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Instructional Strategies that Foster High School Students' Achievement in Blended Learning

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
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Abstract

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by

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MA, Walden University, 2011

BS, Purdue University, 1989

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

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May 2021

Abstract

Blended learning has become an alternative method to promote student achievement in a technology-orientated society. Students enrolled in blended learning classes in a midwestern suburban high school are outperforming students in the traditional face-to-face classes on standardized tests, yet there was little information about the instructional strategies used in the blended learning classroom that result in higher student achievement. The purpose of this qualitative instrumental case study was to explore what instructional strategies were implemented to foster student achievement in a successful high school English and social studies blended learning program. The focus of the study was to understand which instructional strategies were implemented in the blended learning environment. To explore this issue, the conceptual framework was connectivism with the fundamental principle that knowledge is built by connecting nodes. Five English and five social studies blended learning teachers with at least two years of teaching experience participated in this study. Data sources were interviews of teachers and an audit of the teachers' learning management systems. Data were analyzed using lean coding and then examined for emerging themes. Teachers indicated small group instructional strategies were essential to allow students to analyze nodes and build new knowledge. The majority of teachers also used a flipped method of instruction. Another important finding was the study site implementing best practices to foster student achievement. Implications for positive social change include a teacher or a school implementing at least one to two of the study's outcomes to foster student achievement in blended learning classes.

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Dedication

This study is dedicated to my husband, children, friends, and superintendent. I am very grateful to my husband who proofread every doctoral paper I wrote. I am also thankful for the support and encouragement from my children, Cathie and Sean. I want to thank my friends for their encouragement, especially Michelle, who understood the dedication and hard work needed to complete a dissertation because she just finished her own dissertation when I started. Finally, I want to thank my superintendent, who encouraged me to start my dissertation. He asked me the day he hired me as a department chair when I was going to start my doctoral degree.

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Chapter 1: Introduction to the Study

The changes in information and communication technologies (ICT) have affected how people communicate and obtain information. In this technology-based era, students are learning differently (Ma'arop & Embi, 2016). The availability of a wide range of educational technologies has caused a critical demand in education for focusing on learning how to learn (Tomas et al., 2015). The traditional face-to-face classroom is no longer an ideal learning situation for some students (Ma'arop & Embi, 2016). The demand to meet students' needs requires schools to examine their pedagogical approaches to help individuals not only retrieve information from the internet but be able to analyze, understand, and evaluate it (Greene & Hale, 2017). One such transformation has been the development of blended learning models. Blended learning is also referred to as hybrid learning, flipped classroom, mixed-method instruction, and e-learning (Bowyer & Chambers, 2017). There are several definitions and varieties of blended learning. One accepted definition of blended learning is the purposeful integration of face-to-face instruction and online learning (Lai et al., 2016). Blended learning is becoming a new education trend (Ma'arop & Embi, 2016).

Blended learning is changing pedagogical approaches and is providing students with more opportunities. Blended learning incorporates the best of face-to-face learning and e-learning (Suprabha & Subramonian, 2015). School administrators are promoting blended learning courses to change from teacher-centered instruction to student-centered or student-driven instruction (Tamim, 2018). The blended learning model offers teachers the ability to personalize learning by differentiating instruction (Banister & Reinhart,

2015). Blended learning also provides students with flexibility over time and location to engage in their learning activities (Zhang & Zhu, 2018). However, not all the research on blended learning has supported the instructional change.

Research on the effectiveness of blended learning has been inconsistent in findings. Several researchers discovered students in blended learning courses outscored students in traditional face-to-face classrooms (Akgündüz & Akınoğlu, 2017; Banditvilai, 2016; Cimen & Yilmaz, 2017; Greene & Hale, 2017; Zhang & Zhu, 2018). On the other hand, other researchers found no achievement differences among students in a blended learning courses versus and traditional courses (Balentyne & Varga, 2016; Chingos et al., 2017; Jovanovic et al., 2015). Contrary to those results, some researchers discovered students in traditional face-to-face classes outperformed students in blended learning classes (Adams et al., 2015; Evans, 2015; Lowes et al., 2016). The research does not explain why there is a difference in student achievement from one program to another. Further research is needed to determine why there is a difference in student achievement from one blended course to another.

One factor that could make a difference in student achievement in blended courses is the instructional strategies. According to McLaughlin et al. (2015), increased student achievement in blended learning courses may be due to students learning basic content online and using class time for student-centered activities. Students can continue their collaboration online by using online tools such as email, blogs, and chat rooms (Okaz, 2015). Little research has been conducted at the high school level on what instructional strategies help improve student achievement in blended learning classes

(Greene & Hale, 2017). Therefore, further research is needed to determine which instructional strategies promote student achievement in blended learning (Morgan, 2015; Smirnova et al., 2018).

The purpose of this qualitative instrumental case study was to explore what instructional strategies were implemented to foster student achievement in a successful high school English and social studies *blended learning* program. For this study, blended learning was defined as

> a formal educational program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home (Study site, n.d., para.1).

In addition, a successful blended learning program was defined as a blended learning program with students in blended learning classes academically matching or outperforming students in traditional face-to-face classes. The theory guiding this study was connectivism based on the works of Siemens (2005) and Downes (2005, 2008, 2010) as it explains the connections between instructional strategies used in blended learning classes to help students connect different sources of information to form new knowledge. This study's results provide detailed information about some instructional strategies found to foster student achievement in blended learning classes. Teachers may use these instructional strategies in future blended learning courses to engage students and promote student achievement. Chapter 1 of this dissertation includes background information about blended learning and the blended learning program being studied, the problem

statement for the study, the study's purpose, and research questions. Also included in this chapter is the explanation of how the connectivism theory supports the problem, purpose, and research questions.

Background

High school students have had the ability to use technology to instantly access information most of their lives. Technology has changed how students learn and has driven change in education (Greene & Hale, 2017). One of these educational trends has been using virtual education, such as blended learning, to enhance learning. Blended learning combines face-to-face and online instruction (Asarta & Schmidt, 2017). Blended learning has increased in popularity and was developed to foster students' achievement growing up in the digital age (Ellis et al., 2016). The exact date of the emergence of blended learning is unknown. However, a news release in 1999 by a computer skill certification and software training business introduced 220 blended learning courses placing it around the turn of the last century (Kurt & Yildirim, 2018).

Even though the use of blended learning classes has increased since 1999, no standardized definition of blended learning has been reached due to blended learning programs varying from institution to institution (Futch et al., 2016; Lai et al., 2016; Owston, 2018). Several names are used to refer to blended learning, such as mixed-method instruction, e-learning, hybrid learning, and flipped classroom (Bowyer & Chambers, 2017; Greene & Hale, 2017; Kurt & Yildirim, 2018; Owston, 2018). The names vary depending on how the blended learning classes are structured or defined at

the institution. Different models of blended learning provide flexibility for institutions to meet the needs of their students.

Models of blended learning include flex, rotational, enriched virtual, and a la carte (Greene & Hale, 2017; Powell et al., 2015; Truitt & Ku, 2018; Yudt & Columba, 2017). The rotational blended learning model involves students rotating through stations with at least one of the physical stations in a computer lab (Powell et al., 2015; Truitt & Ku, 2018; Yudt & Columba, 2017). The flex model involves most of the content being delivered online, and the instructor using face-to-face meetings to supplement the material (Powell et al., 2015; Yudt & Columba, 2017). In an a la carte blended learning model, students can take a course online currently not being offered as a campus course. In the enriched virtual, blended learning model, students rarely attend class and complete most of the work online (Powell et al., 2015; Yudt & Columba, 2017). The different models allow a teacher or institution to select the blended learning model that would be most effective for their students.

The literature from 2015 to 2018 suggests several reasons why blended learning has been incorporated into many educational programs. Blended learning creates more flexibility for students and gives students a choice of time, place, and pace to engage in learning (Haraga et al., 2019; Vanslambrouck et al., 2018). Blended learning also provides teachers with the opportunity to serve the diverse needs of both high-achieving students and at-risk students (Greene & Hale, 2017). The online days' structure allows teachers to meet with small groups or individual students for extra support (Greene & Hale, 2017). Blended learning supports more learning styles than the traditional

classroom and helps students to develop independence, autonomy, and self-regulation skills (Futch et al., 2016).

Most of the blended learning literature focuses on student achievement (Kurt & Yildirim, 2018). However, the results of the studies are inconsistent. These inconsistencies may exist because there are no guidelines for designing a blended learning course (Donaldson et al., 2017). According to Moore et al. (2017), the potential of blended learning to improve student achievement has not been fully developed because blended learning courses have not been widely adapted in effective ways. The literature suggests some ways to adapt blended learning programs to improve student achievement. The design needs to focus on the shift from teacher-centered to student-centered rather than using the technology (Greene & Hale, 2017). Futch et al. (2016) warned teachers that inadequate LMS design contributes to high student attrition rates. Teachers can support online design by providing students with an orientation on navigating online (Futch et al., 2016). Therefore, teachers should design a well-organized LMS, provide an orientation for the LMS, and use student-centered activities to promote student achievement in blended learning classes.

The literature on blended learning also focused on student perceptions of what motivates students (Kurt & Yildirim, 2018). Kurt and Yildirim (2018) found several factors that affect student motivation: the teacher, course materials, interactions, and how effective the face-to-face lessons are. Additional research is needed to go beyond just the teachers' learning management system (LMS) design to focus on instructional strategies used in successful blended learning programs that would explain the inconsistencies in

the research on student achievement in blended learning (Morgan, 2015; Smirnova et al., 2018).

This study addressed a gap in the literature about instructional strategies used in a successful blended learning program. The study provided rich, thick descriptive data about instructional strategies implemented in blended learning classrooms. In addition, the study may also promote positive social change by providing insights into instructional strategies that can be implemented in future blended learning classes to promote student achievement.

Problem Statement

Students enrolled in blended learning classes in a midwestern suburban school are outperforming students in the traditional face-to-face classes on standardized tests, yet there was little information about the instructional strategies used in the blended learning classroom that result in higher achievement by the students. In fact, students enrolled in the school's blended learning classes are outperforming students in the traditional face-to-face classes on the ACT, SAT, and PSAT (Hanover Research, 2017). *Blended learning* has been defined by the study site (n.d.) as

> a formal educational program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home (para. 1).

According to the study site's associate principal of curriculum, instruction, and assessment, there is a need to examine instructional strategies in the blended learning

classrooms so other teachers can apply the strategies to develop future blended learning classes. Students in blended learning classes in the midwestern suburban school are outperforming students in traditional classes in the same school, but further research about instructional strategies used in those classes may benefit the school's blended learning program.

Blended learning class offerings have increased rapidly over the last century. However, researchers have found inconsistent results on student achievement in blended learning classes compared to the traditional classroom (Cimen & Yilmaz, 2017; Moore et al., 2017; Ugras & Asilturk, 2018). Some researchers have demonstrated that students in blended learning classes academically outperform students in traditional face-to-face instructional classrooms (Akgündüz & Akınoğlu, 2017; Yagci, 2016; Zhang & Zhu, 2018). In contrast, other researchers determined that students in traditional face-to-face classrooms outperform students in blended learning classes (Johnson & Palmer, 2015; Powers et al., 2016). According to Moore et al. (2017), the potential for blended learning to improve student achievement has not been fully realized because the blended learning approach has not been widely adopted in effective ways. Additional research is needed to examine the instructional strategies used in successful blended learning programs (Morgan, 2015; Smirnova et al., 2018). The gap in the literature is the lack of studies examining instructional strategies in blended learning classes to promote student achievement.

Purpose of the Study

The purpose of this qualitative instrumental case study was to explore what instructional strategies are being implemented to foster student achievement in a successful high school English and social studies blended learning program. For the purpose of this study, *a successful blended learning program* was defined as a program with students in blended learning classes academically outperforming or equaling students in traditional face-to-face classes. Several data collection tools were used to examine this problem. I conducted semistructured interviews to understand what instructional strategies the blended learning teachers implement online and in class. I reviewed the teachers' LMS to explore blended learning teachers' instructional strategies being implemented online. The instructional strategies being examined included strategies teachers implement to help students connect to specialized nodes, collaborate and communicate in nodes, and obtain and use accurate, up-to-date knowledge or sources.

Research Questions

Students taking courses in the blended learning environment need to learn to connect to specialized nodes and learning communities, interact, share information, and create new knowledge. Students choose what information sources to use. Then they make connections with up-to-date knowledge, sources, and opinions to develop new knowledge.

Research Question 1: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students connect to multiple specialized nodes?

Research Question 2: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students collaborate and communicate in specialized nodes?

Research Question 3: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students obtain and use accurate and up-to-date knowledge or sources to create new knowledge?

Conceptual Framework

The conceptual framework for this study was the connectivism theory based on the works of Siemens (2005) and Downes (2005, 2008, 2010). Siemens and Downes (2005) developed a new theory of learning for the digital age because technology has shifted the way people construct knowledge and learn. Siemens explained behaviorism, cognitivism, and constructivism are learning theories used to frame instructional environments. However, the development of these theories occurred before technology affected the instructional environment. Siemens noted trends in learning no longer fit into behaviorism, cognitivism, or constructivism. The current trends are

- Over the lifetime of a learner, the learner will move into several different unrelated fields.
- Learning occurs in a variety of ways, and a significant portion of learning happens in an informal learning environment.

- Learning is a lifelong process and learning and work are no longer two separate entities.
- Learners' brains are being rewired by technology.
- Organization and individuals both learn, so there is a need for a learning theory that can explain the connection between individual and organizational learning.
- Technology can now store and manipulated information so learning can occur outside a person.
- Memorization is not as important as knowing where to find information.

LMS, social media, and YouTube have contributed to changing passive instructional strategies to more student-centered strategies that involve co-creation of knowledge (Cheng et al., 2016; Mattar, 2018). Learning theories should reflect social environments (Siemens, 2005). Therefore, Siemens and Downes created connectivism that fits the social technology environment. Connectivism describes how people learn in a network environment that allows people to communicate, collaborate, learn, and reflect. The connectivism theory integrated the network, chaos, self-organized, and complexity theories. Learning occurs in network environments and is not always under the control of the individual (Siemens, 2005).

Nature of the Study

I used a qualitative case study approach to investigate the instructional strategies high school teachers use to help students in blended learning classes connect to multiple specialized nodes, collaborate and communicate in nodes, and obtain and use accurate

and up-to-date knowledge or sources to be successful. A case study allows in-depth research on processes, programs, individuals, events, or activities (Sutherland, 2016). Case studies are used to answer what, why, and how questions regarding the phenomenon in a real-life context (Singh, 2017). In this study, I sought to answer what instructional strategies are being used in successful blended learning classes. Consequently, a case study design was appropriate. In a case study design, multiple data sources should be collected (Morgan et al., 2017). Multiple data sources allow for triangulation of data, which improves the study's accuracy (Morgan et al., 2017). Therefore, I reviewed two types of data in this study: interviews and an audit of the teachers' LMS.

This study was conducted in a midwestern suburban high school whose blended learning students outperform the traditional face-to-face classes on the ACT, SAT, and PSAT (Hanover Research, 2017). Five high school English and five social studies blended learning teachers' LMSs were examined to determine what instructional strategies teachers are implementing to help students learn to connect to multiple specialized nodes, collaborate and communicate in nodes, and obtain and use accurate and up-to-date knowledge or sources to build new knowledge. I then interviewed teachers about the type of instructional strategies they use to help students learn to connect to multiple specialized nodes, collaborate and communicate in nodes, and obtain and use accurate and up-to-date knowledge or sources to build new knowledge. The data from the audit of the LMSs and the interviews was then analyzed using lean coding based on instructional strategies related to the connectivism theory.

Definitions

This section provides definitions of key terms used in this study due to the variations of meanings of words. These definitions lay the foundation for a clear understanding of this study.

Blended day: A blended day is an online day or e-learning day for students in a blended learning class (Zafonte & Parks-Stamm, 2016).

Connectivism: Connectivism is a digital age learning theory based on people learning by connecting to networks, sharing information, and developing new information or meaning (Techakosit & Wannapiroon, 2015).

Blended learning: Blended learning is a formal educational program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home (Study site, n.d., para.1).

Face-to-face instructional day: A face-to-face instructional day is a day students and teacher are in class at the same place and time (Purdue University, n.d.).

Face-to-face course: A face-to-face course is a course delivered in a traditional method in a brick-and-mortar school with the instruction led by a teacher (Christensen et al., 2013).

Instructional Strategies: Instructional strategies are techniques that teachers use to engage students to learn and become independent thinkers (Gaines, 2021).

Learning management system (LMS): The learning management system is an online platform that commonly includes various tools that assist in delivering

instructional content, communication, collaboration, and student evaluation (Binyamin et al., 2017; Kappe & Scerbakov, 2017;).

Node: A node is a connection point on a network such as a learning community, organization, website, journal, library, or database (Techakosit & Wannapiroon, 2015; Vitoulis, 2017).

Assumptions

I made certain assumptions based on my experience as a teacher and administrator and the literature reviewed. Some basic assumptions influencing the direction of this study were:

1. The 2017 program evaluation stating the blended learning students outperform students in the traditional classroom is still valid, and the program has either improved or stayed the same.
2. Participants in this study used instructional strategies that help students in the blended learning classes outperform students in the traditional classroom.
3. Participants in this study provided honest answers about the instructional strategies they use to help students connect to nodes.
4. Participants in this study provided honest answers about the instructional strategies they use to help students learn to collaborate and communicate in nodes.
5. Participants in this study provided honest answers about the instructional strategies they use to help students learn to obtain and use accurate, up-to-date knowledge or sources.

6. The blended learning teachers' instructional strategies that enhance student achievement relate to the connectivism theory. Students need to learn to connect the information from the classroom network, the online network, and networks developed by collaborating with other students either in class or outside of class.

These assumptions were necessary to demonstrate the instructional strategies observed in this study account for the difference in student achievement in blended learning versus the traditional classroom.

Scope and Delimitations

The scope of this study encompasses instructors teaching high school blended English and social studies classes at a midwestern suburban school. The school has approximately 3000 students. I interviewed five English and five social studies teachers with at least 2 years of blended learning teaching experience. This study was delimited by teachers who volunteer for the study. The study was also limited to teachers in departments I am not overseeing as an administrator.

Transferability refers to a qualitative study's ability to be generalized to other settings (Burkholder et al., 2016). Even though the qualitative studies' intent is not to generalize to a large population, a qualitative study should have meaning beyond the instance (Burkholder et al., 2016). Patton (2015) supported the idea of researchers extrapolating rather than generalizing. Extrapolating the study's findings implies the person goes beyond the data and the researcher's findings and considers the application of the results (Merriam & Tisdell, 2015). I used thick description to support

transferability. Using data with sufficient details allows other people to evaluate if the conclusions made in this study can be transferred to their setting and situation (Amankwaa, 2016). Therefore, I used thick descriptions to create a picture of the setting and participants' attitudes. I also reported quotes used to help find themes when analyzing the data, so others can look for similarities or differences to determine if the research can transfer to their setting.

Limitations

A few factors limited the scope and character of this study. The study was limited to only one high school. The study was also limited to two departments. These limitations were used to control the sample size from getting too large for qualitative research. The two academic departments used in this study were English and social studies.

