A QUANTITATIVE STUDY COMPARING STUDENT ENGAGEMENT AND STUDENT

ACHIEVEMENT FOR NON-TRADITIONAL GRADUATE STUDENTS IN BLENDED

SYNCHRONOUS OR ASYNCHRONOUS ONLINE LEARNING

by

Heather Shellabarger

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

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ABSTRACT

Enrollment in online learning has continued to grow; different types of learning environments are being utilized because of the flexibility they provide. Higher education instructors must understand how to effectively develop asynchronous and blended synchronous environments to maximize student engagement and achievement. The purpose of this quantitative causal-comparative study was to investigate the possible cause-and-effect relationship between the learning environment and student engagement and achievement at a free-standing seminary. A convenience sample of 144 non-traditional seminary students between the ages of 35-and 70 years attending classes in two different learning modalities, blended synchronous and asynchronous online were utilized in this study. Participants completed Distance Education Learning Environment Survey (DELES) and the Online Self-Regulated Learning Questionnaire (OSLQ) to measure student engagement and student achievement. A multivariate analysis of variance (MANOVA) was conducted to investigate possible cause-and-effect relationship between the learning environment, student engagement, and student achievement. The results of the MANOVA were statistically significant for student achievement based on learning environment. There were no statistically significant differences between the type of learning environment and student engagement. Further research is recommended to determine if these results can be generalized to different types of institutions, both public and private, for traditional students.

Keywords: blended synchronous, asynchronous, higher education, student engagement, student achievement, online learning

Copyright Page

Dedication

First and foremost, I dedicate the completion of this manuscript to my Lord and Savior, Jesus Christ, without His provision, guidance, and resources completing this daunting task would not have been possible. It is my prayer that the completion of this manuscript will lead to new opportunities. Secondly, I dedicate this dissertation to my wonderful husband. I thank him for being supportive and understanding during the countless hours I was in the office working on the completion of the manuscript. Over the past few years, my husband never doubted that I would finish.

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List of Abbreviations

Learning Management System (LMS)

Multivariate analysis of variance (MANOVA)

Online Self-Regulated Learning Questionnaire (OSLQ)

Distance Education Learning Environment Survey (DELES)

Transactional Distance Theory (TDT)

CHAPTER ONE: INTRODUCTION

Overview

This introductory chapter will provide background information, problem statement, purpose statement, and the significance of the study. The background information provides an overview of the related literature on asynchronous online learning, synchronous learning, and blended synchronous learning, providing a historical, social, and theoretical context regarding these types of learning modalities. The problem statement provides the gap in the literature and the purpose statement provides a plan for solving the problem. The significance of the study describes how this information impacts the educational community. Lastly, this chapter provides the research question, hypothesis, null hypothesis, and definitions for the study.

Background

Online learning is continuing to grow. Enrollment in online courses increased despite the overall downward trend of enrollment in higher education (Martin & Bolliger, 2018). Institutions desiring to keep up with the growing demand for online learning need to stay current with the technology advances that create different learning platforms (Abuhassna et al., 2020; Blau et al., 2017). Research at the secondary level is limited for blended synchronous compared to asynchronous online learning environments (McKenna et al., 2019), however, additional research is needed on student engagement and student achievement within a blended synchronous learning environment. Blended synchronous learning in the post Covid world is here to stay. Universities and colleges are striving to plan for an uncertain future of higher education that includes a mixture of face-to-face, asynchronous online, synchronous online, and blended synchronous learning environments (Seaman et al., 2018).

Historical Overview

   Post-secondary education has evolved particularly around online education. In comparison online education is in its infancy when compared to the hundreds of years of higher education (Kentor, 2015). Online education evolved from print-based correspondence courses to interactive courses that take place through the internet (Rehn et al., 2017). It is important to note that there is not a single point of evolution for the start of online education (Kidd, 2010). The roots of online education can be traced back to correspondence education that could not function until a reliable postal service was developed (Mood, 1995; Phillips, 1998).

