zilka, G. C., Cohen, R., & Rahimi, I. D. (2018). Teacher presence and social presence in virtual and blended courses. *Journal of Information Technology Education: Research*, 17, 103–126.

Zullig, K., & Valois, R. (2018). A preliminary study measuring social self-efficacy among early adolescents and its association with aggressive behavior. *Journal of School Violence*, *18*(4), 498–509. https://doi-org.ezp.waldenulibrary.org/10.1080/15388220.2018.1553718

Appendix A: Interview Protocol

Name of interviewer: _____

Interview Date: _____ Interview Location: _____

Interview Start Time: _____ Interview Stop Time: _____

Interviewee's Name_____ _____ Years with District_____

Grade level(s) _____ Content Area(s) _____

RQ1: -How do high school teachers perceive their ability to implement blended learning with their students?

- What are your beliefs on using technology in different learning activities with your students? How often do you include technology usage in your lessons?
- What influenced your decision to use technology and become involved with using a blended learning model?
- How has your teaching experiences influenced your views on using technology to teach?
- Describe how blended learning has impacted you as a teacher.

RQ2: What support do they need to use blended learning effectively?

- What type(s) of invested time have you put into learning how to incorporate blended learning and technology in your classroom? Did you attend technology training sessions, or did you explore independently?
- How has the time spent during your learning process influenced your belief in your capabilities in using technology in your classroom?
- How supported do you feel the following stakeholders were in your implementation of blended learning. ---District Administration, ----Building Administrators, Colleagues and --- Technology Department.

RQ3: How are high school teachers using blended learning in their instructional practices?

- How do you use blended learning model in your instruction?
- What technology applications do you include in your teaching to effectively implement blended learning?

RQ4: What successes are high school teachers experiencing in integrating technology and blended learning in their instructional practices.

- How do you know if the technology tools you choose to use would help or negatively impact your instruction? How did you deal with the negative impact of technology in your classroom?

- With regards to reluctant teachers in using technology in their classroom regularly, what suggestions or recommendations do you have for them?
- Describe a lesson or two you felt went well due to technology integration. Explain what made the lesson a success?

AFTER the Interview

Thank you for allowing me to interview you. You will be contacted via email or a phone call if I need to do a follow-up interview. Do you have any questions or concerns?

Appendix B: Classroom Observation Protocol

Observation Date:_____ Location:_____
Observation Start Time: _____ Observation Stop Time: _____ Class size: ___
Teacher's Name_____ Content Area_____
Grade level(s) _____ Lesson Topic: _____

1. **Describe the classroom environment.**

_____

_____

_____

_____

2. **Describe how the teacher used a blended learning model in the classroom.**

_____

_____

_____

_____

3. **Identify the technology tools that were used during the instruction/observation period?**

_____

_____

_____

_____

4. **Were there any issues with technology observed? No____, Yes_____ How was it resolved?**

_____

_____

_____

Circle, comment or put a checkmark under the most appropriate answer.

Observed Activities	Yes	No	Comments
5. Use of groupings: Individual, pairs, more than two			
6. The teacher used technology during instruction.			
7. Students activities required technology usage			
8. Lesson/activity involved individualization of technology usage.			
9. The teacher gave explicit instructions on how to use an appropriate technology tool to complete activities.			
10. The teacher showed confidence in using technology to teach.			
11. Was the classroom environment equip with technological devices for each student?			
12. Did the teacher give feedback via technology only____, verbal only____, or both____?			

Appendix C: Alternative to Classroom Observation

Due to the pandemic (COVID-19), it may not be possible for the researcher to observe a Blended Learning Environment physically; therefore, teachers are being asked to describe what their blended learning environment experiences were like before the pandemic.

School Name and Location: _____ Class size: ____
Teacher's Name_____ Content Area_____
Grade level(s) _____ Blended Model Use: _____

1. **Describe your general classroom environment layout.**

_____

_____

_____

_____

_____

_____

2. **How have you used the blended learning model in the classroom.**

_____

_____

_____

_____

_____

_____

3. **Identify the technology tools that you have used the most during the instructions?**

_____

_____

4. **How often did you have issues with technology? Every day_____, less than two times per week____, more than three times per week____, Never____. If you did, how was it resolved?**

Activities	Yes	No	Comments
5. Use of groupings: Individual, pairs, more than two			
6. Did most of the students' activities require more than on technology to complete?			
7. Did student activities required individualized use of technology, or did they share?			
8. Did you feel confident at all times while using technology to teach?			
9. Was the classroom environment equip with technological devices for each student?			
10. How did you generally give feedback to your students: select one? via technology only____, verbal only____, or both____?			