Bias is another factor that could have limited the results of this study. According to Ravitch and Carl (2015), bias exists in all research, and researchers need to incorporate methodological choices that limit the bias. I could have a bias about the instructional strategies teachers should use because I taught a science blended course for three school years from 2014-2017 and currently am a science administrator in the same state. To minimize this bias, I did a member check after each interview. The member check confirmed I accurately represented the teacher's intended responses during the interview. I also recorded rich, thick descriptive data, including quotes made by teachers during the interviews. Finally, I used an audit trail to record my reflections, questions, and ideas that developed throughout the research process. I used a research journal to document emerging themes when analyzing data and to reflect on my thoughts and feelings

throughout the research process (Burkholder et al., 2016). As an administrator, a science department chair in the same state, bias could exist related to the study site's blended learning program. However, no science teachers participated in the research to decrease the chances of bias. Finally, another type of bias is the experimenter effect (Wijenayake, 2020). I controlled my body language during the interviews, so I did not impose my biases on participants. Even though biases could have affected the study's results, I incorporated research methods to limit the bias.

Significance

This study is essential to blended learning teachers because the study will provide thick descriptive data about the best practices for blended learning classrooms. This study is unique because it addresses an under-researched area about pedagogy approaches in blended learning that promote student success (Donaldson et al., 2017; Kim & Thayne, 2015; Ma'arop & Embi, 2016; Tomas et al., 2015; Ugras & Asilturk, 2018). Results of this study provided insights into instructional strategies that foster student achievement. Teachers may use the research findings to implement instructional strategies in future blended learning classes, which will help students become engaged in self-regulated learning processes (Futch et al., 2016). This study may promote positive social change by providing insight into the instructional strategies being used in a successful blended learning program, which can be implemented in other blended learning programs to enhance student learning.

Summary

Even though there has been much research in the past decade on blended learning, most of the research has focused on comparing student achievement in blended learning classes to traditional face-to-face classes. Several studies have demonstrated students in blended learning classes outperform students in traditional face-to-face classes (Cimen & Yilmaz, 2017; Vo et al., 2017; Zhang & Zhu, 2018). However, little research has been conducted to examine what instructional strategies are being used in successful blended learning classes (Greene & Hale, 2017). The purpose of this qualitative instrumental case study was to explore what instructional strategies were implemented to foster student achievement in a successful high school English and social studies blended learning program.

This chapter included an overview of the problem in this study involving the lack of information about the instructional strategies used in successful blended learning classes. The purpose of this qualitative instrumental case study was to explore what instructional strategies are being implemented to foster student achievement in a successful high school English and social studies blended learning program. My problem provides the basis for my three research questions by focusing on finding instructional strategies in successful high school English and social studies students blended learning classes. The research questions are built on the conceptual framework of connectivism that describes how learning occurs in online environments and interactions students make to build networks (Graham & Fredenberg, 2015). Chapter 1 also contained essential terms, assumptions, the scope of the study, delimitations, limitations of the study, and the

study's significance. To support this study's purpose and research questions in Chapter 2, I will review the literature related to the conceptual framework, connectivism, how connectivism relates to blended learning, and recent studies regarding connectivism and blended learning. In addition, I will review the literature explaining what blended learning is and the pros and cons of blended learning to develop the background of blended learning and its significance.

Chapter 2: Literature Review

Blended learning class offerings have increased rapidly over the last century. The availability of technology and the current focus on student needs have put the educational system into a transition stage (Lalima & Dangwal, 2017). Thus, blended learning classes have become a popular option to integrate technology into the classroom and meet students' current needs (Cheng & Chau, 2016). Students in a blended learning class learn online and face-to-face in the school (Powell et al., 2015). The purpose of this qualitative instrumental case study was to explore what instructional strategies were implemented to foster student achievement in a successful high school English and social studies blended learning program.

The current literature relating to blended learning focuses on what blended learning is, student satisfaction, and student achievement. A large portion of the research refers to student satisfaction and what factors affect student satisfaction, such as instructor availability, the flexibility of assignment due dates, and the LMS functionality. To complicate the situation, research on the effectiveness of blended learning has been inconsistent in its findings. Several researchers have revealed that students in traditional face-to-face classrooms outperform or are academically equivalent to students in blended learning classes (Adams et al., 2015; Balentyne & Varga, 2016; Cavanaugh & Jacquemin, 2015; Chingos et al., 2017; Elmer et al., 2016; Evans, 2015; Johnson & Palmer, 2015; Jovanovic et al., 2015; Lowes et al., 2016; Powers et al., 2016; Stack, 2015). Other researchers have demonstrated that students in blended learning classes academically outperform students in traditional face-to-face instructional classrooms

(Akgündüz & Akınoğlu, 2017; Banditvilai, 2016; Boda & Weiser, 2018; Cimen & Yilmaz, 2017; Gambari et al., 2017; Greene & Hale, 2017; Harahap et al., 2019; Marchalot et al., 2018; Nair & Bindu, 2016; Yagci, 2016; Zhou, 2018). To discern why there is a discrepancy in research findings, Futch et al. (2016) and Lai et al. (2016) focused on best practices and instructional strategies to enhance student achievement in blended learning classes. Most of these researchers focused on the effects of best practices to start a blended learning class and course curriculum (Donaldson et al., 2017; Futch et al., 2016; Lai et al., 2016; Margolis et al., 2017; Mehran et al., 2017). Much research has been conducted comparing traditional to blended learning classrooms, but little research has been conducted focusing on the instructional strategies used in blended learning classes.

In Chapter 2, I will review the literature research strategies I used to find the literature presented. Then, I will review the related professional literature on the study's framework (connectivism) to provide information on the origins of connectivism, the development of connectivism, and the relationship of connectivism to this study. Also, I will review peer-reviewed literature to determine a definition and types of blended learning, the benefits and challenges of blended learning, and student satisfaction and achievement in blended learning. Even though there has been much research in the past decade on blended learning, most of the research has focused on comparing student achievement in blended learning classes to traditional face-to-face classes. Several studies have demonstrated students in blended learning classes outperform students in traditional face-to-face classes (Cimen & Yilmaz, 2017; Vo et al., 2017; Zhang & Zhu,

2018). However, little research has been conducted to examine what instructional strategies are being used in successful blended learning classes (Greene & Hale, 2017). The purpose of this qualitative instrumental case study is to explore what instructional strategies are being implemented to foster student achievement in a successful high school English and social studies blended learning program.

This section included an overview of the problem in this study involving the lack of information about the instructional strategies used in successful blended learning classes. The purpose of this qualitative instrumental case study was to explore what instructional strategies were implemented to foster student achievement in a successful high school English and social studies blended learning program. My problem provided the basis for my three research questions by focusing on finding instructional strategies in successful high school English and social studies students blended learning classes. The research questions were built on the conceptual framework of connectivism that describes how learning occurs in online environments and interactions students make to build networks (Graham & Fredenberg, 2015). Chapter 1 also contained essential terms, assumptions, the scope of the study, delimitations, limitations of the study, and the study's significance. To support this study's purpose and research questions in Chapter 2, I will review the literature related to the conceptual framework, connectivism, how connectivism relates to blended learning, and recent studies regarding connectivism and blended learning. In addition, I will review the literature explaining what blended learning is and the pros and cons of blended learning to develop the background of blended learning and its significance.

Literature Search Strategy

In this study, I reviewed and synthesized materials related to connectivism and blended learning from peer-reviewed journals, books, conference presentations, internet websites, and blogs. Databases searched included Education Source, Educational Resource Information Center, Computers and Applied Sciences Complete, EBSCO Host, and Google Scholar. Keywords and phrases used in the searches included *connectivism, Siemens, Downes, conceptual frameworks and blended learning, conceptual frameworks and online learning, blended learning, e-learning, hybrid learning, student achievement and blended learning, student satisfaction and blended learning, instruction strategies, instructional strategies and blended learning, best practices, best practices and blended learning, instructional innovations,* and *instructional strategies related to connectivism*.

Conceptual Framework

This study's conceptual framework is the connectivism learning theory based on the works of Siemens (2005) and Downes (2005, 2008, 2010). Connectivism is a learning theory focused on forming meaningful connections with people or technology-based networks and acknowledges that people learn when they communicate and form networks (Siemens, 2006b). As part of the connectivism principles, knowledge can be stored outside the individual in a network (Siemens, 2005, 2006a). In the process of learning, the learner connects specialized nodes or sources of accurate and up-to-date information to build networks (Siemens, 2005, 2006a). The knowledge resides within the network, and continuous learning occurs as the learner develops and grows connections (Downes, 2008). The learner must examine various opinions to construct knowledge after

choosing what to learn, which can change with reality (Siemens, 2005). An important aspect of connectivism is that knowing where to find information is just as critical or even more critical than building knowledge (Siemens, 2005). Siemens and Downes developed a learning theory explaining how learners connect to multiple networks to gather accurate, up-to-date information to build knowledge.

Connectivism is a learning theory designed for the digital age. Siemens (2005) believed technology shifts the way learners learn. He also acknowledged the learning theories of behaviorism, cognitivism, and constructivism no longer fit learning trends. Historically, knowledge was categorized as quantitative or qualitative (Siemens, 2006a), and knowledge was an objective obtained through reasoning (Bruner, 1990; Skinner, 1971). Previous theories did not address how learning could occur outside a person, but connectivism states that learning can occur outside a person and occur inside devices, tools, databases, and communities (Siemens, 2006a; Veletsianos, 2016). In addition, because organizations and individuals both learn, there is a need for a learning theory to explain the connection between individual and organizational learning (Downes, 2005; Siemens, 2005). Connectivism learning theory addresses how learning can occur outside a person and how organizations learn (Siemens, 2005). These processes are based on nonlinear knowledge.

Learning in the digital age is no longer a linear process and is more than knowledge acquisition (Siemens, 2006a). According to Siemens (2006b), people store knowledge in their minds, and networks can also distribute knowledge. Thus, learning is the process of recognizing patterns developing from a person's networks (Siemens,

2006b, 2011). In other words, learning is a chaotic network process involving a person taking in information from one or more nodes and then processing the information to create new knowledge (Siemens, 2006a). The nonlinear knowledge resulting from this process is called *connective knowledge* and is the epistemological foundation of connectivism (Downes, 2005). A connective knowledge network must possess the traits of diversity, autonomy, interactivity, and openness (Siemens, 2006a). In the learning process, the learner connects to nodes. Nodes can be people, libraries, databases, websites, organizations, or journals (Siemens, 200ba; Techakosit & Wannapiroon, 2015; Vitoulis, 2017). The learner combines the nodes to create a network that evaluates and processes information. Because information is rapidly changing, learners continuously update their networks as needed and rewrite their knowledge.

Learning involves networks at three different levels: neural, conceptual, and external. The neural network consists of making neural connections as new information or stimuli are experienced (Siemens, 2006a, 2011; Siemens & Tittenberger, 2009). The neural connections can happen at any point in the brain, and knowledge is the attribute of patterns formed from the neural connections (Siemens & Tittenberger, 2009). In the neural network, the nodes are neurons (Siemens, 2006a; Siemens & Tittenberger, 2009). At the conceptual level, networks involve key concepts within a discipline (Siemens, 2011). Nodes in a conceptual network are ideas or collections of ideas (Siemens, 2011). Finally, on the external level, the networks are generally social networks involving people connected by technology. The external network helps learners make conceptual relationships within a discipline or field (Siemens, 2011). A node on the external level is

a person, a source of information, or any entity participating in networks (Siemens, 2011). An individual does not always have complete control over the knowledge and learning process with an external node. Learning can occur outside the individual and within the organization or a database (Siemens, 2006a). By connecting to an external network, a learner can gain current, relevant information and become a cocreator of knowledge (Siemens, 2006a). Thus, connectivism is the learning theory for the digital age. Learners can make connections online on social networks or in a blended learning class.

Connectivism Supports Technology in the Classroom

The rise of technology in the 21st century—such as Web 2.0 and tools like blogs, podcast, wikis, LMS, social media, and YouTube—has affected the way people learn and the way teachers teach (Garcia, Elbeltagi et al., 2015; Thota & Negreiros, 2015). Technology has also caused knowledge to grow at an exponential rate with a short half-life (Siemens, 2005). As a result, learners need to adapt to change and understand the reason and circumstance behind the change (Siemens, 2005). Supporters of connectivism argue that behaviorism, cognitivism, and constructivism do not support these dynamic changes in knowledge and the need for changes in instructional strategies in the digital age (Vitoulis, 2017). New instructional strategies are needed to incorporate technology into the classroom, such as digital media and social media tools (Thota & Negreiros, 2015). Connectivism supports these changes by explaining how learners use a computer-supported collaborative environment to learn autonomously, make connections, and share

knowledge with other learners (Siemens, 2005; Vitoulis, 2017). Teachers must learn how to adapt their lessons to develop a connectivism learning environment.

A connectivism learning environment requires teachers to adapt their instruction by designing lessons with students, actively collaborating to form new knowledge. Teachers need to develop activities centered around sensemaking and wayfinding (Siemens, 2011). *Sensemaking* is the process of organizing unknown information or stimuli to understand, explain, interpret, and predict (Siemens, 2011). *Wayfinding* is the process a learner uses to navigate information to maneuver through networks (Siemens, 2011; Siemens & Tittenberger, 2009). In a connectivism learning environment, teachers become the facilitators of information (Siemens, 2011; Sulaiman, 2018; Suprabha & Subramonian, 2015). Teachers need to help learners make connections, create networks, and evaluate and synthesize the information gathered through the networks (Siemens, 2011; Siemens & Tittenberger, 2009). Teachers should facilitate activities to help students access resources and become actively engaged with those resources (Siemens, 2011). Then students should create and share artifacts to demonstrate how they made sense of a topic (Siemens, 2011). These processes can be enhanced by using technology such as blogs, wikis, Google video, Facebook, and Twitter. These technologies can help students make connections to form networks. In the connectivism learning environment, teachers and students make connections to create networks to make sense of the studied topic.

To demonstrate how the connectivism learning theory could support a collaborative computer environment, Siemens (2005, 2006a) and Downes (2005, 2008)

created the Connectivism and Connective Knowledge 2008 adult credit course (CCK/08) offered by the University of Manitoba (Downes, 2012). Over 2,200 people joined the course, and the course became the first massive open online course (MOOC; Bozkurt et al., 2016). Siemens and Downes used the connectivism learning theory to develop the course's layout (Downes, 2012). The class was 14 weeks long, and each week addressed a different topic related to connectivism and connective knowledge (Downes, 2012). However, the content did not define the course. Downes (2012) reported students in the CCK08 course complained there was too much content. As indicated by the connectivism theory, students need to learn how to select content relevant to their context and make connections to gather information relating to that content (Downes, 2012). Therefore, in the CCK08 course, the instructors created over 170 blogs to discuss different topics (Downes, 2012). Downes (2012) learned from the CCK08 course "that cooperation is better than collaboration, that diversity is better than sameness, that harmony is better than the competition" (p. 506). The connectivism learning theory supported the MOOC development and the instructional strategies used to help students make connections within their learning environment.

Recent Studies Related to Connectivism

Based on Siemens and Downes development of the first MOOC, researchers and teachers raised the question of what makes a learning environment adhere to connectivism. A connectivism environment involves collaboration to form networks and build experiences together (Ozturk, 2015). Teachers should be facilitators and use student-centered and network-based pedagogies (O'Brien et al., 2017). Learners need to

have a voice in the curriculum, so they learn to decide what is essential to understand (Ozturk, 2015). A connectivist MOOC (cMOOC) is task based, and students interact and explore through networks to complete tasks (Terras & Ramsay, 2015). The goal of a course taught with a connectivist pedagogy is to learn how to learn (O'Brien et al., 2017; Terras & Ramsay, 2015). The content is secondary. Learners must monitor and self-regulate their learning to know if they need to make more connections to further develop their knowledge (Littlejohn et al., 2016). A connectivism learning environment involves students actively collaborating while they self-monitor and self-regulate their learning. Therefore, in this study, I should look for collaborative instructional strategies teachers and students use to create and share resources to build knowledge.

Students struggled to complete the first cMOOCs. The dropout rate for cMOOCs averaged 90% or more (Dubosson & Emad, 2015; Li et al., 2016). Students experienced problems due to a lack of literacy skills, such as interpretive and evaluative skills (Li et al., 2016; Terras & Ramsay, 2015). They had to analyze the networks to determine if they needed more information to understand a topic. However, they struggled because they lacked the skills to interpret and evaluate their resources. Students also lacked self-regulation skills and did not complete their assignments or make connections (Li et al., 2016). To complete cMOOCs, students need to self-monitor their learning, set goals, and self-reflect on their learning. Due to the low completion rate of cMOOCs, other types of MOOCs developed.

Two other types of MOOCs were developed: an extension massive open online course (xMOOC) and a hybrid MOOC. An xMOOC focuses on learning the content

while students are passive learners (Dubosson & Emad, 2015; O'Brien et al., 2017). It is a highly structured course, often using lecture-based lessons through videos with online quizzes (Dubosson & Emad, 2015; O'Brien et al., 2017; Ozturk, 2015; Wang et al., 2018). Several universities charge a fee for a completion certificate for xMOOC classes (Littlejohn et al., 2016). Littlejohn et al. (2016) discovered that learners in xMOOCs focused on getting the certificates rather than learning (Littlejohn et al., 2016). A hybrid of cMOOC and xMOOC was developed to merge both MOOC designs (Anders, 2015; Fidalgo-Blanco et al., 2016; O'Brien et al., 2017; Ozturk, 2015). The hybrid course demonstrated how a MOOC could be student-centered and focus on content (Anders, 2015; Fidalgo-Blanco et al., 2016; O'Brien et al., 2017; Ozturk, 2015). The hybrid or blended MOOC enabled learner self-agency but provided scaffolding and support to students (Anders, 2015; O'Brien et al., 2017). Teachers can apply the lessons learned from the development of the hybrid MOOC to blended learning classes. Teachers can base blended learning classes on connectivism pedagogy, but they should scaffold the skills to support students.

Researchers have used the connectivism learning theory as the conceptual framework for e-learning studies to learn more about the connections and networks students build in a connectivism learning environment (AlDahdouh, 2018; Alzain, 2019; Reese, 2015). The online, connectivism learning environment should be collaborative to assist students in making connections and networks (Alzain, 2019; Barnard-Ashton et al., 2017; Buzzetto-More, 2015; Reese, 2015; Robinson, 2018). Communication between students and teachers happens in e-learning through synchronous and asynchronous

instruction. Synchronous instruction involves students and teachers interacting in real-time. Synchronous instruction can be accomplished using online live classes, web cameras, Skype, conference programs, and chat software (Reese, 2015). Asynchronous instruction involves students and teachers interacting through delayed-time and can occur through discussion boards, assignments posted on the teacher's LMS page and emails (Reese, 2015). Teachers need to select the appropriate tools to allow students to make connections during synchronous and asynchronous instruction.

Teachers can also promote communication and help students building new connections by using the appropriate LMS. Alzain (2019) discovered Edmodo and Google LMSs supported collaborative e-learning. The Edmodo and Google LMSs allowed students to connect with their teacher outside of work hours, students to share and compare information, and experts in a given field (Alzain, 2019). The social networks also allowed teachers to monitor students' progress and provide feedback (Alzain, 2019). To further understand how students created networks, AlDahdouh (2018) researched the process students used to navigate networks. AlDahdouh discovered the navigation of networks involves three stages: (a) planning, (b) cognitive processing, and (c) evaluating. Also, learners considered the self-efficacy, feasibility, and eligibility of a resource to decide whether to connect to a node (AlDahdouh, 2018). Alzain and AlDahdouh revealed information about networks and nodes teachers can use to develop instructional strategies to help students in an e-learning environment like blended learning.