   After correspondence education, came the use of radio (Mood, 1995). The radio did not grant credit but provided a way for individuals to increase their knowledge (Mood, 1995). Television was the next technology to be utilized for distance education. The presence of cable and satellite television in the early 1980's transformed distance education to more like today's online learning environments. There was an ongoing determination to use the newest technologies to advance distance education (Mood, 1995).

   Online education can be broken down into four different eras. 1975-1985 utilized computer-assisted learning that was rooted in a behaviorist approach (Kidd, 2010). The second era was 1983-1990 that was focused on computer-based training (Kidd, 2010). It was during this era that constructivist influence emerged in the educational tools. Computer-based training was accessed through CD or a web download (Kidd, 2010). The third era is 1990-1995 which focused on web-based training (Kidd, 2010). It was during this era that active learning models emerged. The last era is 1995-2005 with the focus on e-learning (Kidd, 2010). It is during this era where users have more interaction between each other.

While these four eras represent the current understanding of distance education, online education really began to evolve in the 1960's (Kidd, 2010). The 1960's when the internet came into existence and The World Wide Web in the 1990's advanced distance education (Kidd, 2010). The cost of distance education was thought to be prohibited, but that has not been the case overall (Kidd, 2010).

Originally, traditional face-to-face learning methods was the main mode of instructional delivery for higher education institutions. Online learning had been introduced at a much slower pace for higher education as the acceptance of technology and changes to education are slower in post-secondary institutions (Abuhassna et al., 2020; Blau et al., 2017). Fully online courses have been an integral part of the curriculum for the previous two decades in higher education (Abuhassna et al., 2020; Blau et al., 2017).

One of the major benefits of online learning is the individualized instruction and the one-on-one tutoring that was possible through computer technology (Kidd, 2010). Blended learning emerged around twenty years ago but takes on several different forms based upon expectations and individual institutions (McKenna et al., 2019). Blended synchronous learning is a spin-off of the blended learning approach where students both in the classroom and virtually can participate in one classroom of learning (McKenna et al., 2019).

Blended synchronous delivery combines face-to-face students with virtual students to participate simultaneously through web conferencing technology (Angelone et al., 2020; Nortvig et al., 2018; Wang et al., 2017). Living in a post Covid world there is a necessity to identify student engagement and student achievement in both blended synchronous and asynchronous online learning. Given the newness and the importance of online learning to higher education,

institutions need more insights into the different modalities of online education. Answers are needed to ensure that students who participate in online learning are engaging and achieving.

Society-at-Large

Technology has rapidly changed the way people function in their daily lives worldwide. The impact of technology has also changed how institutions utilize technology in learning (Budevici-Puiu, 2020). Post-secondary schools are no exception to the impactful change technology has had. Technology-based learning will provide students 24/7 access to educational content making post-secondary education available to all persons (Budevici-Puiu, 2020).

The number of students participating in non-traditional learning methods has continued to rise. Fully online courses continue to increase because of its exceptional functionality, flexibility, and accessibility removing barriers to learning; including geographic barriers (Abuhassna et al., 2020.). This type of learning method is referred to as asynchronous online learning. With the development of technologies, synchronous online learning has gained traction (Francescucci & Rohani, 2019). Synchronous sessions provide the space for real-time interactions between students and the instructor. This type of learning modality removes the flexibility that asynchronous online courses are developed to do.

With the further development of technology, the latest teaching delivery method emerged, blended synchronous learning. Blended synchronous can take on three different models. For this study, the model utilized is the blending of online and face-to-face students in one environment (Conklin et al., 2019). This structure is taking advantage of the best of both modalities by providing direct contact, real-time interaction, and conscious reflection on discussion responses which are essential to adult learning principles (McKenna et al., 2019).