Appendix D: Codebook

Table D1

Codebook with Codes, Themes, Descriptions, and Quotes for the Research Questions

RQ1. : - How do high school teachers perceive their ability to implement blended learning with their students?				
Codes	**Categories**	**Themes**	**Descriptions**	**Quotes**
-Adapt to changes. -Forced to use technology -Technology is new norm	Ways of thinking	Beliefs	Participants described their ability to use technology with their students.	"It was forced upon me." Teacher 2. "I believe that technology is the new norm,....humans must adapt to those changes and implemented as much as possible so that we can prepare students for the real world." Teacher 1. "... all they know is technology .....so, to teach without technology, we will be doing them a disservice,... I do believe that we have to, it's almost a requirement that we do teach with technology..., whenever we can." Teacher 3. "I believe heavily in using technology, I have been teaching for a while and I have all lessons online and now that I'm teaching virtual, it's like nothing to me." Teacher 4. "I think the implementation of technology is absolutely essential." Teacher 10
-Geeky -Fearless and willing to try anything -Computer literate	Worthy of doing and using daily	Self-Efficacy	Participants described how often they include technology in their lessons and	"I usually don't." Teacher 2 "Pretty much every day." Teacher 1

-Ease of technology exploration -Role models -Personal explorations -Abilities -Capabilities -Experiences -Practice -Reluctant -Daily -Everyday			how their experiences influenced their views on using technology and blending learning.	"Absolutely every day. Teacher 9 "I'm known as the tech girl," and "I've just gotten more confident over the years with implementing technology." Teacher 10 "I already felt pretty confident using technology in my classroom, especially with my graduate program because I have my master's degree and they taught us how to implement technology." Teacher 10
-COVID-19 pandemic -Daily usage expectation -Technology integration during personal studies -Real world preparation -Forced -Role model -Academic programs -Training -Training sessions -Student's way of life -Pandemic -Virtual Platform -Teaching Environment	Environmental Effects	Influenced	Participants described what influenced their decision to use technology and become involved with using a blended learning model.	"It was forced upon me. All teacher had to become computer literate. Teacher 2 "Our district was probably the first or second district in the state of South Carolina, that went one to one computing with students. So, for them to make this step, sort of force, teachers, force me to include technology in my instruction." Teacher 3 "In my teaching program, they had us doing everything, all of our lesson plans had to have a technology inserted into it." Teacher 10 "I would say the pandemic." Teacher 1
RQ2. :- What support do they need to use blended learning effectively?				
Codes	**Categories**	**Themes**	**Descriptions**	**Quotes**
-Mentors -Learning from others -Learning by trial and error	Educational Practices	Training	Participants described the time spent to learning to incorporate	"...if you don't learn technology as an educator, I don't know how you are going to reach your students." Teacher 9

-Professional Development -Continuous Education -Individual research -Practice -Teaching Experiences			blended learning and technology.	"I attend every possible training there is and I do it on my own time." Teacher 4 "They structure trainings, I mean, every day, to the point where we would get upset because here you have yet another training." Teacher 3 "I have spent countless hours trying to look into technology." Teacher 10
-Technology Usage -Pandemic -Teaching Experiences-past and present -Capabilities -Teacher Knowledge -Confidence -Technology Availability	Technology Usage	TPACK	Participants described how their training influenced their beliefs in their capabilities in using technology.	"I think they very serious about this technology, they certainly put a lot of money around the technology in the district, and they were very serious about having us use it." Teacher 3 "I didn't use a lot of technology infusion in my classroom lessons, ...because it was so small it was so much easier for me to just print paper packets...I wasn't a big fan of Google Classroom but then after the pandemic hit, and we were forced to go to a virtual learning a blended learning, we had to get this quick, fast, training and everybody had to get on board." Teacher 8 "So, I already felt pretty confident using technology in my classroom... I'll usually go in on the teacher side and the student side kind of see what it's going to be like on both ends. If it's confusing on either end it's kind of a no. if it's confusing on my end but not so much on there's if

				it's like super seamless for them." Teacher 10 "Well, like day by day, Google classroom where all my materials are. Sometimes I make interactive forms for kids to add things to for discussion." Teacher 4
-Stakeholders -Students -Preparation Time	Stakeholders Offering help	Support	Participants described the support received from stakeholders.	"Definitely colleagues and the tech department, especially... are awesome." Teacher 4 "...there has not been anything different, or new that we were given to really incorporate into our blended learning style." Teacher 5 "I think at the school they offer a lot of options to gain your access into technology, ...and, I believe that I've definitely had a lot of help, and I know that I can go to them for resources, if I ever need anything." Teacher 7 "I haven't seen where I've not gotten any support because anything that I feel that I'm lacking and I don't know, if I go to my department head or the assistant principal, or instructional coach if they don't know the answer, they'll find it for me." Teacher 8 "They were very supportive." Teacher 3

RQ3 :- How are high school teachers using blended learning in their instructional practices?