Researchers also used the connectivism conceptual framework to research student satisfaction and success in e-learning environments. Students reported blended learning motivated them for three reasons: (a) students were in control over the time and place they studied, (b) students were supported by the collaborative environment, and (c) students had control over their learning path (Aurangzeb, 2018). Students were satisfied with the e-learning environments because they had a voice and a choice in their learning. Wichadee (2019) tested several variables to determine student satisfaction. The two predictors of student satisfaction were students' attitude toward blended learning and the amount of face-to-face support the students received (Wichadee, 2019). Students with negative attitudes about blended learning were not satisfied with blended learning. However, Robinson (2018) discovered students taking an e-learning economics course were motivated by collaboration and self-accusation. Researchers used connectivism as their conceptual framework and found several reasons students were satisfied with blended learning.

Researchers also used the connectivism conceptual framework to research student academic performance in e-learning environments. Wichadee (2019) tested several variables to determine student academic performance. There were three predictors of student performance: students' attitude toward blended learning, students' digital literacy skills, and the face-to-face support the students received (Wichadee, 2019). Heyde and Siebrits (2019) researched whether online collaborative pre-laboratory activities helped students in a physics course. Most students did not believe the online activities helped them plan or prepare for the physics labs (Heyde & Siebrits, 2019). Students felt the

online activities did not allow them to use their time more efficiently during the physics labs (Heyde & Siebrits, 2019). Robinson (2018) also found students were challenged with self-directed online activities. Students both struggled with an online connectivism environment and were motivated by it.

A few instructors developed new models of instruction for e-learning connectivism environment. Zhou (2018) designed an English writing course based on the connectivism four levels of interaction: (a) operation, (b) wayfinding, (c) sensemaking, and (d) innovation. Students had to prewrite, draft, and revise their papers twice (Zhou, 2018). Each one of these writing activities was based on a connectivism level of interaction. Students' writing skills improved from the pretest to the posttest in the connectivism blended learning writing course (Zhou, 2018). Techakosit and Wannapiroon (2015) developed a second model for connectivism e-learning. They developed an e-learning augmented science laboratory class. This connectivism augmented science course consisted of four components: learning environment, scientific literacy process, characteristics of the learning environment, and enhancement of the scientific literacy (Techakosit & Wannapiroon, 2015). The connectivism learning environment consisted of individual hands-on science experiments, collaboration to share knowledge, connecting with people in and outside the class to create networks to learn, and flexibility to meet students' needs and abilities (Techakosit & Wannapiroon, 2015). This connectivism augmented science model was certified by the American Association for the Advancement of Science (Techakosit & Wannapiroon, 2015). The e-learning

English writing course and augmented science laboratory course can be used as a model to develop other connectivism online or blended learning courses.

Literature Review on Blended Learning

What is Blended Learning?

Blended learning combines face-to-face and online instruction (Asarta & Schmidt, 2017). Blended learning is also known as hybrid learning, mixed-method, e-learning, and flipped classroom (Bowyer & Chambers, 2017; Greene & Hale, 2017; Kurt & Yildirim, 2018; Owston, 2018). There are several definitions of blended learning because a variety of forms of blended learning have been implemented (Futch et al., 2016; Greene & Hale, 2017; Lai et al., 2016; Okaz, 2015; Owston, 2018; Truitt & Ku, 2018). One accepted definition of blended learning is the purposeful integration of face-to-face instruction and online learning (Lai et al., 2016). For this study, blended learning was defined as

> Blended learning is a formal educational program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home. (study site, para.1)

This definition became the study site's working definition of blended learning during the third year of its blended learning program.

Several blended learning models offer flexibility to meet the needs of institutions and students: (a) rotational, (b) flipped (c) à la carte, (d) self-blended, (e) enriched virtual, and (f) flex (Greene & Hale, 2017; Powell et al., 2015; Truitt & Ku, 2018; Yudt & Columba, 2017). The rotational model involves students moving through different

stations, with at least one station being online (Powell et al., 2015; Truitt & Ku, 2018; Yudt & Columba, 2017). The online station may or may not be within the brick-and-mortar school building (Truitt & Ku, 2018; Yudt & Columba, 2017). The flex model involves most of the content being delivered online (Craciun & Bunoiu, 2015; Powell et al., 2015; Yudt & Columba, 2017). The face-to-face time is then used for class activities involving the content learned online or for individual students who need extra assistance (Craciun & Bunoiu, 2015; Truitt & Ku, 2018; Yudt & Columba, 2017). Individual student schedules for face-to-face time are flexible based on student needs (Craciun & Bunoiu, 2015). In the à la carte or self-blended learning models, students can take online classes with no face-to-face time with their teacher (Craciun & Bunoiu, 2015; Powell et al., 2015; Yudt & Columba & Ku, 2017). The à la carte option is useful when a course a is unavailable at the school. In the enriched virtual blended learning model, students learn online and face-to-face with the instructor (Craciun & Bunoiu, 2015; Powell et al., 2015). The enriched virtual model is also called *remote blended learning*. In this model, the instructor decides how many times a week students will attend class (Craciun & Bunoiu, 2015). The enriched virtual learning model is the most common traditional blended learning model. The flipped blended learning model reverses what traditionally happens at school and at home. Students watch an online video at home to learn the content and complete in-class what would have traditionally been homework (Powell et al., 2015; Truitt & Ku, 2018). However, in this model, students usually attend class every day. The blended learning program at the study site uses the enriched virtual learning blended model. Students attend class two to three times a week and, on alternate days, have online

assignments. There are several blended learning models, and each institution needs to select the best model based on the programs' needs and resources.

Benefits and Challenges of Blended Learning

The number of blended learning courses being offered at institutions have increased due to the availability of technology and focus on personalized learning (Adekola et al., 2017; Ask et al., 2017; Aurangzeb, 2018; Challob et al., 2016; Cieminski & Andrews, 2018; Cundell & Sheepy, 2018; Powell et al., 2015). The increase in blended learning courses has brought several benefits to students. Blended learning enables students to be able to learn anytime, from any place, and at their own pace (Boelens et al., 2018; Buran & Evseeva, 2015; Gambari et al., 2017; Powers et al., 2016; Truitt & Ku, 2018; Yudt & Columba, 2017). To capitalize on these benefits, students need to develop a growth mindset, self-efficacy, and self-regulation skills to be able to work on their own during their online time (Ask et al., 2017; Boelens et al., 2018; Bowyer & Chambers, 2017; Diep et al., 2017; Powers et al., 2016; Wivell & Day, 2015). Students benefit from blended learning classes and can learn lifelong skills like self-efficacy and self-regulation.

The most critical component to implementing a flexible, successful blended learning class is an engaged, effective teacher (Ask et al., 2017; Blau et al., 2018; Diep et al., 2017; Donaldson et al., 2017; Greene & Hale, 2017). Teachers need to approach the role as a coach and facilitator (Banditvilai, 2016; Chan & Leung, 2016; Cleary et al., 2018; Costley & Lange, 2016; Cundell & Sheepy, 2018; Powell et al., 2015). In addition, teachers need to facilitate students' cognitive and social presence in the class (Cleary et

al., 2018; Cundell & Sheepy, 2018). According to Boelens et al. (2017), teachers found it challenging to facilitate the students' social presence in the online environment. Students want blended learning flexibility but enjoy the social interactions face-to-face classes offer (Banditvilai, 2016; Boelens et al., 2017). Therefore, teachers need to design online and face-to-face collaborative activities (Cundell & Sheepy, 2018). Teachers can use social media tools to facilitate online collaborative activities. Chan and Leung (2016) discovered students preferred using social media tools they were comfortable with, such as Facebook and Twitter. However, Aurangzeb (2018) suggested the use of other tools such as WhatsApp and Skype. Whatever tools the teacher decides to use, they should make sure students know how to use the media tool or provide training. An effective teacher needs to select student-centered activities to engage students both online and face-to-face.

Through blended learning, teachers can provide pedagogical enhancements. Cundell and Sheepy (2018) found teachers used various audio, video, writing, and reading activities. If teachers implement a technology, student-centered approach properly, it can motivate students to learn (Chan & Leung, 2016). Teachers can implement student-centered activities either online, face-to-face, or online and face-to-face. Teachers need to consider students' perceptions of how they learn best, needs, interests, abilities, and learning styles when deciding what pedagogical methods to employ (Alnoori & Obaid, 2017; Keogh et al., 2017; Sheerah, 2020). The online activities need to be engaging, promote higher-order thinking, be interactive, provide feedback, and complement face-to-face activities (Cundell & Sheepy, 2018; Keogh et al.,

2017). In real-life, students use YouTube, search the web, and interact with other people online to discover the answers to a problem (Alnoori & Obaid, 2017). Therefore, teachers need to design instruction to use the same problem-solving methods. For example, teachers should use social media students are familiar with to promote student interaction and to share resources with students (Alnoori & Obaid, 2017; Chan & Leung, 2016). Teachers need to consider the course's needs and students' knowledge of technology to balance student-centered online and face-to-face activities that enhance the course's curriculum.

Teachers can also implement other instructional strategies into blended learning courses, such as the flipped classroom method and differentiation. If teachers incorporate a flipped approach, the online learning should include the use of tools like YouTube videos, which will allow teachers to use the face-to-face instructional time for student-centered activities (Ahn & Bir, 2018). Students reported being better prepared for laboratory activities and problem-solving in class when they could rewatch video lessons before class (Ask et al., 2017; Nortvig et al., 2018). Teachers can also design the blended learning course to allow for differentiation (Boelens et al., 2017; Buran & Evseeva, 2015). Teachers can differentiate instruction by providing additional online support, altering the online performance tasks, and providing different online student activities (Boelens et al., 2018). Teachers can also differentiate by asking a struggling student to come to class during online days to get extra help face-to-face (Bowyer & Chambers, 2017). A teacher can choose to use engaging instructional strategies such as the flipped classroom method and differentiation to benefit students in blended learning classes.

Teachers implementing a blended learning class must learn how to balance the face-to-face and online components. However, many teachers find it challenging to implement both components and balancing the curriculum (Cundell & Sheepy, 2018; Fabbian et al., 2017). To balance curriculum, blended learning teachers must avoid the "course and a half syndrome" (Fabbian et al., 2017, p. 317). The "course and a half syndrome," happens when a teacher keeps all the materials from the traditional face-to-face class and adds additional materials for the online portion. To avoid this syndrome, blended learning teachers need to convert a large portion of the material covered in class to online assignments instead of adding more material. Cundell and Sheepy (2018) researched the preferred mix of class and online time. The best combination was an equal blend of online and face-to-face instruction (Cundell & Sheepy, 2018). Teachers should use an equal mix of online and face-to-face activities to enhance the curriculum without adding additional material to build the class's online portion.

Professional development can help teachers learn how to balance the blended learning class's online and face-to-face components. However, one of the largest barriers in developing blended learning classes is teachers' lack of professional development (Crompton et al., 2016). Professional development is a necessary component of implementing a new blended learning program to help teachers establish best practices for blended learning instruction (Bano et al., 2018; Boelens et al., 2017; Buzzetto-More, (2015); Crompton et al., 2016; Donaldson et al., 2017; Greene & Hale, 2017; Powell et al., 2015). A more intense teacher training is essential if the teacher is also responsible for developing the curriculum and assessments (Buzzetto-More, 2015). When teacher

training is offered, the training is typically provided once with no follow-up (Crompton et al., 2016). Crompton et al. (2016) surveyed administrators, teachers, and instructional coaches from 24 schools. The participants revealed professional development was needed for technology integration and should include detailed training on the technology tools (Crompton et ala., 2016). The professional development should also include pedagogical training to help students develop student goals related to blended learning (Crompton et al., 2016). After analyzing their findings, Crompton et al. recommended that schools provide ongoing training conducted by school-based instructional coaches. Continuous professional development will help blended learning teachers improve their pedagogical approaches to promote student success and motivation.

Another essential part of the online and in-class pedagogy strategies is teacher-student and student-student communication. Students and teachers have found communication to be challenging in blended learning classes, because teachers and students do not interact face-to-face every day (Boelens et al., 2017). Teachers need to be available online and in-person to keep students from feeling isolated (Hall & Villareal, 2015; Hunt, 2015). Teachers can communicate with students and enhance students' flexibility and learning experience using asynchronous communication such as posting notes on the LMS, emailing, or blogging (Boelens et al., 2017). Teachers can also improve student satisfaction and achievement by providing online feedback on assignments (Cakir & Bichelmeyer, 2016; Nortvig et al., 2018). Online tools such as LMS dropbox or online quizzes allowing written or taped feedback can improve feedback and increase teacher-student communication (Ask et al., 2017; Spanjers et al., 2015). In

addition, online discussions enhance student learning by creating a sense of community (Bowyer & Chambers, 2017). Nortvig et al. (2018) also found online discussions increased students' critical thinking skills. On the other hand, Taylor et al. (2015) discovered students perceived online discussions as the least useful online tool for learning. During the face-to-face time, teachers should allow students to ask questions, process theory, and summarize the online material (Ask et al., 2017). To manage the communication challenge, teachers need to find an effective method to communicate with students and provide feedback in a quick, efficient manner.

Students and teachers found time management to be another challenge in blended learning classes. Students who found it challenging to develop self-efficacy and self-regulation skills reported time management as a challenge in blended learning classes (Powers et al., 2016; Wivell & Day, 2015). Blended learning teachers also found time management challenging because they had to stay at the same pace as other instructors to cover the same amount of material as the traditional class (Aurangzeb, 2018; Crompton et al., 2016; Greene & Hale, 2017; Powers et al., 2016). Powers et al. (2016) conducted a study on the efficacy of a hybrid course. Teachers commented that they needed more time in the hybrid class for hands-on-activities, exam review, and discussions (Powers et al., 2016). In addition, students suggested hybrid teachers should slow the class's pace which would require even more time (Powers et al., 2016). To solve this problem, institutions and teachers need to balance teacher autonomy and heavily prescribed courses to help diminish time management skills (Powell et al., 2015). Teachers need the flexibility to develop unique blended classroom systems, but clear expectations from the

institution are required to leverage blended learning benefits (Powell et al., 2015). If an institution has heavily prescribed programs, students lose the benefit of flexibility. In summary, a benefit of blended learning is the pedagogical strategies involving student-centered instruction with the teacher facilitating learning. However, teachers and institutions will have to overcome challenges when developing blended learning classes to balance online and in-class activities.

Factors Affecting Student Satisfaction and Achievement

A large portion of the literature from 2015 to 2020 focused on student satisfaction and blended learning achievement. Several of those studies compared student satisfaction of blended learning classes to online and traditional class designs. A few studies determined students preferred face-to-face classes over blended or online classes (Fish & Snodgrass, 2015; Weldy, 2018). However, several researchers concluded students had a higher satisfaction level with blended learning courses (Ask et al., 2017; Banditvilai, 2016; Blau et al., 2018; Elmer et al., 2016; Kleinpeter, 2018; Krasnova & Vanushin, 2016; Margolis et al., 2017; Marquis & Ghosh, 2017; Nazarenko, 2015; Suwantarathip, 2019; Wichadee, 2019). Institutions and teachers should examine what factors relate to student satisfaction in blended learning classes (Blau et al., 2018; Fish & Snodgrass, 2015; Krasnova & Vanushin, 2016; Pryiomka, 2017; Suwantarathip, 2019; Vanslambrouck et al., 2018; Weldy, 2018). By understanding what factors satisfy and motivate students to take blended learning classes, institutions and teachers can design their blended learning classes to increase student motivation and possibly student achievement.

The research on student satisfaction revealed numerous factors affecting student satisfaction in blended learning classes. Communication and feedback are the most prominent factors instructors control related to student satisfaction (Kleinpeter, 2018; Pryiomka, 2017; Tamim, 2018). Communication can be challenging in a blended learning class because the instructor and students meet face-to-face only a few days a week (Boelens et al., 2017). Students indicated in several studies that instructors' communication could be a strength or a weakness depending on the instructors' availability and timeliness in providing feedback (Kleinpeter, 2018; Owston, 2018; Pryiomka, 2017; Tamim, 2018). Therefore, institutions need to hire a content expert who is technologically competent and willing to communicate with students for blended learning classes to be successful (Pryiomka, 2017). In three studies, researchers found teachers could improve communication by providing orientation in the first week of class (Owston, 2018; Tamim, 2018; Wichadee, 2019). The orientation could help students learn to navigate the system, learn how to submit assignments, and learn about the course's organization (Owston, 2018; Tamim, 2018; Wichadee, 2019). Teachers should also provide multiple avenues for students to ask questions to the instructor and peers (Owston, 2018; Wichadee, 2019). Pryiomka (2017) discovered students were satisfied when they could communicate with other classmates to discuss assignment directions, ask general questions, and ask content specific questions to each other. Therefore, appropriate technology tools such as chat options that make communication easy could improve students' satisfaction (Tamim, 2018). Teachers need to design their blended learning class to enhance communicate and feedback.

Another factor affecting student satisfaction is the design of the instructional assignments. Teachers need to design blended learning classes that intrinsically motivate and empower students (Owston, 2018). Blended learning classes can empower students by offering flexibility in scheduling assignments (Kleinpeter, 2018; Krasnova & Vanushin, 2016; Manwaring et al., 2017; Owston, 2018; Pryiomka, 2017; Tamim, 2018; Wichadee, 2019). Suleiman et al. (2017) explained teachers need to balance the number of tasks assigned to students online with the amount of content covered. However, Wichadee (2019) found no relationship between student satisfaction and workload. Teachers also need to design the assignments so the assignments are easy for students to understand (Blau et al., 2018; Hubackova & Semradova, 2016; Krasnova & Vanushin, 2016; Suwantarathip, 2019). Clear and precise directions reduce student frustration and confusion (Blau et al., 2018). Keogh et al. (2017) discovered interactive online assignments that complemented face-to-face instruction were the most effective. Teachers should determine what motivates students in the blended learning course and then design the class assignments to meet the course and students' needs.

Teachers and institutions need to carefully select the technology tools and LMS used for a blended learning class. The ease of using the LMS system is one of the most significant factors related to online student satisfaction (Blau et al., 2018; Hubackova & Semradova, 2016; Kintu & Zhu, 2016; Kintu et al., 2017; Krasnova & Vanushin, 2016; Lin et al., 2016; Nazarenko, 2015; Tamim, 2018). Kleinpeter (2018) and Nazarenko (2015) found easy access to the course material contributed to student satisfaction. The easier students navigated the system and found course material, the more satisfied they

were with the blended course (Kleinpeter, 2018; Nazarenko, 2015). Institutions may improve student satisfaction by providing technology training at the beginning of the course, especially if it is the students' first time taking a blended learning class (Suwantarathip, 2019; Tamim, 2018; Wichadee, 2019). The institutions should train teachers on all the technology implemented in the blended learning class, so teachers can help students when technology issues (Blau et al., 2018; Buzzetto-More, 2015; Crompton et al., 2016; Donaldson et al., 2017; Wingo et al., 2017). In addition, the appropriate technology tools such as chat options were factors students listed affecting their satisfaction with a blended learning class (Lin et al., 2016; Tamim, 2018). However, Wichadee (2019) found the quality of online tools was not a factor of student satisfaction. Student satisfaction will increase if the LMS system is easy to navigate and instructional tools are easy to use. If the LMS is easy to use, students can use their online time to learn content or practice skills rather than navigating the system.