Theoretical Overview

There are two different theories that drive this study: the theory of transactional distance and the theory of involvement. Transactional distance theory attempts to explain the psychological space of potential misunderstanding between the behaviors of the instructors and the behaviors of the students leading to communication gaps between students and instructors (Moore & Kearsley, 1996). The theory of involvement is defined as the amount of physical and psychological energy a student devotes to the academic experience (Astin, 1984).

Transactional Distance

Transactional distance theory was derived out of the two-dimensional theory of independent learning and teaching, comprised of distance teaching and learner autonomy (Moore, 1972; Moore, 1973). This theory attempts to explain the psychological space of potential misunderstanding between the behaviors of the instructors and the behaviors of the students which may create a separation between students and the instructor leading to potential communication gaps (Moore & Kearsley, 1996). The theoretical application allows for further examination of the lack of research on blended synchronous learning in terms of student engagement and student achievement as compared to asynchronous online. An analysis of the relationship between learning modality and engagement is explored by applying the theory of transactional distance (Moore, 1972; Moore, 1973).

Theory of Involvement

The theory of involvement was rooted in the study of college student persistence, developed by Astin in 1973 (Milem & Berger, 1997) as both a guide for researchers and a tool for college administration to create more effective learning environments for college students (Astin, 1984). Astin (1984) defines involvement as the amount of physical and psychological

energy a student devotes to the academic experience. The application of student involvement theory will explore the relationship between learning modality and student achievement (Astin, 1984).

To summarize, students participating in different type of distance learning modalities is continuing to rise. The different technologies that continue to be developed contribute to the new ways that persons can gain an education. Distance learning has gone from print-based correspondence courses to virtual classrooms using web conferencing platforms. Transactional distance theory when utilized in the development of courses regardless of the learning modality will minimize the potential psychological space between the instructor and the learner minimizing misunderstanding. The theory of involvement will help to explain why some students persist and are successful in higher education. Application of the theories will be addressed within the literature review to gain greater understanding of the problem. These two theories will aid in looking into the problem identified below.

Problem Statement

In terms of different learning modalities, blended synchronous courses are relatively new and still have unknowns related to student engagement and student achievement. Student perspectives on blended synchronous learning vary based upon different studies. In a study by Samson (2020) students who physically attended class face-to-face had a significantly higher level of participation and GPA than those attending remotely. Yang et al. (2019) revealed students' academic performance was improved by students attending remotely and not by students in the traditional face-to-face classroom. Lakhal et al. (2020) stated that instructors and students in the traditional face-to-face class could both hinder and encourage the academic and social interaction of the remote students. Based on the discrepancies in various studies on

blended synchronous learning more research is needed (Heilporn et al., 2021; Lakhal et al., 2020; McKenna et al., 2019). Learner preferences in both the traditional face-to-face and remote environments play a role in engagement and achievement in the blended synchronous environment warranting further research within the blended synchronous environment.

Student participation is influenced by course design, instructional context, and instructor guidance (Heilporn et al., 2021; Kara, 2021; Lakhal et al., 2020; Samson, 2020). Research is lacking in the blended synchronous platform especially at the graduate level (Heilporn et al., 2021). Comparison research is needed between different learning environments: blended synchronous, asynchronous online, or fully in-person (McKenna et al., 2019). Research completed for blended synchronous classes have taken place at a single institution, or for a single course which does not yield results that are generalizable (Conlkin et al., 2019; McKenna et al., 2019; Samson, 2020). Different learning populations, institutions, classes, or the duration of a study has the possibility to alter the results (Heilporn et al., 2021; Kara, 2021; Lakhal et al., 2020; Samson, 2020).

Further research according to Conlkin et al. (2019) is needed to study courses in different fields. Zydney et al. (2020) utilized a full semester to gather research, however, the frequency of surveys caused a drop-in participation potentially yielding different results. The effects on student learning and outcomes based on engagement have not been studied in the blended synchronous learning modality (Raes et al., 2020). Student achievement and student engagement specifically have not been researched for non-traditional students in a blended synchronous learning environment (Angelone et al., 2020; Conlkin et al., 2019; McKenna et al., 2019; Raes et al., 2020; Zydney et al., 2020). The problem is blended synchronous and asynchronous online

courses have not been researched specifically around student engagement and achievement for non-traditional students.