Codes	**Categories**	**Themes**	**Descriptions**	**Quotes**

-Face-to-face -Virtual -Instructional Practices -Flexibility	Learning Environment	Blended Learning	Participants describing blended learning model usage.	"...our program is a blended program." Teacher 5 "I do kinda like rotation." Teacher 10 "I try not to do more than two or three different apps or technology pieces in the blended learning." Teacher 3 "It allowed me to realize that students learn differently and with the blended learning model, you have to be able to make sure you reach students in capacity..., have safe havens in place for the students that are struggling." Teacher 1
-Technology Applications -Infused with teenager's lifestyle -Practices	Applications	Implementation	Participants describing the Blended Learning Applications and technology they use.	"There is a lot of YouTube channels that I used to help supplement game development, animation designs, and others." Teacher 6 "Khan Academy is decently good." Teacher 10 "I also use n2y, Unique learning systems, and Kanims." Teacher 2 "There's achieved 3000, brain pop. Well, I use some things from Flocabulary... I rely heavily on the Ed puzzle interactive tutorial." Teacher 8
-Instructional Models -Teaching and Learning	Teaching Environment	Learning Platform	Participants describing their teaching and learning platform during the interview.	"Virtually using zoom as well as digitally or using the, the mediums, in my case it's Google classroom, and some of the other classes is SC virtual." Teacher 5

				"...that is Google Classroom." Teacher 8 "Hybrid, its works for me." Teacher 4 "...using the virtual and blended learning, you infuse so much more into your instructions." Teacher 8

RQ4:- What successes are high school teachers experiencing in integrating technology and blended learning in their instructional practices?

Codes	**Categories**	**Themes**	**Descriptions**	**Quotes**
-Positive -Negative	Technology Issues	Impact	Participants described dealing with the negative and positive impact of technology.	"The tools support visual learners." Teacher 1 "I'll make a document with pictures so I'll put links pictures and make like a flow chart, so that they can see like this." Teacher 10 "The only negative impact of technology is when we have the system goes down as far as the loss of power." Teacher8 "...if we are doing something or trying something that we find that it is not given us to the results that we need then we revise we adapt or we may change in order to get the intended result that we are looking for." Teacher 5 "Monitor and adjust, try to have a plan B or backup plan." Teacher 1 "Usually use alternative lesson plans." Teacher 6
-Recommendation -Teacher Encouragement -Self-Evaluate	Reluctant Teachers	Reluctancy	Participants making recommendations for teachers	"Take baby steps, crawl before you walk... and try to stay positive as you learn" Teacher 1

			who are reluctant to include technology in their instructions.	"They need to try it. I would suggest you get on the ball, and you learn what you're doing. Computers are going to be with us from here on out and speaking particularly about myself. I have to do it if I want to be successful, and to go ahead." Teacher 2 "Don't shut it out completely before you've actually given it a chance." Teacher 7. "...just try one thing, just figure it out, pick one thing, ...have your kids do it repeatedly, maybe just in one class and see how they do," and "You need to do stuff outside your comfort zone to learn and grow." Teacher 10 "Team teach with a teacher who uses it flawlessly." Teacher 3
-Technology Tools -Lesson Success -Innovation -Resolution -Content Area -Culture	Lesson Successes	Technology Integration Success	Participants describing their success in using technology and blended learning.	"...it kept the kids engaged, and they seem to be interested." Teacher 3 "Well, they have three tries to get three correct...and if you get three out of three, they are awarded a certificate." Teacher 2 "I would then throw them into a kahoot game or quizzes to get immediate feedback and many of them would say, can I go with that, can I do it again, I know what I did. So, I look at that as actually the sole purpose of teaching not just measuring." Teacher 4

		"...learn why simulation is important by running an actual simulation. It is successful because students were engaged. They watched videos on it, they were able to do research themselves and actually produce the goals from the simulation by finding the correlations between different aspects of the simulations." Teacher 6

Note: Table 12 shows a codebook with the codes, categories, themes, descriptions and quotes from some of the participants. Adopted from the Publication manual of American Psychological Association (7th ed.). (2020). https://doi.org/10.1037/0000165-000. Saldaña, J. (2016). *The coding manual for qualitative researchers.* Thousand Oaks, CA: Sage