Institutions and teachers should also examine the factors affecting student achievement when designing a blended learning class. However, the research results on student achievement in blended learning classes have been inconsistent. Several researchers have revealed students in traditional face-to-face classrooms outperformed students in blended learning courses (Adams et al., 2015; Evans, 2015; Johnson & Palmer, 2015; Powers et al., 2016). On the other hand, other researchers found no achievement differences among students in a blended learning and traditional courses (Balentyne & Varga, 2016; Cavanaugh & Jacquemin, 2015; Chingos et al., 2017; Elmer et al., 2016; Jovanovic et al., 2015; Luna & Winters, 2017; Wong et al., 2020). Contrary

to those results, some researchers discovered students in traditional face-to-face classes outperformed students in blended learning classes (Akgündüz & Akınoğlu, 2017; Banditvilai, 2016; Boda & Weiser, 2018; Cimen & Yilmaz, 2017; Dey & Bandyopadhyay, 2019; Gambari et al., 2017; Gonzalez-Gomez et al., 2016; Greene & Hale, 2017; Harahap et al., 2019; Marchalot et al., 2018; Nair & Bindu, 2016; Zhang & Zhu, 2018). Even though the research is inconsistent, most recent studies have concluded blended learning is either as effective or more effective than traditional classroom instruction.

Researchers disagreed on the factors affecting the difference in student achievement. Powers et al. (2016) concluded student achievement was lower in blended learning classes because students spent less time on homework than students in the traditional face-to-face classes. Also, Adams et al. (2015) surveyed students in blended learning flipped classes and found students did not take notes on the lectures. Therefore, students had less interaction with the content material and performed lower. On the other hand, Northey et al. (2015) found blended learning students were more engaged in asynchronous activities, which positively correlated to an increase in student achievement. Similarly, Marchalot et al. (2018) and Banditvilai (2016) discovered students in blended learning classes spent more time on homework than students in traditional face-to-face classes. Banditvilai found blended learning students were motivated and took more ownership in their homework. Blended learning may encourage students to spend more time on asynchronous activities because they can select when and where they will study.

Researchers also found several other factors besides time spent on homework as a factor affecting student achievement. Wichadee (2019) found students' attitude about blended learning was a predictor of how well students achieved in blended learning. Students who had a positive attitude about blended learning outperformed students with a negative attitude towards blended learning classes (Wichadee, 2019). Other factors affecting student achievement are grade point average (GPA) and student attendance (Cavanaugh & Jacquemin, 2015; Musabirov et al., 2019; Park et al., 2019). Students with higher GPAs perform better in a blended learning class than students with lower GPAs (Cavanaugh & Jacquemin, 2015; Park et al., 2019). Students with a higher attendance rate also performed better in blended learning classes than students with low classroom attendance (Musabirov et al., 2019). Researchers have found several factors that affect student achievement, such as student attitude, GPA, and attendance.

If blended learning courses are implemented with effective instructional methods, blended learning can offer students an alternative learning method that is attractive to a wide range of students (Greene & Hale, 2017). The purpose of this qualitative instrumental case study was to explore what instructional strategies were implemented to foster student achievement in a successful high school English and social studies blended learning program. Hence, the study added to the gap in the literature on what instructional strategies increase student achievement in a blended learning class.

Summary and Conclusions

The number of e-learning courses and programs has rapidly increased over the past 10 years. E-learning is a term referring to both online and blended learning classes.

A hybrid class is another popular phraseology referring to blended learning. In this study's literature, I summarized the professional literature regarding blended learning, the benefits and challenges of blended learning, student satisfaction, and student achievement in blended learning. I also reviewed professional literature on this study's conceptual framework, connectivism. The professional literature provides a basis for the literature gap related to blended learning and the need for this study.

In the literature, there is no one agreed-upon definition of blended learning. However, most studies agree upon the definition that blended learning involves students studying partially online and face-to-face in the classroom (Powell et al., 2015). The blended learning program at the study site uses the enrich virtual blended model. Students meet face-to-face in the traditional class format two to three times a week and have online classes on alternate days.

The other main topics in the literature were the benefits and challenges to blended learning, student satisfaction, and student achievement. Blended learning enables students to learn anytime, from any place, and at their own pace (Boelens et al., 2018; Buran & Evseeva, 2015). Teachers are a critical factor in implementing a successful blended learning class (Ask et al., 2017; Blau et al., 2018). Teachers need to be a coach and facilitator of students' cognitive and social presence in class (Cleary et al., 2018; Costley & Lange, 2016). Because the teacher and students only meet a few days a week, face-to-face communication and feedback can be challenging (Boelens et al., 2017). Teachers should design their blended learning LMS to enhance communication. Factors affecting student satisfaction are the instructors' availability, the flexibility of assignment due

dates, and the LMS functionality. Factors affecting student achievement are student completion of homework, student engagement, students' attitude about blended, and students' prior GPA (Adams et al., 2015; Cavanaugh & Jacquemin, 2015; Marchalot et al., 2018; Park et al., 2019; Powers et al., 2016; Wichadee, 2019). The difference in research results could be affected by the instructional strategies being used in the different blended learning classes. Additional research is needed to examine the instructional strategies used in successful blended learning programs (Morgan, 2015; Smirnova et al., 2018). The gap in the literature is the lack of studies examining instructional methods in successfully blended learning classes.

Connectivism is the conceptual framework used in this study to address the gap in literature. Connectivism is a new learning theory for the digital age. Connectivism explains how learning is not a linear process. Instead, learning is a chaotic network process. A learner connects to a network and gains relevant information. Then the learner combines information from multiple networks and creates new knowledge. According to Siemens (2011), teachers should facilitate activities that help students access and engage with resources. Technology and a collaborative environment can help students make connections to form networks. Connectivism is the conceptual framework for this study because students in blended learning classes can use social media and other class activities to connect to networks.

The purpose of this qualitative instrumental case study was to explore what instructional strategies were implemented to foster student achievement in a successful high school English and social studies blended learning program. Hence, this study adds

to the literature gap on what instructional strategies increase student achievement in blended learning classes. I used teacher interviews and an audit of their LMSs to explore instructional strategies teachers used to help students connect to specialized nodes, engage with up-to-date information, and collaborate within specialized nodes. These strategies may help students build new knowledge.

Chapter 3: Research Method

The availability of technology has changed the way people learn and has provided educators with new challenges to overcome (Lalima & Dangwal, 2017). One current transformation being used to meet learners' needs is blended learning (Ma'arop & Embi, 2016). However, research on the effectiveness of blended learning has been inconsistent. In some cases, studies found blended learning to increase student achievement over traditional face-to-face instruction (see Boda & Weiser, 2018; Gambari et al., 2017; Marchalot et al., 2018; Nair & Bindu, 2016; Yagci, 2016). On the other hand, several researchers found no significant difference between academic achievement or found students in traditional face-to-face classes outperform students in blended learning classes (see Chingos et al., 2017; Elmer et al., 2016; Evans, 2015; Johnson & Palmer, 2015; Powers et al., 2016; Stack, 2015). The problem in this study was students enrolled in blended learning classes in a midwestern suburban school are outperforming students in the traditional face-to-face classes on standardized tests, yet there is little information about the instructional strategies used in the blended learning classroom that result in higher achievement by students. Further research was needed to determine what instructional strategies in blended learning classes should be implemented to help student achievement (Greene & Hale, 2017). Therefore, this study examined the instructional strategies used in a successful blended learning program.

The purpose of this qualitative instrumental case study was to explore what instructional strategies are being implemented to foster student achievement in a successful high school English and social studies blended learning program. In Chapter 3,

I discuss the research design and methodology used to explore the instructional strategies teachers used to help students connect to nodes, collaborate and communicate in nodes, and obtain and use accurate, up-to-date knowledge and sources. This chapter provides details about the procedures for participant recruitment, data collection procedures, details about the data collection instruments, and analysis methods. Also, I discuss how triangulation addresses credibility and dependability, how thick descriptive data addresses transferability, and how reflexivity addresses confirmability in this study.

Research Design and Rationale

A qualitative, instrumental case study was used to explore the instructional strategies high school English and social studies blended learning teachers use to help students connect to nodes, collaborate and communicate in nodes, and obtain and use accurate, up-to-date knowledge and sources. A case study is defined as an intense analysis of an event, person, or group by collecting multiple sources of data within a bound system (Buck et al., 2016). An instrumental case study provides insight into one topic and allows transferability of the given phenomenon to similar contexts (Gomba, 2017). I chose to use an instrumental case study to explore one successful blended learning program to provide insights into the blended learning program's instructional strategies. In addition, a qualitative methodology design was appropriate because the design can be flexible and suitable for findings, which can be unpredictable (Hussein, 2018). A qualitative methodology is an excellent way to examine a topic in detail by gathering descriptive data (Kornbluh, 2015). I explored instructional strategies used in high school English and social studies blended learning classes and collected two forms

of data: teacher interviews and audits of the teachers' LMSs. Using qualitative research allows for thick descriptive data to be collected (Ravitch & Carl, 2015). In this study, I made a generalization about the instructional strategies that promote student success in blended learning classes by studying English and social studies blended learning classes in a midwestern suburban high school.

Many research designs were not suitable for this study. Quantitative designs include descriptive, correlation, quasi-experimental, and experimental research (Nardi, 2018). Descriptive quantitative researchers seek to describe a measurable identified variable (Nardi, 2018). In this study, I was not describing a measurable variable, but I explored instructional strategies teachers used in the blended learning classes. Correlation researchers attempt to demonstrate a relationship between variables, and quantitative quasi-experimental researchers conduct correlation research that tests for cause and effect (Campbell & Stanley, 2015; Nardi, 2018). Also, quantitative experimental researchers examine the relationships between a group of variables (Campbell & Stanley, 2015). In this study, I was not trying to determine whether there was a relationship between two variables. Therefore, neither descriptive, correlation, quasi-experimental, nor experimental quantitative designs were appropriate for this study.

Four other qualitative designs were not appropriate for this study: narrative analysis, grounded theory, phenomenology, and ethnography. A researcher using narrative analysis focuses on capturing personal experiences and the relationship between the experiences and the cultural context (Sahito & Vaisanen, 2018). For example, Sahito and Vaisanen (2018) studied English competency teachers' experiences and how these

experiences affected their job satisfaction. In this study, I did not explore how the experiences of teachers affected the blended learning program. Instead, I explored instructional strategies that were implemented in a successful blended learning program.

Another qualitative design not appropriate for this study was the grounded theory design. Researchers using grounded theory design discover and develop theories (Aten & Denney, 2018). If a field of study was new or lacking constructed knowledge, grounded theory is a methodology used to create and support the new field of study (Turhan et al., 2018). Konuk et al. (2016) researched students' book-writing skills. He implemented the grounded theory methodology, and participants developed writing skills and wrote a rubric for writing summaries (Konuk et al., 2016). Participants then used the rubric to evaluate summaries in the university's Turkish language teaching department (Konuk et al., 2016). Grounded theory was not appropriate for this study for two reasons: a new field of study was not researched, and a new theory was not constructed.

Neither narrative analysis nor grounded theory fits the design to explore what instructional strategies are being used in a successful blended learning program in a midwestern suburban high school. A phenomenological study was also not an appropriate qualitative method for this study. A researcher using a phenomenological study design describes the meaning and perspectives participants have in common with a phenomenon (Parsons, 2016). For example, Parsons (2016) conducted a phenomenological study that explored middle-aged participants. The phenomenon was the experiences of being middle-aged, and the study described the challenges that individuals had in common who

had experienced middle age (Parsons, 2016). A phenomenological methodology was not appropriate for this study because I did not explore experiences related to a phenomenon.

Finally, an ethnographic method was also not an appropriate methodology for this study. In an ethnography study, the researcher studies the culture of a group or community (Clapp, 2017). Clapp (2017) studied the interactions of an e-learning team developing online distance learning postgraduate classes. The purpose of the study was to inform future professional development for communities of educators who need to develop online distance learning courses (Clapp, 2017). Ethnography was not an appropriate methodology for this study because I was not studying the blended learning program's culture. Instead, I explored the instructional strategies. Therefore, I used an instrumental case study.

I used an instrumental case study to explore the instructional strategies used in a successful blended learning program at a midwestern suburban high school to generalize what instructional strategies promote student success. In this study, I explored three research questions:

RQ1: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students connect to multiple specialized nodes?

RQ2: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students collaborate and communicate in specialized nodes?

RQ3: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students obtain and use accurate and up-to-date knowledge or sources to create new knowledge?

Role of the Researcher

As a researcher, I was responsible for each portion of the research. I designed the data collection plan, recruited participants, and collected the data. To recruit participants, I obtained the names of teachers who have taught at least 2 years of blended learning English or social studies classes from the study site's principal. I then emailed teachers and provided them with information about the study and an invitation to participate. To collect the data, I conducted teacher interviews and audited their LMSs. Then I transcribed, analyzed, and interpreted the data.

The possibility of research bias did exist during this research. I am a science educator and science department chair in the same state as the research was conducted. However, no science teachers participated in the research to decrease the chances of bias. Also, I conducted the research at a suburban school with over 3,000 students and over 200 teachers. I took additional steps to mitigate potential bias by monitoring my opinions during the data collection and by having experts review the semistructured interview protocol and LMS audit.

I put additional checks into place to help monitor any biases. Member checks ensured I accurately recorded the teachers' intended responses during the interviews. I also recorded rich, thick descriptive data, which included quotes made by teachers during the interview. Finally, I used an audit trail where I recorded my reflections, questions,

and ideas that developed throughout the research process. I used a research journal to document emerging thoughts and themes while analyzing data and reflecting on my thoughts and feelings in real-time throughout the research process (Burkholder et al., 2016). According to Burkholder et al. (2016), journal reflection area process that can mitigate bias. I used member check, thick descriptive data, and an audit trail to migrate bias.

Methodology

To conduct this instrumental case study, I followed strict procedures and guidelines for recruiting participants and collecting data. In the following subsections, I describe the procedures for recruiting participants and collecting the data. In addition, I describe the data analysis plan I used after the collection of data.

Participant Selection

I used a purposeful sampling method to obtain participants in this study. In purposeful sampling, the researcher intentionally selects the participants and study site to procure an understanding of the research problem (Creswell & Creswell, 2017). The site selected was a midwestern suburban high school of approximately 3,000 students. This school was purposefully chosen due to its blended learning students outperforming students in the traditional face-to-face classes (see Hanover Research, 2017). I selected a successful blended learning program to explore the instructional strategies used to increase student achievement in the school. The study site's blended learning program was ranked as the number one blended learning program in the United States in April 2019 by a top Internet study site. In the 2018-2019 school year, 73 teachers taught a total

of 66 blended courses. There were 2,190 students enrolled, with some students enrolled in more than one blended course totaling 5,437 seats. After selecting the study site, the number of participants needed to be considered (Creswell & Creswell, 2017). A small sample size was appropriate because this is a qualitative case study.

I used a small sample to explore one case deeply. The small sample size allowed in-depth review of multiple sources such as teacher interviews and the audit of teachers' LMSs (Merriam & Tisdell, 2015). Therefore, I asked the blended learning teachers from the English and social studies departments to participate in the study to limit the sample size to five English and five social studies teachers. I selected participants according to the following criteria: (a) participants had to be in the English or social departments, (b) participants had to be teaching at least one blended learning class, and (c) participants had to have at least 2 years of blended learning teaching experience at the school. The principal provided the names of teachers who meet the criteria for the study. The school district's associate superintendent and the school principal gave permission to recruit from the study site. I then obtained permission from the Walden's Institutional Review Board (IRB) before contacting any participants. After obtaining the IRB approval (Approval No. 04-06-20-0177098), I emailed the English and social studies teachers fitting the criteria to solicit participation in the study. I provided teachers the purpose of the study, information on time commitment, details on data collection procedures, and information about confidentiality in the email. I also explained that the research was voluntary and that teachers could choose to withdraw at any time or refrain from answering any questions. The consent form was part of the email. I instructed teachers to

send me an email stating their willingness to participate in the study. Each participant was given the option to ask for further clarification through email.

Instrumentation

I used two data collection instruments in this qualitative instrumental case study: an interview protocol and a LMS audit. I used multiple sources of data to verify the information. Triangulation is using many forms of data collection to validate the evidence collected (Creswell & Creswell, 2017). According to Burkholder et al. (2016), triangulation of the data increases the study's credibility and dependability. For this study, I designed two instruments aligned with the research questions. I also asked three experts with doctoral educational degrees to review the interview protocol for alignment with the research questions and certify the instrument's validity. I asked three experts in LMS design to check the LMS audit to make sure I could collect the data needed to answer the research questions. The LMS design experts included administrators from the study site who had experience auditing blended learning teachers' LMS pages. These processes improved the trustworthiness of the study. All in all, by using data triangulation and having three experts validate the two instruments, the study's dependability and credibility were increased.

LMS Audit

I created an LMS audit (Appendix A) to use when looking over the teachers' LMS webpages to see what instructional strategies teachers used outside of class. The audit allowed for all observations to be recorded for later data analysis. I recorded the following in the beginning of each audit: the content area of the blended learning class,

name of the blended learning class, teacher's ID, and the audit date. I examined the classes' activities recorded on the LMS from January 6, 2020, to March 13, 2020.

The audit contained a place to record the pedagogical methods of connectivism the teacher was incorporating into the activity, a brief description of the activity, and the activity's date. The type of pedagogical method of connectivism was categorized into one of seven methods: (a) an instructional strategy used which allowed the learners to interact with a personal network; (b) an instructional strategy used that allowed the learners to engage in meaningful dialogue or collaborate through the use of technology; (c) an instructional strategy used to assist the learners in choosing accurate and reliable online or offline sources to meet the desired outcome; (d) an instructional strategy used that allowed the learners to develop skills to build and expand their learning networks as needed across different platforms and media; (e) an instructional strategy used to enable learners to build a network to evaluate, reflect, and synthesis opinions, concepts, and perspectives so each learner can then create new knowledge; (f) other for any method of connectivism pedagogy not fitting into the original five methods; or (g) not a connectivism pedagogy method (Kizito, 2016; MacCallum & Parsons, 2016; Parsons & MacCallum, 2017). The five original pedagogical methods of connectivism were developed through the key features of connectivism and validated through three research studies (Kizito, 2016; MacCallum & Parsons, 2016; Parsons & MacCallum, 2017). Multiple pedagogical methods sometimes applied to one activity. Therefore, the recording of detailed information about each activity allowed me to reexamine the instructional strategies during the coding process.

Interview protocol

Another data collection instrument was a semistructured interview protocol. I developed the semistructured interview protocol with open-ended interview questions (Appendix B). I used the conceptual framework as a guide to write the research questions. Open-ended interview questions are relevant in qualitative studies because the interviewees cannot simply answer yes or no (Rubin & Rubin, 2012). I was able to collect descriptive data to answer my research questions by using semistructured interview questions. The interview protocol provided a guide to confirm that I started every interview with the same introduction and asked every interviewee the same main questions so I obtained descriptive data to answer each research question from every participant.

I conducted individual interviews using Zoom conferencing. I was unable to meet with the interviewees face-to-face due to the pandemic coronavirus disease 2019. The interviews were video and audio recorded. During the semistructured interviews, I asked teachers to elaborate on the instructional strategies they used in class and online to help students to connect to nodes, collaborate and communicate in nodes, and connect different resources to create new knowledge. This semistructured interview technique allowed participants to answer questions at length and in vivid detail and allowed the interviewer to follow-up with questions to bring out even more information (Rubin & Rubin, 2012). During the interview process, I listened and controlled my body language to monitor biases, so I did not impose my biases on participants (Ravitch & Carl, 2015). I

obtained thick descriptive answers from participants with less bias by controlling my body language.