Purpose Statement

The purpose of this quantitative casual-comparative study is to investigate graduate student engagement and student achievement based on content delivery model. The independent variable is the instructional delivery model of blended synchronous learning and asynchronous online learning. Blended synchronous learning is defined as online students and face-to-face students in one class simultaneously through computer technologies (Angelone et al., 2020; Nortvig et al., 2018; Wang et al., 2017). Asynchronous online learning is defined as students complete course work online through a learning management system which lacks social presence and immediate feedback (Wang & Huang, 2018). The study will have two dependent variables: student engagement and student achievement. Student engagement is the amount of energy a student devotes to their studies relating to student persistence (Astin, 1984). Student achievement is the measurement of the amount of academic content a student learns during a set time frame and the extent that a student has reached their short or long-term goals (Top Hat, 2019). Participants for this study will be non-traditional graduate students ranging from the age of 35 and up. They will be enrolled in either asynchronous online or blended synchronous sections of introductory course offerings.

Significance of the Study

The benefit of understanding student engagement and student achievement based on learning modalities in a theological institution in the Midwest is improved student retention, better course design, and improved instructor guidance (Heilporn et al., 2021; Kara, 2021; Lakhal et al., 2020; Samson, 2020). This study will build upon the work of McKenna et al.

(2019) to compare blended synchronous learning to asynchronous online learning. Blended synchronous learning is continuing to grow in higher education and with technological advances this research will benefit the gaps in the literature. This study will provide research on blended synchronous learning in a theological institution which has not been previously studied. Research specially in higher education is lacking for the blended synchronous learning modality (Heilporn et al., 2021).

Further, while a Midwest theological institution research site may find that student engagement and student achievement are improved based upon learning modality, that information can provide insight for further research at larger universities. The research will provide data comparing asynchronous online to blended synchronous learning modalities for non-traditional students. This study addresses the gap in literature by determining the difference in student engagement and student achievement based upon learning modality and building upon Astin's (1984) student involvement theory, and Moore's (1972) transactional distance learning theory.

Research Question

RQ: Is there a difference in student engagement and student achievement for students participating in blended synchronous learning or asynchronous online learning for non-traditional graduate students?

Definitions

1. *Asynchronous Online Learning* - Students complete course work online through a learning management system at their own pace, however, it lacks social presence and immediate feedback (Wang & Huang, 2018)

2. *Blended Synchronous Learning* – Blended synchronous learning combines online students and face-to-face students into one class simultaneously through computer technologies (Angelone et al., 2020; Nortvig et al., 2018; Wang et al., 2017)

3. *Non-Traditional* – Students meeting one of seven characteristics: delayed enrollment into post-secondary education, attends college part-time, works full-time, is financially independent for financial aid purposes, has dependents other than a spouse, or is a single parent (National Center for Educational Statistics, 2019)

4. *Online Learning* – Online education has evolved from print-based correspondence courses to interactive courses that take place through the internet (Rehn et al., 2017)

5. *Student Achievement* – the measurement of the amount of academic content a student learns during a set time frame and the extent that a student has reached their short or long-term goals (Top Hat, 2019)

6. *Student Engagement* – the amount of energy a student devotes to their studies relating to student persistence (Astin, 1984)

7. *Student Involvement Theory* – rooted in the study of college student's persistence (Astin, 1984)

8. *Synchronous Online Learning* – Learning takes place where the student and the instructor are not in the place, but at the same time through computer technologies (Francescucci & Rohani, 2019).

9. *Transactional Distance Theory* – Transactional distance theory was derived from the theory of independent learning and teaching. The theory is two-dimensional: distance teaching and learner autonomy. The theory of learning and teaching contained three sub-systems: learner, teacher, and communication method (Moore, 1973).