Procedures for Recruitment, Participation, and Data Collection

Before recruiting any participants from the study site, I contacted the superintendent, associate superintendent of curriculum and instruction of the district, and the study site's principal to explain my study's purpose. I also provided the associate superintendent with an overview of the study's recruitment, participation, and data collection procedures. The associate superintendent and principal provided letters of cooperation. Permission to recruit participants was then granted by the Walden's IRB, Approval No. 04-06-20-0177098.

Procedure for Recruitment

I used a purposeful sampling method to recruit five English and five social studies blended learning teachers from a midwestern suburban high school. In purposeful sampling, participants are selected because they have had a particular experience, live in a certain location, or give the research specific information to answer the research question (Ravitch & Carl, 2015). I selected participants according to the following criteria: (a) participants must be a teacher in the English or social studies department (b) participants must be teaching at least one blended learning class, and (c) participants must have at least 2 years blended teaching experience at the school. The study site's blended learning program was purposefully chosen due to its blended learning program's successful student achievement rate (Hanover Research, 2017). The blended learning teachers from the English and social studies departments were chosen to participate in the

study to limit the sample size. In addition, science blended learning teachers could not participate in the study due to a conflict of interest. I am the science department chair in the same state as the study site.

An email was sent to the English and social studies teachers fitting the criteria to participate in the study. In the email, I provided teachers the purpose of the study, information on time commitment, details on data collection procedures, and information about confidentiality. I also explained to teachers that they were volunteering, and they could choose to withdraw at any time or refrain from answering any questions. The email served as the invitation and the consent form for the study. If a teacher agreed to be a participant, the teacher replied to the invitation with the words I consent. Participants could also contact me with further questions. The invitation outlined the criteria for participation and participants' rights, such as the study's voluntary nature and privacy information. After teachers agreed to join the research, I emailed teachers to ask if they had any questions. I first audited the teacher's LMS page or pages. Some participants had multiple blended learning classes, so I examined all of their LMS pages. Two of the five blended English teachers taught three blended learning courses, so I audited all three of their LMS pages. Four of the five social studies blended learning teachers taught two blended learning courses, so I audited both blended learning LMSs. After auditing a teacher's LMS courses, I sent the teacher a Doodle.com to find an interview time. Finally, I sent a calendar invite to set-up the interview with the participant.

Procedure for Participation

I notified participants in the email consent form that participating in the study was voluntary, and they had the right to withdraw at any time. I informed participants that they could exit the study at any time through the email sent to teachers inviting them to participate in the study. Participants also had the right to refuse to answer any questions they considered stressful or too sensitive. There is no perceived risk to participants. Participants received a $10 Amazon gift card for participating in the study. The intrinsic benefits of participating in the study are the improvement of blended learning programs.

Procedure for Collection of LMS Audit Data

I conducted an audit of the teachers' LMS pages. The audit was recorded on the LMS audit guide (Appendix A). As I conduct each LMS audit, I logged the date and teacher's ID. I audited the activities recorded on the participants LMSs from January 6, 2020, to March 12, 2020. These dates correlate to the third quarter of the 2019-2020 school year until the school went into remote learning due to the pandemic coronavirus disease 2019. The LMS audit examined the pedagogical method of connectivism: (a) an instructional strategy which allowed the learners to interact with a personal network connected to other social networks to create or modify an artifact, (b) an instructional strategy that allowed the learners to engage in meaningful dialogue or collaborate through the use of technology, (c) an instructional strategy that assisted the learners in choosing accurate and reliable online or offline sources to meet the desired outcome, (d) an instructional strategy that allowed the learners to develop skills to build and expand their learning networks as needed across different platforms and medias, (e) an instructional

strategy that allowed learners to develop a network to evaluate, reflect, and synthesis opinions, concepts, and perspectives so each learner can then create new knowledge, (f) other for any method of connectivism pedagogy not fitting into the original five methods, or (g) not a connectivism pedagogy method (Kizito, 2016; MacCallum & Parsons, 2016; Parsons & MacCallum, 2017). I recorded an instructional strategy for each activity recorded on the teacher's LMS during the time framed examined.

Procedure of Collection of Interviews

After auditing the teacher's LMS, I conducted a conference interview with each participant using Zoom. At the beginning of the interview, I logged the date and the teacher's ID being interviewed. Then I read the introduction to the interview protocol (Appendix B), which describes the purpose of the research project, the potential benefits of the study results, and the time commitment for the interview. I asked participants the interview questions and any necessary follow-up questions. During the interview process, I kept notes on crucial responses from the interviewee and recorded the interview. These notes and recording were used in the data analysis process. At the end of the interview, I asked participants if they would be willing to participate in a follow-up interview. Each participant agreed to a follow-up interview if needed. However, I conduct no follow-up interviews. Each interview lasted about 45 minutes.

Data Analysis Plan

I collected two sources of data to explore three research questions. First, I collected data from the LMS audit. During the LMS audit, I looked for five pedagogical

methods of connectivism. After collecting the data from the teachers' LMS, I aligned the data to the appropriate research question. I then started coding the data.

After collecting the LMS data, I related the data to a specific research question. I analyzed any data collected from the LMS related to the learners interacting with a node, personal network, or developing skills to build and expand their learning network to explore Research Question 1: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students connect to multiple specialized nodes? I analyzed data related to learners being engaged in meaningful dialogue in person or online to explore Research Question 2: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students collaborate and communicate in specialized nodes? I analyzed data collected from the LMS related to instructional strategies in choosing accurate and reliable online or offline sources to explore Research Question 3: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students obtain and use accurate and up-to-date knowledge or sources to create new knowledge? Finally, I analyzed data collected related to instructional strategies to build new knowledge by evaluating, reflecting, and synthesizing opinions, concepts, and perspectives to explore Research Question 3.

The other set of data I needed to analyze were the answers to the interview questions, so I examined the interview data and related it to a specific research question. I analyzed data from interview Question 1 to explore Research Question 1 about nodes because I asked participants what sources of information students used in their course to

create new knowledge. I also analyzed data from interview Question 2 to explore Research Question 1 because I asked participants what instructional strategies they used to help students obtain their classes' resources. The third interview question I asked participants was what instructional strategies they used to help students obtain up-to-date resources. I then analyzed this data to explore Research Question 3. I also analyzed data from interview Question 4 to explore Research Question 3 because I asked participants what instructional strategies they used to help students obtain accurate resources. The fifth main interview question I asked participants was what instructional strategies they used to help students collaborate and learn from one another. I analyzed the responses from this interview question to explore Research Question 2. I analyzed data from interview Question 6 to explore Research Question 2 because I asked participants what instructional strategies they used to help students learn to communicate when they were not in class. The seventh interview question I asked participants was what instructional strategies they used to help students connect different sources of information to build new knowledge. I analyzed responses from this interview question to explore Research Question 3. The final interview question I asked participants was a general question to help them think of any other strategy they may have forgotten. I related participants' answers to this question to the appropriate research question.

Data analysis is not a linear process. Therefore, I implemented Creswell and Poth's (2018) spiral method of analysis. In the spiral process, the researcher begins with raw data and finishes with a narrative (Creswell & Poth, 2018). However, the researcher may combine process steps or return to previous steps at any point in the data analysis as

needed to revise or build upon their codes and themes. The first step in the spiral process was managing and organizing the data. After collecting the data, I aligned the data to the appropriate research question. Next, I read the collected data several times to make sense of the data collected (Creswell & Poth, 2018). As I read through the data, I wrote memos. This process helped in exploring the data by documenting codes as they developed across different sources of data so later, I could easily compare the memo notes from multiply sources of data (Creswell & Poth, 2018). Also, during this process, I asked myself two questions: (a) What does this mean? and (b) What does this tell me about the instructional strategies teachers in the blended learning classes are using to help students connect to nodes, communicate in nodes, find up-to-date, reliable, accurate resources?

Next, I described and classified codes into themes. Coding is a process that translates data and adds an interpretation of the meaning of the data so the data can later be labeled (Saldana, 2015). I used lean coding throughout the coding process. Lean coding involves starting the process with five to six codes and then expanding the codes into to 30 codes as I read and reread the data (Creswell & Poth, 2018). The 25 to 30 codes will then be combined or reduced into five to six themes (Creswell & Poth, 2018). By using this process, I eliminated the problem of developing too many codes that needed to be eliminated or reduced during the theming process. The data must be winnowed because not all the data will apply to this study (Creswell & Poth, 2018). I also recorded a description and boundary for each code.

The next step was the process of developing and accessing interpretations. During the interpretation process, the researcher must be both creative and insightful about what

patterns and themes are relevant to the study (Patton, 2015). In the interpretation process, the researcher will abstract meaning from the codes and themes to a larger meaning of the data (Creswell & Poth, 2018). This process began when I started developing the codes, themes, and organizing the themes into larger units to develop meaning from the data. Marshall and Rossman (2015) warned researchers to be aware of possible alternative meaning to the data. Creswell and Poth (2018) suggested asking these questions during the process:

> "What surprising information did you not expect to find? What information is conceptually interesting or unusual to participants and audiences? What are the dominant interpretations, and what are the alternate notions?" (p. 241)

By continually asking these questions, I was able to journal my reasoning for the development of each code, theme, and interpretation of those items. Throughout this process, I reminded myself that the process is a spiral process, and if needed I will return to any previous step to modify or reexamine if modifications are necessary to the codes, themes, and interpretation of the raw data.

The final step in this spiral process is representing and visualizing the data (Creswell & Poth, 2018). This step involved displaying the data in Table 1 (Appendix C). This process helped the transferability of the research results. By displaying descriptive data with sufficient details, other people can then evaluate if the conclusions made in this study can be transferred to their setting and situation (Amankwaa, 2016). Table 1 provides adequate descriptive data to help people decide if the results or part of the results of this study can be applied to their learning environment.

While analyzing the data for themes, I also analyzed the data for discrepancy cases, also called negative or disconfirming cases. A *discrepancy case* is data that varies from the other themes and patterns which emerged from the research (Ravitch & Carl, 2015). During the interview, if vague or disconfirming data compared to the LMS audit were apparent, I asked probing and follow-up questions to make sure I understood the teacher's responses. I analyzed the data for emerging themes several times throughout the data collection and analysis process. I used member checks and data triangulation to compare the data consistently. Member checks allowed participants to verify that the recorded data represents their intended response, and I did not miss any instructional strategies or misunderstand the intent of the strategy. By looking for discrepancy cases during the data analysis process, because the data analysis process is spiral, I challenged any preconceived notions which developed about emerging themes (Ravitch & Carl, 2015). The discrepancy cases can add further understanding to the instructional strategies blended learning teachers use to improve student achievement (Creswell & Clark, 2017). The process of challenging the emerging themes during the data analysis process added credibility and dependability to the study.

Trustworthiness

The data collection and analysis methods I used in this study were intended to guarantee the study's trustworthiness. The processes I used ensured confirmability, credibility, dependability, and transferability of the study were audit trail, face validity, member checking, reflexivity, thick descriptive data, and triangulation. These processes ensured I properly documented all bias. These trustworthiness processes ensured the

research results are appropriate and consistent, can be confirmed by other researchers, and the study's findings can be extrapolated to other school settings.

Confirmability

Confirmability is the qualitative concept of objectivity. *Confirmability* is the degree to which the research findings of a study can be confirmed or collaborated by other researchers. Other researchers should be able to make the same conclusion by analyzing the research data (Burkholder et al., 2016). In this study, I used reflexibility, triangulation, and audit trail to satisfy confirmability.

Credibility

Credibility or internal validity confirms whether the collected data matches the research questions. *Credibility* deals with whether the research results are believable, appropriate, and represents reality (Merriam & Tisdell, 2015). Through the process of credibility, the researcher should account for intricacies that arise and patterns in the data that do not easily fit the research questions (Burkholder et al., 2016). In addition, credibility depends on the data's richness rather than the amount of data collected (Merriam & Tisdell, 2015). The processes I used to ensure credibility were a research journal to create an audit trail, face validity, member checks, reflexibility, thick descriptive data, and triangulation.

Dependability

Dependability in qualitative research is comparable to reliability in quantitative research (Burkholder et al., 2016). For research to be dependable, there needs to be consistency with data collection and analysis. Dependability also means the researcher

documents any shifts or adjustments in methodology (Burkholder et al., 2016). To ensure dependability in this study, I applied triangulation and audit trails.

Transferability

Transferability is the qualitative concept of external validity. *Transferability* refers to a qualitative study's ability to be generalized to other settings (Burkholder et al., 2016). Even though qualitative studies' intent is not to generalize to a large population, a qualitative study should have meaning beyond the instance (Burkholder et al., 2016). Patton (2015) supported the idea of researchers extrapolating rather than making generalizations. Extrapolating the study's findings implies the person goes beyond the data and the researcher's findings and considers the application of the findings (Merriam & Tisdell, 2015). I used thick descriptive data to support transferability.

Audit Trails

An *audit trail* is a detailed record of how data in a qualitative study was collected, how categories and themes in coding were derived, and how decisions were made throughout the entire research process (Burkholder et al., 2016). The audit trail supported the study's dependability by documenting a description of all the codes, categories, and themes in the study. The audit trail also supported the study's credibility by documenting any issues in the methodology process and how the themes in the data analyze developed. Finally, the audit trail increased the study's confirmability of the study by keeping a record of the data collection and analysis processes.

Face validity

To accurately collect data on the three research questions, I used the process of face validity. *Face validity* ensures the instruments measure what is expected to be measured (Burkholder et al., 2016). Three experts checked each instrument, the LMS audit and the interview protocol. Face validity supported the study's credibility by showing the research was carried out with integrity.

Member Checks

I conducted member checks for the interview data. Member checks supported the creditability of the study. Credibility ensures data represents reality by allowing participants to provide feedback about the data (Burkholder et al., 2016). I asked participants to verify if the interview transcription was accurate and if I captured what they intended. I then met with participants to review the transcripts. This process was an excellent way to rule out misinterpretations and to check for biases.

Reflexivity

A researcher engages in *reflexivity* when the researcher self-reflects their perspective, biases, and assumptions and then discusses how these experiences affect the researcher's interpretation throughout the research. Reflexivity requires the researcher to take field notes or journal their biases about their role in the research process and any adjustments they made during the research (Burkholder et al., 2016). During the entire process, I journaled to keep track of my perspective, biases, and assumptions. This process was essential because qualitative research involves understanding how a researcher's values influence the study's findings (Creswell & Poth, 2018). The

reflexivity supported the credibility and confirmability of the study. Reflecting on any bias and my role as the researcher increased this study's credibility by accounting for any issues that arose and how I identified the data's themes and patterns. Reflecting on my position in the study and my subjectivity increased the study's confirmability by helping me check my bias.

Thick Descriptive Data

I needed to describe three elements need to properly implement thick descriptive data: the setting, participants, and evidence to support the findings (Burkholder et al., 2016). I recorded the setting and details about participants on the interview protocol and LMS audit. I also recorded quotes during the interview on the interview protocol. I also kept field notes in my journal. Thick descriptive data supported transferability and credibility of the study. By using descriptive data with sufficient details, other people can then evaluate if the conclusions made in this study can be transferred to their setting and situation (Amankwaa, 2016). Therefore, I used thick descriptions to create a vivid picture of the setting and participants' attitudes. Table 1 (Appendix C) displays some of the thick descriptive data in the form of quotes from participants' interviews, how I coded quotes, and how several quotes developed into a theme. This data supports the study's transferability.

Triangulation

I used triangulation to ensure the credibility, confirmability, and dependability of the study. Triangulation uses of multiple researchers or sources of data to confirm merging findings (Burkholder et al., 2016; Merriam & Tisdell, 2015). In this study, I used

multiple sources of data: LMS audits and teacher interviews. I used the interviews to check the LMS audits. Triangulation supported the credibility, confirmability, and dependability of the study. According to Patton (2015), triangulation increases the study's credibility by eliminating the accusation that the study is based on a single method or a single source. Triangulation also increased confirmability and dependability in this study by checking the consistency generated by collecting data using two data collection methods (Merriam & Tisdell, 2015). I demonstrated that the data was consistent and confirmed because the same themes emerged from the two different qualitative data collecting methods.

Ethical Procedures

I took several steps to protect the participants in the study. After considering this study's recruitment, participation, and data collection procedures, the associate superintendent and the study site principal granted permission to conduct the study on the chosen research site. Walden University's IRB approved (Approval No. 04-06-20-0177098) that this study complies with Walden University's and the federal government research ethical regulations. After receiving IRB approval, the study site principal provided the names and emails of the English and social studies blended learning teachers with at least 2 years of experience. I followed all the required protocols from the IRB. The recruitment of participants and data collection did not occur until approval from the IRB was granted.

I maintained the confidentiality of all participants throughout the study. Teachers' names were kept confidential. I collected consent emails and all the data. After the data

were collected, I locked the hard copies of the data in a cabinet in my home. Electronic data were password protected on my personal computer. After 5 years, I will shred all hard copies of the data and delete the electronic data from my computer.

I addressed all ethical issues relating to the study. Only English and social studies blended learning teachers were recruited to limit the number of participants in the study. I did not recruit science blended learning teachers because I am the science department chair in the same state as the research site. Recruiting science teachers would be a conflict of interest. I informed the participating teachers that they had the right not to answer any questions and to withdraw from the study at any time. No teachers withdrew from the program.

Summary

I implemented an instrumental case study to explore the instructional strategies used in a successful blended learning program. I recruited five English and five social studies teachers from the research site. I audited the teachers' LMSs and interviewed teachers to determine what instructional strategies teachers used to help students connect to multiple specialized nodes, collaborate and communicate in nodes, and obtain and use accurate and up-to-date knowledge or sources to build new knowledge. The data were analyzed using lean coding. I provided all participants the study's purpose, information on time commitment, details on data collection procedures, and confidentiality information. I also explained to teachers that they were volunteering and could choose to withdraw at any time. In Chapter 4, I will describe the setting and demographics of

participants, data collection process, and data analysis process. I will also explain the study's results in Chapter 4.

Chapter 4: Results

Students enrolled in blended learning classes in a midwestern suburban high school are outperforming students in the traditional face-to-face classes on standardized tests. However, little was known about why students in the blended learning classes are outperforming students in the traditional face-to-face classes. The purpose of this qualitative instrumental case study was to explore what instructional strategies were being implemented to foster student achievement in a successful high school English and social studies blended learning program. The following research questions guided the case study:

Research Question 1: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students connect to multiple specialized nodes?

Research Question 2: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students collaborate and communicate in specialized nodes?

Research Question 3: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students obtain and use accurate and up-to-date knowledge or sources to create new knowledge?

In this chapter, I will describe the setting and demographics of participants. I will then describe the data collection and analysis process. I will also summarize the results of the study and trustworthiness of the results. Finally, I will relate results to each research question in the study.

Setting

The setting for this case study was one public high school located in the midwestern suburbs of the United States. This school had over 3000 students and over 200 teachers. I was familiar with the study site because I live and am employed as a science department chair in the same state. I purposefully chose the research study site due to its blended learning program's successful student achievement rate (Hanover Research, 2017). In the 2019-2020 school year, 73 teachers taught 75 blended learning courses. There were 2234 students enrolled in blended learning classes, and some students were enrolled in more than one blended course totaling 5594 seats. Some school details have been omitted to preserve the anonymity of the study site and participants.

I started auditing Participant 1's LMSs on April 24, 2020, and then interviewed Participant 1 on May 7, 2020. This process continued until all 10 participants were interviewed by August 13, 2020. I collected the stored LMS data from the third quarter of the 2019-2020 school year before the school went to remote learning due to the coronavirus pandemic 2019. Teachers' LMS could not be audited after March 13 due to classes no longer being blended but being fully remote, which could have affected teachers' instructional strategies after March 13, 2020. The LMS platform allows teachers to upload, organize, and store the course content in a meaningful way to impact students' learning, which allows past class assignments to be accessed and analyzed. During the interviews, I asked teachers to answer the questions by providing instructional strategies during the portion of the year that students were in the blended learning environment, not in the remote environment.

To deeply explore this case study, I used a small sample size to allow an in-depth review of multiple sources. I sent invitations to all teachers at the study site meeting all the following criteria: (a) participants had to be in the English or social studies departments, (b) participants had to be teaching at least one blended learning class, and (c) participants had to have at least 2 years of blended learning teaching experience at the school. Five English and five social studies teachers consented to participate in the study. The only participant demographics recorded for this study were the participants' number of years of teaching, number of years teaching blended courses, and whether the teacher was a member of the English or social studies department. I recorded teachers' demographics in Table 2.

Teachers who volunteered for the study had several years of teaching experience. All five English teachers who participated had 3 to 5 years of experience teaching blended learning classes. Two of the social studies teachers had 3 to 5 years of experience teaching blended learning classes, and three teachers had over 5 years of experience. All five English teachers had over 15 years of teaching experience, with 119 years of experience among five teachers. Two of the five social studies teachers had over 15 years of teaching experience. Two social studies teachers had 14 years of teaching experience, with only one teacher having under 10 years of teaching experience. The social studies teachers had a total of 68 years of experience among the five teachers.

Table 2

Participants' Demographics

Participant ID	Number of years teaching blended	Number of years teaching	Department
1	4	31	English
2	7	17	Social studies
3	3	26	English
4	5	8	Social studies
5	5	16	English
6	4	26	English
7	4	20	English
8	6	14	Social studies
9	3	14	Social studies
10	7	15	Social studies

Data Collection

The entire data collection process took approximately 4 months, from April 2020 to August 2020. I started by auditing the teacher's LMS and then interviewed the teacher. The interviews were virtually conducted over Zoom because face-to-face interviews were not allowed due to the coronavirus pandemic. There were no unusual circumstances encountered during the data collection process.

The first data source was the teachers' LMSs. Ten teachers participated, but I audited 17 LMSs because some teachers taught two or three blended learning classes. The number of LMSs I audited for each teacher is listed in Table 3. I used the LMS audit instrument to record the teacher's ID, the blended learning class's name, date of the activity, a brief description of the activity, and whether the activity took place in class or outside of class during an online day. I also used the audit tool to record whether the instructional strategy used was a whole group, small group, or independent activity. Finally, I recorded the type of pedagogical methods of connectivism the teacher incorporated into the activity. The type of pedagogical method was categorized into one of seven methods: (a) an instructional strategy that allowed the learners to interact with a personal network, (b) an instructional strategy that allowed the learners to engage in meaningful dialogue or collaborate through the use of technology, (c) an instructional strategy that allowed the learners to choose accurate and reliable online or offline sources to meet the desired outcome, (d) an instructional strategy that allowed the learners to develop skills to build and expand their learning networks as needed across different platforms and medias, (e) an instructional strategy that allowed the learners to build a network to evaluate, reflect, and synthesis opinions, concepts, and perspectives so each learner can then create new knowledge, (f) other for any method of connectivism pedagogy not fitting into the original five methods, or (g) not a connectivism pedagogy method (Kizito, 2016; MacCallum & Parsons, 2016; Parsons & MacCallum, 2017). After auditing three LMSs from participant 1, I scheduled the interview with the participant. I repeated this process until I finished interviewing all 10 participants.

Table 3

Teachers' LMS

Participant ID	LMS class 1 audited	LMS class 2 audited	LMS class 3 audited
1	Dual Credit Speech B	Public speaking B	Film and literature B
2	Psychology B	AP psychology B	
3	English III H B		
4	Global studies B		
5	Dual credit English IV B		
6	English IV-responsibility B		
7	AP English literature B	English IV-alienation B	English II B
8	AP European history B	Global Studies B	
9	Current issues B - 9/10		
10	American government B	Economics B	

*B – Stands for blended

I conducted 10 virtual interviews by Zoom starting on May 7, 2020. I interviewed each participant for approximately 45 to 60 minutes. I asked each participant questions from the interview protocol (Appendix B). I also asked some specific follow-up questions based on the LMS audit to clarify some instructional strategies and activities. I recorded both the audio and video files during the Zoom interview and then transcribed the audio file verbatim. Before coding any data, I shared the interview transcript with the participant in a Google document in comment only mode. I asked the participant to comment on the document if any changes were needed or if they needed to add any

additional comments. I then met virtually with the participant to go over the changes made on the transcript. After they indicated they had finished commenting on the Google document, I copied the document into Word to store the Word document in an encrypted file with a password and unshared the Google document with the participant and deleted it. I completed this process for all 10 participants.

Data Analysis

I reflected in a journal each time I collected data. After examining the LMS, I reflected on the instructional strategies used and the overall connections to the connectivism theory. After the interviews, I reflected on the conversations, and I did a self-check for bias, noting any feelings or assumptions. After the interviewees went through the member check process, I started the coding process using lean coding.

I used lean coding to analyze the data to eliminate the problem of developing too many codes that would later need to be reduced during the theming process. Lean coding involves starting the process with five to six codes and then expanding into 25 to 30 categories as I read and reread the data (Creswell & Poth, 2018). The codes were nodes, collaboration and communication, building knowledge, resources, and best practices. As part of the process, I recorded each code's description and each code's boundary in Table 4 (Appendix D; Creswell & Poth, 2018). Node was an initial code that included all data referring to a connection point that provides information, including online resources, videos, or journals. Another initial code called collaboration and communication included all data referring to communication between two or more people in person or online. Building knowledge was the third initial code, including any data involving synthesizing

concepts, opinions, and perspectives of multiple nodes to build new knowledge. Resources was an initial code used to code all instructional strategies used to obtain accurate and up-to-date sources for learning purposes. Finally, best practices was a code used to collect data about methods used by teachers to help students academically succeed, not related to instructional strategies.

After establishing the codes, I expanded the codes into 28 categories. The categories that emerged were instructional strategies and best practices used by teachers to help students succeed in blended learning. Some categories emerged from multiple codes. For example, modeling and scaffolding were instructional strategies that emerged from four codes: nodes, resources, building knowledge, and collaborating and communicating. Participant 8 said, "I modeled how to handle sensitive material in a small group activity by showing students a piece of information they could use and demonstrated the appropriate way to ask certain types of questions." Figure 1 (Appendix E) lists all the categories that emerged from the codes.

I coded the data using NVivo, a qualitative and mixed-method software program. Using NVivo, I organized the LMS and interview data into codes. Then I reread each code and organized the data into the categories that emerged. For the final step, I created a chart of the codes and how they expanded into the categories to make sure I had a clear vision of the development of the themes to answer the research questions.

Five themes developed from the categories when I was coding the data relevant to the research questions. I explored what instructional strategies teachers used to promote blended learning students' academic success. The five themes were instructional

strategies related to nodes, instructional strategies for researching, instructional strategies for synthesis and application of content, instructional strategies to help students communicate and collaborate, and best practices.

Five codes expanded into 28 categories during the data analysis process, and then the categories merged into five themes. Several of the categories overlapped into multiple themes, as seen in Figure 1 (Appendix E). The categories were instructional strategies teachers used in their classroom to promote students' academic success. I placed the categories into themes according to how teachers applied the instructional strategy. Therefore, I placed several categories into multiple themes.

Instructional Strategies for Nodes

The first theme that emerged from the data was instructional strategies related to nodes. These strategies included instructional strategies teachers used to help students connect or analyze nodes. Nodes include videos, text, and online resources. There were nine categories in this theme: read/video with guided questions, outline/guided outline, brainstorming, investigating, annotate, modeling, scaffolding, discussion post, and feedback/reflecting. On the online days, outlining and annotating were a common practice. Participant 2 said, "They're reading and outlining, and that's something that we work on a lot at the beginning of the year." Another example, Participant 6 said "They read the chapters and make annotations on assigned topics and on evidence that supports the topics." In these examples, teachers used instructional strategies to help students interact with resources to obtain information from the nodes to build knowledge.

Instructional Strategies for Researching

Instructional strategies for researching was a theme that developed from categories related to students finding accurate and up-to-date resources. There were 10 categories combined to create this theme: annotated bibliography, activate prior knowledge, metacognition, website credibility checklist, Power of 3, bias of sources, primary/secondary sources, CRAP/CRAAP/SCATAB tests, modeling, and scaffolding. Modeling how to use the Gala database or how to conduct a CRAP test was a common instructional strategy. Participant 5 said, “In the fall semester, when they have to find their one source themselves, I show them how I go through the power search.” Participant 5 modeled how to conduct a power search. Modeling and scaffolding were common instructional strategies throughout several of the themes.

Instructional Strategies for Synthesis and Application of Content

This theme involved students doing higher-order thinking skills. The instructional strategies related to this theme involved the synthesis and application of content and opinions to build knowledge. Eight categories merged to form this theme: metacognition, modeling, creation of artifacts, compare and contrast, feedback/reflect, small group instruction, speeches, and discussion post. As part of the connectivism theory, students should create and share artifacts to demonstrate how they made sense of a topic (Siemens, 2011). Participant 8 shared that the groups created wiki pages to demonstrate an understanding of the significant developments in the period 1880-1939 using a variety of media. The groups then provided each other feedback, and the teacher allowed the groups to make any changes before the final product was due.

Instructional Strategies to Help Students Communicate and Collaborate

The theme of instructional strategies to help students communicate and collaborate involved class and online communication and collaboration. There were eight categories in this theme: modeling, feedback/reflect, small group instruction, speeches, lecture, discussion post, talking stick, and peer teaching. Feedback/reflect, small group instruction, speeches, and discussion post categories are duplicated from the instructional strategies for synthesis and content application. The small group instruction category has several instructional strategies: Socratic seminar, jigsaw, debate, think-share-pair, literature circles, fishbowl, circle the stage, lotus blossom, heads together, and assigning roles to small group members. These strategies can allow students to communicate, collaborate, learn content, and build knowledge all at one time. Participant 8 said, "Quite often, I use the jigsaw method where I break students into expert groups." Participant 5 revealed another example of an instructional strategy to collaborate, "I used the lotus blossom to help students start thinking about their research topics." Small group instruction, modeling, and scaffolding were the most common in-class instructional strategies mentioned by participants.

Discrepancy Case

Lecture was a category developed as a means of communicating content to students. Three participants mentioned using lectures as one form of communicating content. However, traditional lecture is a discrepancy case for the connectivism theory. A connectivism learning environment requires actively collaborating among learners to

form new knowledge. However, two of the three participants reported using active lecturing. Students interacted with the teacher and each other.

Best Practices

Best practice is a code not focusing on instructional strategies but rather focusing on good practices teachers implement to help students succeed. Four categories emerged to form this theme: clear communication on the teachers' LMS pages, instruction on what to do on an online day, differentiation, and high and clear expectations. The best practices theme does not relate to any research question. However, these practices were mentioned or used on the LMS by every participant. Participant 7 stated, "For the first 2 weeks of class, we meet in class. Students learned how to plan their time, how the LMS was organized, how to submit homework, and how to write online discussions." The study site has a set policy during the first 2 weeks of a blended learning class that students do not have any online days. The purpose of the policy was to provide students with an orientation of the tools and skills needed for the course. However, freshmen stayed in class even longer. Participant 8 stated, "The first couple of years in Global Studies, we spent six weeks in class, but this past year, we spent nine weeks before we had any online days." Bended global studies at the study site is a freshman class, and students stayed in class to provide a better high school orientation. This best practice helped students succeed in blended learning because it offered a blended learning orientation.

Another reason students may have to stay in class is low grades. Participant 1 shared,

> The school's policy is students must have a 70% to blended but, in my class, they must have an 80%. I have found if you set the standards high, students will meet those standards because they want the online days.

According to school policy, if a students' grade is below a 70% average, they must attend class during an online day. However, teachers were allowed to set the expectations even higher. Participant 1 and several other participants set the expectation at 80%. If student's grade fell below 70% or 80%, the student attended class and could get extra help while other students had an asynchronous day.

Flipped Classroom

During the interview process, I documented another common theme among several participants not directly related to my research questions. A common pedagogical approach used by six of the 10 participants was the flipped classroom. In addition, Participant 1 stated, "I would like to explore the flipped classroom now that I have experienced the remote learning and realize how easy it is to make videos." Students would first read content or watch videos during an online day and normally fill out guided notes, an outline, or fill in a guided outline. During class, students would apply or synthesis the content knowledge to create an artifact or debate facts. Participant 2 stated, "by the time we use the content in class, students have processed the content at least twice." Also, Participant 9 said, "Global Studies utilizes a flipped classroom to have them do the work outside class so that when the class meets, we are discussing things and students are teaching each other." Using the flipped classroom pedagogy allowed higher-

order thinking skills to occur during class instead of assigning these activities as homework or online.

Results

The purpose of this qualitative instrumental case study was to explore what instructional strategies were being implemented to foster student achievement in a successful high school English and social studies blended learning program. I organized this section by research questions because the instructional strategies needed to align to each research question. The themes closely aligned with the research questions and the connectivism theory. Each research question has one to two themes aligned to the question.

Research Question 1

The first research question explored instructional strategies high school blended learning teachers used to connect to multiple specialized nodes. Table 5 displays the theme and the categories related to Research Question 1. The theme of instructional strategies to connect to nodes aligns with Research Question 1 because these instructional strategies entail students connecting to videos, texts, and online resources. In the process of learning, the learner connects to specialized nodes (Siemens, 2005, 2006a), and continuous learning occurs as the learner develops and grows connections (Downes, 2008). Teachers should facilitate activities to help students access resources and become actively engaged with those resources (Siemens, 2011). The theme of instructional strategies connecting to nodes provides a list of instructional strategies teachers used to

help students connect to different nodes to build knowledge. The instructional strategies used by teachers involved strategies used during in-class and online learning days.

Table 5

Research Question 1: Theme and Categories

Research question	Theme	Categories/Instructional strategies
Research Question 1: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students connect to multiple specialized nodes?	Instructional strategies to connect to nodes	Read/Video with guided questions Outline/Guided outline Discussion post Feedback/Reflection Brainstorming Investigating Annotate Modeling Scaffolding

Teachers used several instructional strategies to help students examine nodes and learn from nodes during online days or what the study site called blended days. Teachers incorporated instructional strategies such as assigning reading or watching videos with a guided question worksheet to help construct students' knowledge. Other instructional strategies used while students read or watch videos were outlining, guided outlining, and annotating. For example, Participant 6 stated,

> When we read novels in English IV, the students take annotations, and in one column, they write notes on what they want clarified. Then we take the first 5 to 10 minutes of class to go over the clarifications the students need and any misconceptions they may have from their reading.

The annotations involved students interacting with the novel by taking notes on important events, characters, settings, the author's meaning, tone, and even notes about items students wanted clarified. The connectivism theory supports the teachers' instructional strategies because students were actively engaged with nodes to construct knowledge.

Most of the teachers' in-class instructional strategies, which are related to Question 1, focused on improving students' skills to analyze the nodes. During class, teachers incorporated instructional strategies such as brainstorming, investigating, feedback/reflection, scaffolding, and modeling. Participant 3 stated, "I model for the students what a good online discussion post and response should look like. I want students to know what the expectations are." Teachers demonstrated to students how to interact with the class's resources to thoroughly analyze the questions to write an online discussion post that other students could agree, disagree, or add additional information. Students would then be required to provide feedback or reflect on two to three other students' discussion posts.

Research Question 2

Research Question 2 explored instructional strategies being implemented in high school English and social studies blended learning classes to help students collaborate and communicate in specialized nodes. The theme of instructional strategies for

communication and collaboration aligns with Research Question 2. In the connectivism learning environment, teachers need to become the facilitators of information, so the learner can examine a variety of opinions to construct knowledge (Siemens, 2005, 2006a, 2011; Sulaiman, 2018). Therefore, teachers need to use instructional strategies that allow students to collaborate to form new knowledge. Nine categories emerged to form the theme of instructional strategies for communication and collaboration. Table 6 displays the categories related to Research Question 2. Participants used small group instruction, peer teaching, talking sticks, and lecture to deliver or analyze content in class. Participant 4 acknowledge that she used the jigsaw strategy to have students answer the question of how the land in the Amazon Rainforest should be preserved. Several blended learning teachers used the jigsaw method to help students process and analyze content rather than passively taking notes. Cooperative learning methods like the jigsaw have been shown to improve the autonomy, leadership, learning gains, and retention of material (Guerrero et al., 2019). In their interviews, teachers revealed that in-class days were generally used for small group activities or class discussions.

Teachers incorporated student speeches to also communicate knowledge in class. Students critiqued and provided feedback to other students giving their speeches. Usually, to prepare for the speech, students had to research to find their nodes, an important part of the connectivism theory. According to Siemens (2005), knowing where to find information is just as critical or even more critical than building knowledge. Participant 1 explained how he scaffolded the speeches in his Public Speaking class by requiring more from each speech throughout the semester. Students listening to the

speeches also learned from interacting with the speaker by asking questions and providing feedback.

Table 6

Research Question 2: Theme and Categories

Research question	Theme	Categories/Instructional strategies
Research Question 2: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students collaborate and communicate in specialized nodes?	Instructional strategies for communication and collaboration	Small group instruction Feedback/Reflection Discussion post Peer teaching Talking stick Lecture Speeches Modeling Scaffolding

Online discussion posts allowed students and teachers to communicate and collaborate outside of class. Normally an online discussion post started with the student interacting with a node and responding to a question. Then students have to read and respond to each other's posts. Therefore, students also learned from each other's perspective. According to Siemens (2005), building knowledge involves synthesizing opinions, concepts, and perspectives to create new knowledge. The online discussion post

allowed students to analyze multiple nodes, multiple opinions, and perspectives to develop a more in-depth knowledge base of the topic.

Three participants mentioned lectures as a means of communicating content to students. Lecture is a form of communication and does deliver content. However, a traditional lecture is a discrepancy case for the connectivism theory. A connectivism learning environment requires teachers to adapt their instruction by designing lessons with students actively collaborating to form new knowledge. However, two of the three participants who reported the lecture as an instructional strategy also said their lectures were interactive. Participant 3 stated, “I tell students we have about 4 minutes of notes, which will take about 14 minutes when you factor in having to listen to all the stories relating to the novel.” Participant 5 stated, “I provide students’ classroom notes by lecture. However, lectures are very interactive and are more like classroom discussions.” Even though lecture is a form of communication and provides students with content, there is little collaboration with lecture unless teachers have inserted active participation into the lecture time.

Research Question 3

The third research question explored instructional strategies being implemented in high school English and social studies blended learning classes to help students obtain and use accurate and up-to-date sources to build new knowledge. Two themes that emerged from Research Question 3 are instructional strategies for researching and instructional strategies for synthesis and application of content. The results directly relate to the connectivism theory which involves the learners connecting to specialized nodes or

sources of accurate and up-to-date information to build networks (Siemens, 2005, 2006a). Because information is rapidly changing, learners continuously update their networks as needed and rewrites their knowledge (Downes, 2005). Therefore, teachers need to implement instructional strategies that allow the learners to develop a network to evaluate, reflect, and synthesize opinions, concepts, and perspectives so each learner can create new knowledge (Kizito, 2016; MacCallum & Parsons, 2016; Parsons & MacCallum, 2017).