CHAPTER TWO: LITERATURE REVIEW

Overview

A systematic review of the literature was conducted to explore student engagement and student achievement in blended synchronous online. This chapter will present a review of the current literature related to asynchronous online education, synchronous online education, and blended synchronous education using the WebEx platform. The theories relevant to the study will be discussed. Followed by a synthesis of recent literature regarding asynchronous online education, synchronous online education, and blended synchronous. The role student engagement plays in terms of student achievement will be addressed and in the end a gap in the literature will be identified, presenting a need for the current study.

Theoretical Framework

The theoretical framework that guides this study comes from two different theories: Moore's (1972) theory of transactional distance and Astin's (1984) theory of involvement. Transactional distance theory evolved from the theory of independent teaching and learning which took root from John Dewey's educational philosophy. The theory of involvement was developed based upon three pedagogical theories: subject-matter, resources, and individualized and rooted in a study on college persistence (Astin, 1984).

Transactional Distance

Transactional distance theory was derived out of the two-dimensional theory of independent learning and teaching, comprised of distance teaching and learner autonomy (Moore, 1972; Moore, 1973). This theory attempts to explain the psychological space of potential misunderstanding between the behaviors of the instructors and the behaviors of the students which may create a separation between the students and the instructor leading to

potential communication gaps (Moore & Kearsley, 1996). According to Moore (1972), distance teaching is defined as instructional methods in which the teaching behaviors are completed apart from the learning behaviors. Communication between the teacher and learner must then be facilitated by print, electronic, mechanical, or other devices (Moore, 1972).

Communication is a fundamental component of learning regardless of the learning modality (Swinnerton et al., 2020). In distance education communication methods include a variety of sources (Moore, 1993). Communication tools available for distance education has advanced since 1972 with the addition of personal computers and audio conferences (Moore, 1993). Modern distance teaching includes more than one way of communicating in contrast to earlier years (Swinnerton et al., 2020). Through the implementation of different communication methods transactional distance can be lessened (Moore, 1993).

Communications are affected by not only the media tools available, but the number of students, the frequency of communication opportunities, financial constraints, and the environment (Moore & Diehl, 2019). Appropriate structuring and dialogue usage are demanding for instructors (Yilmaz & Keser, 2017). Having the relevant technological tools is important for creating an interactive online learning experience (Yilmaz & Keser, 2017). Distance education requires a collaborative process among instructional designers, media specialist, and content experts to develop a basis for dialogue between learners and teachers (Ahmed & Osman, 2020; Best & Conceicao, 2017; Moore, 1993). Increasing dialogue and developing well-structured materials lessens transactional distance (Moore & Diehl, 2019).

Dialogue defined in transactional distance theory (TDT) refers to positive interactions between students and instructors, as well as among students, thereby reducing transactional distance (Best & Conceico, 2017). Best and Conceico (2017) explored dialogue interactions

among students in a blended learning environment for a master's degree program across three

different European Universities. Regardless of physical distance, instructors were essential in

guiding discussions and learning. Through this study, student satisfaction was explored based

upon TDT in a multi-institutional program (Best & Conceico, 2017). Interactive dialogue can

impact student satisfaction (Best & Conceico, 2017). It is important for persons involved with

distance education either asynchronous online or blended synchronous to mitigate transactional

distance through interactive dialogue between the instructor and the students (Best & Conceico,

2017).

Learner autonomy refers to a situation where the learner is responsible for the decisions

regarding their learning and takes charge of their own learning (Moore, 1972). Autonomous

learners utilize the teacher support when they need help formulating problems or gathering

information without giving up total control (Moore, 1972). Teachers have a different kind of

relationship with autonomous learners than non-autonomous learners; with autonomous learners

the teacher is seen as a resource, with non-autonomous learners, the teacher is the director

(Moore, 1973). Teachers need to facilitate interactions to guide and resource the learners to

develop learner autonomy (Bolliger & Halupa, 2018).