The 10 categories that merged to form the theme, instructional strategies for researching, are displayed in Table 7. Teachers used these instructional strategies to help students learn how to find accurate and up-to-date resources. Participant 5 said, "Students are also required to write an annotated bibliography to show that they have evaluated the sources they choose to use in their research unit." Participant 5 explained that she used modeling and scaffolding to help students learn to use these instructional strategies. Participant 5 first presented to students the CRAPP or SCARAB test and then showed them how to use the test. At the beginning of the year, students were only required to find one source to write an essay. By the beginning of second semester, students had to find enough sources to evaluate and synthesize to support a research question the student developed themselves.

Eight categories merged to form the theme of instructional strategies for synthesis and application of content, Table 7. One of the categories, creation of artifacts, was mentioned by every participant or found on the participant's LMS. Teachers had students

create several different types of artifacts. Students needed to synthesize and evaluate the content, perspectives, and opinions to create these artifacts.

Table 7

Research Question 3: Themes and Categories

Research question	Themes	Categories/Instructional strategies
Research Question 3: What instructional strategies are being implemented in high school English and social studies blended learning classes to help students obtain and use accurate and up-to-date sources to create new knowledge?	Instructional strategies for researching	CRAAP/CRAP/SCARAB test
		Primary/Secondary sources
		Annotated bibliography
		Activate prior knowledge
		Website credibility checklist
		Bias of sources
		Power of 3
		Metacognition
		Modeling
		Scaffolding
	Instructional strategies for synthesis and application of content	Small group instruction
		Creation of artifacts
		Compare and contrast
		Feedback/Reflection
		Discussion post
		Metacognition
		Speeches
		Modeling

To accomplish higher-order processes like synthesizing and applying content, students also need a chance to collaborate and share their knowledge to gather more content, perspectives, and opinions. Therefore, the category of small group instructional

also fits into the theme of instructional strategies to synthesize and apply content. Teachers would use small group instruction such as debates, Socratic seminars, or lotus blossoms to provide students with more perspectives on a topic to determine the meaning of the content. Small group instruction is one of the eight instructional strategies that emerged to develop the theme of instructional strategies for synthesis and application of content

Other Themes

Two themes in this study were not associated with any research questions: best practices and flipped instructional model. The study's main goal was to determine why students in the blended learning program at the midwestern suburban high school are outperforming the traditional classroom students. Therefore, I needed to examine all themes emerging from the study. The theme, best practices, was not associated with any research question. The categories related to best practices are clear communication on the LMS, instruction on what to do on an online day, high expectations, and differentiation. The theme was also not associated with the connectivism theory. However, the theme emerged from the audit of the teachers' LMS pages.

Best Practices

Most of the categories that emerged to create the theme of best practices were associated with school policy. The study site's associate principal of curriculum, instruction, and assessment explained that blended learning teachers were required to have a welcome page on their LMS. Teachers had to include their contact information, course overview, course requirements, and attendance requirements on the welcome

page. The category that developed from this requirement was clear communication on LMS. Another school policy was teachers were required to keep their students in-class the first 2 weeks of class. During this time, teachers demonstrated how to use the technology needed to be successful, how to navigate the LMS pages, and what to do on blended days. The school calls online days blended days. The associate principal added that if a student did not maintain a 70% in the class, the student would have to go to class even on a blended day. A teacher could set a higher standard or require a student to come to class for another purpose if needed. Four out of 10 teachers required students to have an 80% to leave class on a blended day, and one teacher required students to have a 70% and all their work turned in. Three out of four categories in best practice developed from school policy.

The main category not required by the study site that several teachers emphasized was differentiation. Participant 9 said, “I think blended learning is tailored to differentiation because a teacher can use the blended days to ask certain groups of students to come in to either get extra help or to extend their learning.” Therefore, on blended days teachers could have required struggling students or students who needed extra help with a specific skill to come in even if they had above 70%. In addition, teachers used blended days to challenge gifted students. Blended learning allows teachers flexibility in their schedule to build time in for differentiation for both struggling and advanced students.

Flipped Classroom

A second theme not associated with a research question was the flipped classroom method. Six out of 10 participants mentioned using the flipped classroom method of instruction during the interviews. Students analyzed content on blended days before using the content in class. However, the flipped classroom concept does not align with any research questions. Participant 4 said that using the flipped classroom method allowed for student collaboration in class. The flipped classroom pedagogy allowed higher-order thinking skills to occur during class with support from the teacher instead of assigning these activities as homework or as blended day assignments.

Evidence of Trustworthiness

The data collection and analysis methods used in this study define and establish the study's trustworthiness results. I addressed credibility, transferability, dependability, and confirmability of this study to achieve proper trustworthiness. These processes confirmed I properly documented all bias. These trustworthiness processes also ensured the research results are appropriate and consistent, can be confirmed by other researchers, and other school officials can extrapolate the study's findings to their school settings.

Credibility

Credibility or internal validity confirms the collected data matches the research question, and research results represent reality. I used three processes to ensure credibility: face validity, member check, and triangulation. Using face validity, I ensure the instruments measured what was expected to be measured (Burkholder et al., 2016). To validate the interview protocol, I asked three qualitative research experts to review the

interview protocol for alignment with the research questions and thoroughness of the protocol. Three administrators who have expertise in auditing LMSs checked the LMS audit's validity and suggested some changes. After confirming the instruments' validity, I audited Participant 1's LMS and then interviewed Participant 1. I then used a member check to verify that the interview transcription was accurate and captured what the participant intended. A member check allows participants an opportunity to provide feedback about the data. I provided Participant 1 with a copy of the transcript and allowed Participant 1 to make comments on the Google Document. I then met with the participant to go over the transcript to verify any changes. I repeated this process until I interviewed all 10 participants. In this study, I used two sources of data: the LMS audit and interviews. According to Patton (2015), triangulation increases credibility of a study by eliminating the accusation that the study is based on a single method or a single source of data. I also increased this study's credibility by using interview data to check the LMS audit data.

Two other processes I used to ensure credibility in this study were audit trail and reflexibility. The audit trail supports the study's credibility by documenting any methodology process issues and how the data analysis themes developed. This process can help a researcher account for patterns in data that do not easily fit the research questions (Burkholder et al., 2016). In this study, there were no issues that arose during data collection from the LMS audit or interviews. However, themes did develop that were not aligned with any research questions. The audit trail shows that best practices and the flipped classroom themes did not align with any research questions. Another way to

document credibility is to use reflexibility. Reflexivity requires researchers to take field notes or journal their biases about their role in the research process (Burkholder et al., 2016). During the entire process, I journaled to keep track of my perspective, biases, and assumptions. The audit trail and reflexibility helped document data patterns and developed the codes, categories, and themes.

Transferability

In general terms, transferability refers to a qualitative study's ability to be generalized to other settings. Patton (2015) supported the idea of researchers extrapolating rather than just making generalizations. To extrapolate this study's findings, an individual would go beyond the study's data and findings and consider the study's application. I used thick description data to support transferability. Table 1 (Appendix C) displays some of the thick descriptive data in the form of quotes from participants' interviews, how I coded quotes, and how several quotes developed into a theme. Using thick descriptive data, individuals can evaluate if this study's findings can be transferred to their setting and situation.

Dependability

For research to be dependable, there needs to be consistency in the research findings. To demonstrate dependability, I applied an audit trail and triangulation to my study data analysis processes. By keeping an audit trail, I kept my research processes transparent by documenting a description of all the codes, categories, and themes in the study. In addition, triangulation checked for the consistency of data by using two different data collection methods. The results demonstrated that the data was consistent

and dependable because the same themes emerged from two qualitative data collection methods.

Confirmability

Confirmability addresses how other researchers should confirm the research results by analyzing the research data (Burkholder et al., 2016). In this study, I used reflexibility, triangulation, and an audit trail to ensure confirmability. I used reflexibility by journaling field notes during interviews and journaling my perspective or assumptions as I analyzed the data. After reflecting on each participant's specific follow-up questions, I confirmed the questions aligned with the main interview question. There was no bias in the question. For example, one of the main interview questions was what instructional strategies do you use to help students collaborate to learn from one another. As a follow-up question, I told Participant 6 that I noticed on her LMS calendar students read Catcher in the Rye on a blended day, and then the next day in-class did an activity. Then I asked her what instructional strategies she used during the in-class day. The follow-up question was to provide more information about data I gather from the participant's LMS audit.

In addition to using reflexibility, I used an audit trail and triangulation to ensure confirmability. An audit trail is a detailed record of how data in a qualitative study was collected, how themes in coding were derived, and how decisions were made throughout the research process (Burkholder et al., 2016). The audit trail increased the study's confirmability by keeping a record of the data collection; a record of the development of codes, categories, and themes; and a description of the codes, categories, and themes. Triangulation also supported confirmability because I used multiple forms of data: LMS

audits and teacher interviews. Triangulation increased this study's confirmability by checking the consistency generated by collecting data using two data collection methods (Merriam & Tisdell, 2015). The results demonstrated that the data was consistent and confirmed, because the same themes emerged from the two different qualitative data collecting methods.

Summary

This study's findings provided instructional strategies used in a successful blended learning program in a midwestern suburban high school. Teachers in this study used several instructional strategies to help students examine nodes and learn from nodes. The most common instructional strategies used to help students collaborate and communicate was small group instruction such as jigsaw and Socratic seminar. The final research question addressed instructional strategies to help students find accurate, up-to-date resources and instructional strategies to use multiple sources to build new knowledge. Teachers used 10 different instructional strategies to help students find accurate, up-to-date resources. Students needed to synthesize and evaluate others' content, perspectives, and opinions to build new knowledge. Therefore, teachers used instructional strategies involving the creation of artifacts such as a mind map. Scaffolding and modeling were two instructional strategies used by most teachers to improve students' skills throughout the year. Two other themes developed from the research that was not related to a research question: best practices and the flipped instructional model. These two themes repeatedly emerged from data. Using the flipped classroom method, students first analyzed a node or multiple nodes during an online day. Then the class

collaborated about the nodes and further developed the ideas during class. Finally, an individual or a group of students created an artifact to synthesize all the nodes, concepts, and opinions either in-class or during an online day.

Chapter 5 includes an interpretation of this study and how it relates to the current research on blended learning and the connectivism theory. I will also discuss how this study's findings contribute to the current research and the influence the findings could have on the way schools start or improve a blended learning program. In addition, I will discuss the limitations of this study and suggest further research on blended learning.

Chapter 5: Discussion, Conclusions, and Recommendations

Students enrolled in blended learning classes in a midwestern suburban high school are outperforming students in traditional face-to-face classes on standardized tests, yet there was little information known about the instructional strategies used in these classes. The purpose of this qualitative instrumental case study was to explore what instructional strategies were being implemented to foster student achievement in a successful high school English and social studies blended learning program. Four themes emerged related to the research questions: instructional strategies used to analyze nodes, instructional strategies for researching sources, instructional strategies for communication and collaboration to learn content, and instructional strategies for synthesis and application of content. Two additional themes emerged unrelated to the research questions: best practices and the flipped instructional model.

Interpretation of the Findings

Four themes developed from this study related to the three research questions. These four themes are supported by the connectivism theory and literature review. Two other themes developed from the research: best practices and the flipped instructional model. The flipped instructional model is supported by the connectivism theory and literature review. The blended learning literature review supports the best practices theme.

Several categories overlapped into multiple themes because teachers used some of the instructional strategies for multiple reasons. For example, teachers mentioned using modeling to support four out of five of the themes. Teachers used modeling to

demonstrate to the students how to connect to nodes and analyze them. Teachers also used modeling to demonstrate how to research using different databases. Modeling was also connected to two other themes: (a) synthesizing and applying content to build knowledge and (b) communication and collaboration. Participant 3 explained how he modeled a good post and response, so students knew online discussions' expectations. I placed categories into themes according to how teachers used the categories. The overlap of the categories occurred because instructional strategies have multiple uses.

Instructional Strategies for Nodes

The instructional strategies for nodes theme emerged from instructional strategies teachers used to help students interact with sources. Learners need to connect to specialized nodes or different types of resources (Siemens, 2005, 2006a). Teachers also need to actively engage learners with resources to facilitate their learning (Siemens, 2011). Participants in this study used instructional strategies like answering guided questions, outlining, and annotating to guide students' interactions with videos, texts, articles, and online resources to determine the most relevant material. Videos, text, articles, and online resources were specialized nodes used in the courses as content sources. Teachers assisted learners in making connections and creating networks (Siemens, 2011). Another instructional strategy used in this study was an online discussion post to interact with sources by posting reactions or questions to sources and then providing feedback or reflections regarding other students' posts. In these discussion posts, teachers helped students connect with sources and create networks. Online activities need to be engaging and interactive, provide feedback, and complement face-to-

face activities (Cundell & Sheepy, 2018; Keogh et al., 2017). The online discussion post in this study did promote interactions among students, and students provided each other feedback on their posts. Northey et al. (2015) found students in blended learning are more engaged in asynchronous activities, which positively correlates to an increase in students' final course grade. Even though there is no direct correlation between students' achievement in this study and their online interaction, this could be one reason blended learning students at the research study site are outperforming students in the traditional classroom on the ACT, SAT, and PSAT.

Instructional Strategies for Researching

Instructional strategies for researching theme developed from instructional strategies that teachers used to help students find resources. In this study, teachers used scaffolding and modeling to help students to find their resources. As part of the scaffolding process, freshmen teachers provided students with most of the resources. Then students learned to analyze sources for bias. Each sequential year in English classes, teachers require students to do more research and use more research databases. Finally, during their senior year, they have to write a complete research paper independently. According to Siemens (2005), knowing where to find information is just as critical or even more critical than building knowledge. O'Brien et al. (2017) found that teachers need to provide students with opportunities to search for sources using a student-centered pedagogy with scaffolding to help students overcome their lack of self-regulatory skills. Teachers scaffolded the research process by gradually adding more requirements each year, so students learned to build and navigate new learning networks.

Instructional Strategies to Help Students Communicate and Collaborate

In this study, nine out of 10 teachers used small group instruction to promote students' interaction with resources to build new knowledge. According to Alzain (2019), a connectivism learning environment should be collaborative to assist students in making connections and building networks. In this study, teachers used several small group instructional strategies to promote collaboration and communication. Teachers stressed in the interviews that they used small group instruction during the majority of the time during in-class days. Teachers incorporate several small-group instructional strategies: Socratic seminar, jigsaw, debate, think-share-pair, literature circles, fishbowl, circle the stage, lotus blossom, heads together, and assigning roles to small group members.

Learning involves networks at three different levels: neural, conceptual, and external. In the neural network, nodes are neurons in the human brain (Siemens, 2006a; Siemens & Tittenberger, 2009). At the conceptual level, networks involve key concepts within a discipline (Siemens, 2011). A node in the external network is a person or another source of information (Siemens, 2011). Therefore, it is essential learners connect with others to gain information, perspectives, and opinions to create new knowledge. The connectivism learning environment should be collaborative to assist students in making connections and networks (Alzain, 2019; Barnard-Ashton et al., 2017). Teachers used small group instructional strategies to help students collaborate and communicate to analyze nodes, perspectives, and opinions to build higher-order thinking skills and new knowledge.

In a blended learning class, students have to collaborate and communicate both asynchronously and synchronously. Online discussions are one way to promote asynchronous collaboration and communication. Online discussions enhance student learning by creating a sense of community and increasing critical learning skills (Bowyer & Chambers, 2017; Nortvig et al., 2018). In this study, teachers used asynchronous online discussions to extend in-class discussions, analyze nodes, and provide students with feedback. Even though there is no direct correlation, students' participation in classroom discussions in this study could account for part of their higher academic success on the ACT, SAT, and PSAT. In synchronous instruction, teachers used several different types of small group strategies that allowed students to interact and communicate. Banditvilai (2016) said students liked the flexibility of blended learning but still preferred social interactions in a traditional face-to-face class. Therefore, teachers need to design collaborative activities into their blended learning curriculum.

Instructional Strategies for Synthesis and Application of Content

Instructional strategies for synthesis and application of content theme emerged from instructional strategies teachers used to help students synthesize and apply content, perspectives, and opinions to build knowledge. Learners evaluate and synthesize information gathered through networks (Siemens, 2011). Learners then create and share artifacts to make sense of the information (Siemens, 2011). In this study, teachers used several instructional strategies to synthesize and apply the content, such as metacognition, modeling, comparing and contrasting, small group instruction, speech, and discussion posts. Teachers used small group instruction to help students collaborate,

synthesize and apply the content, as well as share perspectives and opinions. Participant 2 said:

> Students read a given section of the psychology book, outline it, and wrote down a personal example during an online day. Then they shared their examples the next day. It is all about applying it to their lives and their experiences. The more connections they make, the better they will understand the material.

Students worked in groups to synthesize gathered information, decide if they needed to gather more information, and create their artifact. Then groups shared their artifacts and provided each other feedback regarding how to improve.

Best Practices

The best practices theme was not related to a research question or the connectivism theory. However, the best practices mentioned by teachers in this study are supported by prior research. The study site had policies set-up to assure all the blended learning teachers had clear communications on the first page of the LMS. Teachers included their contact information, a course overview, course requirements, and attendance requirements. According to the study site's associate principal, teachers had to organize each unit on the LMS by theme or product output. If the teacher organized the unit by theme, each unit's sequential subpage included smaller topics covered throughout the unit. If the teacher organized the unit by product output, each unit has three subpages: one page for notes and resources, one page for assignments, and one page for assessments. Teachers in this study also used the calendar to organize information by linking the assignments to the calendar. The ease of using the LMS in the blended

learning environment is one of the most significant factors related to student satisfaction (Blau et al., 2018; Hubackova & Semradova, 2016; Kintu & Zhu, 2016; Kintu et al., 2017; Krasnova & Vanushin, 2016; Lin et al., 2016; Tamim, 2018). The easier students could navigate the LMS system and find course material, the more satisfied they were with the blended course. Course satisfaction was not a variable measured in this study. However, students could easily navigate the LMS, which could be one reason students in blended learning are outperforming traditional classroom students.

The study site also required every blended learning classes to have traditional face-to-face meetings for the first 2 weeks of school to teach students skills they would use during online days. Participant 4 explained that freshmen students were kept even longer in-class to help them transition too high. In three previous studies, researchers found that teachers could improve communication by providing orientation in the first week of class (Owston, 2018; Tamim, 2018; Wichadee, 2019). The orientation could help students learn to navigate the system, learn how to submit assignments, and learn about the course's organization. At the study site during the first 2 weeks of class, teachers provided an orientation to blended learning students. During the orientation, teachers showed students how to navigate the LMS, contact the teacher during an online day, read feedback provided by the teacher, complete an online discussion post, turn online assignments in, use specialized software, and manage their time. Participant 2 stated, "during the second week of class, we have fake online days where students pretend to have an online day even though they are actually in class." This allowed students to practice the skills needed for online days with the teacher still present in class. Teachers

at this study site incorporated orientation at the beginning of the year, as previous research suggested, to improve communication and students' ability to navigate the LMS.

According to the associate principal, the study site's policy requires any student with a grade below 70% to stay in class during online days. Boelens et al. (2017) discovered blended learning courses allowed for student differentiation. The study site policy helped teachers differentiate by having students who were struggling stay in class for additional support. This allowed teachers to work one-on-one or in small groups with students on skills. Bowyer and Chambers (2017) showed that blended learning teachers successfully helped struggling students by providing them extra support when they came to class during online days. Some of the study site teachers also made stricter policies or changed the policy to provide additional differentiation. Participant 6 stated, "I sometimes require students who scored below 75% on a formative quiz to come to class during an online day so they can get extra help." The school's attendance policy allowed teachers an opportunity to assist struggling students one-on-one or in small groups.

Teachers also used online days to differentiate and extend learning for advanced students. Participant 9 held workshops during online days for high-level students so he could challenge students by applying the content and skills to more challenging applications. This was especially useful for courses that did not have honors level sections. Students in these classes had a wide arrange of skill abilities. Teachers can use online days to meet with different groups of students to challenge them without overwhelming them.

Flipped Classroom

The flipped classroom theme was not related to a research question. However, it is supported by the connectivism theory. The connectivism theory is a learning theory for the digital age (Siemens, 2005). Blended learning courses are one method of incorporating technology into the classroom. The connectivism theory supports blended learning by explaining how learners use a computer-supported collaborative environment to learn autonomously, make connections, and share knowledge with other learners (Vitoulis, 2017). Six out of 10 teachers in this study reported using a flipped approach in their blended learning class. Students independently read and analyzed sources outside of class. Sometimes students watched videos on YouTube or EdPuzzle and took notes outside of class. Then students discussed the content or created artifacts related to the sources studied outside of class during in-class days. According to Fabregat-Sanjuan et al. (2017), students in flipped blended learning classes found video clips helped them better understand the course content. Students liked the ability to rewatch the videos multiple times (Krasnova & Vanushin, 2016). Students reported they were better prepared for laboratory activities and problem-solving in class when video lessons could be rewatched before class (Ask et al., 2017; Nortvig et al., 2018). Students at the study site also got the advantage of rewatching the videos multiple times and then interacting in student-centered instruction in-class to build knowledge.

Limitations of the Study

Institutions have increased the blended learning course offerings due to the availability of technology and the focus on personalized learning (Adekola et al., 2017;

Ask et al., 2017; Aurangzeb, 2018; Cieminski & Andrews, 2018; Cundell & Sheepy, 2018). The increase of blended learning courses has brought benefits and challenges to students and institutions. However, student achievement in blended learning programs varies in effectiveness (Boda & Weiser, 2018; Luna & Winters, 2017; Powers et al., 2016). Even though this study added to the existing body of research by providing instructional strategies, a limitation of the research was the use of only one study site and only two academic departments. Further research could explore additional study sites from different regions of the United States or different academic departments. This would allow researchers to determine if the instructional strategies varied from different study sites or academic departments.

I assumed the 2017 program evaluation stating the blended learning students outperform the traditional classroom students was still valid during my study. Using this assumption, I conducted a qualitative methodology to explore what instructional strategies were being implemented to foster student achievement in a successful high school English and social studies blended learning program. A limited amount of mixed-method research has been conducted to explore the flipped method strategy in a blended learning environment (Cabi, 2018). Further research could examine a mixed-method approach comparing student achievement in blended learning classes using a specific instructional strategy compared to a control. Using the mixed method would show a relationship between student achievement and the instructional strategy.

Recommendations

Institutions have increased the blended learning course offerings due to the availability of technology and the focus on personalized learning (Adekola et al., 2017; Ask et al., 2017; Aurangzeb, 2018; Cieminski & Andrews, 2018; Cundell & Sheepy, 2018). The increase of blended learning courses has brought benefits and challenges to students and institutions. However, prior research has shown that student achievement in blended learning programs varies in effectiveness (Boda & Weiser, 2018; Luna & Winters, 2017; Powers et al., 2016). Even though this study added to the existing body of research by providing instructional strategies, a limitation of the research was that it examined one study site and only two academic departments. Further research could explore additional study sites from different regions of the United States or different academic departments. This would allow researchers to determine if the instructional strategies varied from different study sites or academic departments.

During my study, I assumed that the 2017 program evaluation stating the blended learning students outperform students in the traditional classroom was still valid, and the program had either improved or stayed the same. Using this assumption, I conducted a qualitative methodology to explore what instructional strategies were being implemented to foster student achievement in a successful high school English and social studies blended learning program. A limited amount of mixed-method research has been conducted to explore the flipped method strategy in a blended learning environment (Cabi, 2018). Further research could examine a mixed-method approach comparing student achievement in blended learning classes with a specific instructional strategy

implemented compared to blended learning classes without the same instructional strategy. Using the mixed method would allow the research to show a relationship between student achievement and the instructional strategy.

Implications

A positive outcome of social change from this study would be for individual teachers and schools to examine their blended learning classes to determine if they could adopt one or two outcomes of this study to improve their program. Individual blended learning teachers can examine the instructional strategies teachers used in this study to determine if they could enhance their blended learning classes. Schools or districts can audit their blended learning program and compare it to this study's outcomes and determine if they could implement changes to improve their program. Finally, both teachers, schools, and districts can examine the implications this study could have on their current remote or hybrid programs.

Individual Teacher Implications

In this study, individual teachers noted instructional strategies they used to help students connect, analyze, and synthesize sources to build new knowledge. Most importantly, teachers stressed the importance of using small group instructional strategies during in-class days. Teachers should resist the tendency to lecture and instead facilitate the learning (Siemens, 2011; Sulaiman, 2018). This study's implication for blended learning teachers is to implement student-centered instructional methods. Teachers in this study also stressed the importance of modeling and scaffolding instruction. When a skill

is first introduced to students, teacher should break the steps into small parts and demonstrate how to complete the skill.

Another implication of this study for an individual teacher is the use of the flipped instructional method. Six out of 10 of teachers in this study used a flipped-classroom approach. In the flipped classroom method, students read and analyzed text or watched videos to become familiar with content during an online day first. Then in-class, students actively participated in debates, discussions, jigsaw activities, fishbowl discussions, and Socratic seminar. Three additional teachers stated that after experiencing remote learning and learning how to create videos, they wanted to try the flipped classroom method when returning to a regular school environment. With the increase of remotely or hybrid teaching due to the Coronavirus, other teachers may also want to consider trying a flipped classroom method during remote or hybrid learning. Students watch videos as homework; then, when attending class either online or at school, they would participate in the application, analysis, synthesis, and evaluation of student-centered classroom activities (Sirakaya & Ozdemir, 2018). After experiencing remote or hybrid learning, the flipped classroom method could be an easy way for teachers to switch from the traditional classroom to a more student-centered classroom after the Coronavirus 2019 is over.

School or District Implications

A positive outcome of social change from this study would be for schools or districts with blended learning programs that needed improvement to implement a portion of this study's results. In addition, other schools or districts planning on implementing a new blended learning program can use the study findings to help set-up their new

program. Several categories in the best practices theme resulted from the school's administration requirements. Teachers were required to have clear communication on the first LMS page, including the overview of the course, teacher contact information, classroom expectations, and attendance policy. Teachers also had to organize classroom material on the LMS pages by theme or product output, use the LMS calendar, clearly post in-class and online days, and post assignments. Teachers should organize their LMS to provide clear communication, so students know all the information to be successful in the class.

A clear attendance policy could also help student achievement. Teachers were required to keep students in-class for the first two weeks of school. During this time, teachers provided an orientation to the class. Finally, the school also implemented a policy that if a student had below 70%, they still had to report to the teacher's classroom during an online day. Schools and districts should consider implementing some of these policies into their blended learning programs. These policies may help students stay organized and motivated to learn. According to Participant 1, students strive to meet the grade set for online days because they want to be out of class. These best practice requirements will provide consistency among all the blended learning classes offered in the school or the district.

Schools or districts with blended learning programs may want to audit the instructional strategies teachers are using in the classroom and compare it to this study's results. If teachers do not use student-centered instructional strategies, the school should consider professional development for teachers. Teachers in this study and previous

research demonstrated the importance of student-centered activities to synthesize and apply content.

Schools currently in remote or hybrid learning may also want to apply this study's results to improve student achievement. Three of the teachers who did not use the flipped classroom method before being shut down for the Coronavirus 2019 now plan on using the flipped classroom method. Teachers could use the flipped classroom method during remote and hybrid learning. Teachers provided students with a video to watch or a reading to complete outside of class. Then during class, teachers facilitated student-centered activities. Teachers may also need professional development on how to conduct student-centered activities over Zoom or Google Meets. Another implication from this study that supports hybrid or remote learning is clear communication on the LMS page. Teachers need to have a welcome page for students and parents with contact information and pertinent information about the course. There needs to be a designated spot where students and parents know they can find homework information and a classroom schedule. If the school sets a policy that all teachers have this information in the same location, all parents and students will know where to find the information. These policies allow clear communication when the teacher is not available to talk to the students.

Conclusion

The purpose of this qualitative instrumental case study was to explore what instructional strategies were implemented to foster student achievement in a successful high school English and social studies blended learning program. A positive social outcome from this study would be for an individual blended learning teacher to

implement some of the study's results. In this study, blended learning teachers used instructional strategies to help students connect to and analyze several sources of information, including written text, videos, online text, and people. Teachers also used several instructional strategies such as annotated bibliographies, scaffolding, modeling, and CRAP tests to help students learn to find their own accurate, reliable, and up-to-date sources. The majority of teachers in this study had students read and analyze these information sources first during online days. During in-class face-to-face days, blended learning teachers used instructional strategies to help students communicate and collaborate in small groups and synthesize and apply content by creating an artifact. The majority of teachers in this study implemented a flipped classroom method. Teachers stressed the importance of small group instruction, scaffolded instruction, and modeling skills. Finally, teachers emphasized that students need to work in small groups to synthesize and apply the content, opinions, and perspectives of others to build new knowledge.

An institution developing a blended learning program can promote student achievement by implementing clear communication policies on teacher's LMS and a grading policy for attendance on online days. Every teacher in this study set-up their first page of their LMS in a similar format. The study site set clear communication requirements for the first page of the teachers' LMSs, organization of the LMS pages, use of the calendar, and posted assignments. In addition, the study site developed a grading policy that if students had below a 70%, students had to come to class during an online day. This policy allowed teachers time to differentiate and individually help students on

skills they were struggling with during online days. This policy helped raise student achievement. A positive social change would be for a teacher or a school to implement one or two of this study's outcomes to foster student achievement.

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Appendix A: LMS Audit

Teacher's ID _____ Audit Date _____
Class _____ Content Area _____

Activity Description	Instructional strategy
Online Activity 1: Start date of Activity: Completion date of activity: Description	Y or N - Connect to resources: ___ interact with personal network online ___ interact with personal network in class ___ work on creating an artifact or changing an artifact Y or N – Communicate or Collaborate: ___ Engage in meaningful dialogue face-to-face ___ Engage in meaningful dialogue online ___ Skills to build and expand learning network Y or N - How to obtain accurate resources: ___ online ___ offline Y or N - How to obtain up-to-date resources: ___ online ___ offline Y or N - How to synthesize the resources to create new knowledge: ___ evaluate ___ Reflect ___ Synthesis opinions, concepts, and perspectives Y or N – Other connectivism instructional strategy Description: Y or N – Other instructional strategy (not connectivism) Description:

Online Activity 2: Start date of Activity: Completion date of activity: Description (20 to 100 of these charts were made per participants LMS depending on the number of activities that were documented on the participant's LMS from January 6, 2020 through March 13, 2020)	Y or N - Connect to resources: ___ interact with personal network online ___ interact with personal network in class ___ work on creating an artifact or changing an artifact Y or N – Communicate or Collaborate: ___ Engage in meaningful dialogue face-to-face ___ Engage in meaningful dialogue online ___ Skills to build and expand learning network Y or N - How to obtain accurate resources: ___ online ___ offline Y or N - How to obtain up-to-date resources: ___ online ___ offline Y or N - How to synthesize the resources to create new knowledge: ___ evaluate ___ Reflect ___ Synthesis opinions, concepts, and perspectives Y or N – Other connectivism instructional strategy Description: Y or N – Other instructional strategy (not connectivism) Description:

Appendix B: Interview Protocol

Interview Start Time _____ Interview Finish Time _____
Class _____ Content Area _____

[Read to interviewee.] Thank you for being willing to share your insights into instructional strategies used in blended learning classes. This research project is to explore the instructional strategies used in blended learning classes both online and in-class to help students be successful in a blended learning environment. The results of this study will potentially identify the instructional strategies blended learning teachers can use to help students be academically successful.

This interview will last about 45 minutes and will be recorded with your permission. After the interviews, the information will be transcribed so I reflect your exact answers. I will be asking you to review the summary of your responses so I can make sure I accurately recorded and reflected your thoughts. In addition, the information you provide today will be kept confidential and secured in a safe place for 5 years upon, which it will then be destroyed.

Do you have any questions?

I would like to begin by having you tell me a little about yourself:

1. How long have you been teaching?
2. How many years have you taught blended learning classes?
3. How many of those years are within this school?
4. What content area do you teach?
5. Do you have a set schedule for online and in class days?
6. How many online days do students have in one week?

Questions	**Interviewer's Notes**
Main interview question: What sources of information do students use to build knowledge? Probe questions: • Do students use a textbook to obtain information? • Do students use journal articles to obtain information and do students obtain these articles or given these articles? • What type of online sources do students obtain to build knowledge	

and how do they find these sources? Social Media?	
Main Interview question: What instructional strategies do you use to help students obtain these sources? Probe questions: • (If textbooks were used) What instructional strategies do you use to help students obtain relevant information from the textbook? • (If journal articles were used) What instructional strategies do you use to help students obtain relevant articles? • (If students research for their own sources) What instructional strategies do you use to help students obtain other relevant sources of information? If needed some examples of instructional strategies are modeling, think out loud, weighing evidence to support or refute claims, PBL, comparing similarities and differences, inquiry, debate, etc.	
Main interview question: What instructional strategies do you use to help students obtain up-to-date resources? Probing questions: • What do you consider up-to-date sources? • How do students choose resources? • How do you instruct students on how to determine if a resource is up-to-date? Is this instruction done face-to-face or online? • How often do students have to find their own resources? Examples if needed: Partner with librarian, course resource bank, direct instruction on credible resources,	

dimension of critical analysis, checklist, compare resources, hoax or no hoax, students develop criteria, guided inquiry, etc.	
Main interview question: What instructional strategies do you use to help students obtain accurate resources? Probing questions: • How do you instruct students on how to determine if a resource is accurate? Is this instruction done face-to-face or online? Examples if needed: Partner with librarian, course resource bank, direct instruction on credible resources, dimension of critical analysis, checklist, compare resources, hoax or no hoax, students develop criteria, guided inquiry, etc.	

Main interview question:
What instructional strategies do you use to help students collaborate to learn from one another?
 	
Probe questions:
• During online days do students work individually or collaboratively?
  ○ Do they work together collaboratively face-to-face or online? through social media?
  ○ How do they collaborate?
  ○ What type of activities do they do collaboratively?
  ○ How do you help students learn from one another during online days?
• During in class days, what instructional strategies do you use to help students learn from one another?	

○ Why do you help students work collaboratively? ○ How do you help students learn from one another during in class days? Examples of instructional strategies if needed: cooperative learning, scaffolding, group norms, assign roles, real world problems, reflection, jigsaw, problem solving activities, study teams, debate teams, establish group agreements, modeling, think-pair, fishbowl, etc.	
Main interview question: How do you help students learn how to effectively communicate with you or each other when they are not in class? Probe questions: • How do students communicate with you or each other on online days of instruction? • Why do students communicate with each other during online days? • Why do students contact you on online days?	
Main interview question: What instructional strategies do you use to help students connect different sources of information to construct new knowledge? Probing questions: • Do students use multiple sources of information to construct new knowledge? • If needed provide an example, from a topic that the teacher had given in the interview. Examples if needed: scaffolding, PBL, real world problems, phenomena, provide multiple sources, concept mapping,	

executive summary, gallery walk, hands on activities, modeling, prompts, guided practice, etc.	
Main interview question: What other instructional strategies do you use to help students in a blended learning class to be successful? Probing questions: • Do you teach these strategies throughout the year or at the beginning of the year only? • How does this strategy help the blended student be successful?	

Appendix C: Thick Descriptive Data of Coding

Table 1

Thick Descriptive Data

Code	Quote	Category	Theme
Node	Participant 2 said, "They're reading and outlining and that's something that we work on a lot in the beginning of the year."	Outlining	Instructional strategies for nodes
	Participant 6 said, "They read the chapters and make annotations on assigned topics and on evidence that supports the topics."	Annotate	
	Participant 2 said, "They'll start with questions from the assigned reading."	Read with guided questions	
	Participant 5 said, "In the fall semester when they have to find their one source themselves, I show them how I go through the power search."	Scaffolding	
	Participant 5 said, "Students are also required to write an annotated bibliography to show that they have evaluated the sources they choose to use in their Research Unit."	Annotated bibliography	
Resources	Participant 5 said, "Our school uses the CRAPP test but my Dual English class uses the SCARAB test to find resources."	CRAPP SCARAB	Instructional strategies for researching
	Participant 8 said, "Quite often I use the jigsaw method where I break students into expert groups."	Small group nstiruction - Jigsaw	
	Participant 3 said, "I model for the students what a good online discussion post and response should look like. I	Model Discussion post	

	want students to know what the expectations are."		
	Participant 5 said, "My favorite is the Fishbowl because they have to be an observer before they can go in and the Fishbowl. Whoever's in the bowl first is just random."	Small group instruction - Fishbowl	
	Participant 8 said, "Other times debates are more like a Socratic seminar where it's they'll have read a particular source or two and then I do throw a question out."	Small group instruction - Debate	
Collaborate & Communicate	Participant 5 said, "I used the lotus blossom to help students start thinking about their research topics."	Small group instruction - Lotus blossom	Instructional strategies communicate and collaborate
	Participant 9 said, "Global Studies utilizes a flipped classroom to really have them do the work outside class so that when the class meets, we are discussing things and students are teaching each other."	Flipped	Flipped
Build Knowledge	Participant 1 said, "Students had to create a mind map to show a hero's journey after watching several movies about heroes."	Creation of artifact – Mind map	Instructional strategies for synthesis and application
	Participant 4 said, "Students had to create an infographic to answer the unit's supporting question, how does culture influence gender roles."	Creation of artifact – infographic	
Best Practices	Participant 7 said, "For the first 2 weeks of class we meet in class and there were no blended days, students could learn the expectations of blended."	Teach how to blend	Best practice

Appendix D: Code Descriptions

Table 4

Code Descriptions

Initial code	Description of code	When to use code	When not to use Code	Example of a segment of text from study
Node	A connection point on a network such as a learning community, website, journal, videos, library, textbook, database, etc.	When text is referring to a connection point that provides information	Information shared between two people	Slides posted online with notes
Resources	Instructional strategies used to help students find accurate and up-to-date resources	Instructional strategies used to help students find resources	Instructional strategies related to	"In English IV we use the CRAPP test and in the Dual Credit English class we use the SCARAB test" (Participant 5, May 2020).
Collaboration and communication	Communication between 2 or more people in person or online	Anytime text refers to students communicating or collaborating with other people	Instructional strategies not involving communication between 2 or more people	"Explain how you participate in two of the four types of interpersonal communication. Make sure you provide specific examples in your post. You must respond to at least three posts." (Participant 1, May 2020).
Building knowledge	The process of synthesizing concepts, opinions, and perspectives of multiple nodes to build new knowledge	Instructional strategies used to build new knowledge	Instructional strategies to analyze one node without extension questions	"It's all about applying it to their lives and experiences or experiences they're familiar with. The more connections they can make the better they will understand the material." (participant 2, June 2020).
Best practices	Practice found to work in the blended environment	A practice rather than an instructional strategy used to help students academically succeed in blended classes	Instructional strategies	First page of LMS had teacher contact information, calendar link, and class syllabus

Appendix E: Development of Codes to Categories to Themes

Figure 1

Development of Codes to Categories to Themes