Learners make the decision to be autonomous by exercising the powers of learning and

overcoming obstacles to complete difficult tasks. The teacher provides information, advice, and

reasons, so that the learner can decide and understand the reason (Moore, 1973). There needs to

be a distinction between utilizing teacher support, and the student giving up total control of their

own learning (Moore,1973). In autonomous learning, the learner receives a lot of help, but does

not give up control or responsibility of their own learning (Moore, 1972; Moore, 1973;

McMillion & King, 2017). Autonomous learners construct their own learning with minimal

guidance and are motivated to learn. Distance learning is naturally suited for autonomous

learners (Moore, 1972). A balance between dialogue, structure, and autonomy are needed to

reduce transactional distance as advised by Moore (Moore, 1993; Stapleford & Lee, 2020).

Quong et al. (2018) explored reducing transactional distance using a closed social media

platform and found that undergraduate students struggled with the platform for self-directed

learning. From this information the researchers deduced the idea that public schools place more

emphasis on the teacher and structure, and less on student autonomy (Quong et al., 2018).

Student autonomy plays an essential role in reducing transactional distance which supported the

findings from Moore (1993) that both high structure and high dialogue can lessen transactional

distance. In contrast to the undergraduate students who did not prefer using a closed social media

platform, the graduate students included in the research sample did (Quong et al., 2018). This

response reinforces Moore's (1993) idea that graduate students returning to school on their own

volition may have a stronger ability to set educational goals and be autonomous learners (Quong

et al., 2018).

Transactional distance can be bridged through student engagement and effective teaching

strategies (Bolliger & Halupa, 2018). Bolliger and Halupa (2018) explored student perceptions of

student engagement, transactional distance, and outcomes in online courses. The study included

graduate and undergraduate students from three different private institutions (Bolliger & Halupa,

2018). The results of this study showed that meaningful learning activities maximize student

engagement and outcomes, but instructors facilitate interactions that guide student learning and

build student engagement (Bolliger & Halupa, 2018).

Theory of Involvement

The theory of involvement is rooted in the study of college student persistence developed by Astin in 1973 (Milem & Berger, 1997) as both a guide for researchers and a tool for college administration to create more effective learning environments for college students (Astin, 1984). Astin (1984) defines involvement as the amount of physical and psychological energy a student devotes to the academic experience. Astin's work stemmed from his dissatisfaction of the prevalent pedagogical theories of subject-matter, resources, and individualized theories (Astin, 1984; Ncube, 2020). These theories tended to treat students as a black box where the college would input the policies and programs, and the output would be achievement based upon standardized tests and grade-point average (Parker & Aldred, 1986). Astin sought to develop a framework that would be useful for understanding the process of how students learn for institutions' resources to focus on a common objective (Parker & Aldred, 1986).

Astin utilized the three pedagogical theories to develop the theory of involvement: subject-matter, resources, and individualized. Subject-matter states that student learning and development depended on exposure to the right subject matter; resource theory maintains that if appropriate resources are brought together, student learning and development will occur, and individualized theory assumes no one approach is adequate for all students (Astin, 1984; Srivastava & Beri, 2017; Zhou & Cole, 2017). Astin (1984) provided a link between the pedagogical theories and his theory of involvement. The theory of involvement contrasted the pedagogical theories in that the theory of involvement places an emphasis on what the student does, rather than what the instructor does (Parker & Aldred, 1986). The theory of involvement focuses on the process of development instead of developmental outcomes (Parker & Aldred, 1986).

Astin argued that involvement requires an investment of psychosocial and physical energy; continuous invested interest that varies from student to student; can be qualitative or quantitative; student gains are proportional to the extent of involvement; and academic performances are correlated with the student involvement (Astin, 1984; Milem & Berger, 1997; Terenzini, 1987; Zhou & Cole, 2017). The word involvement is defined in active terms meaning it requires an action on the part of a student. The more involved students are in their college experience the more likely they will have institutional connectedness and more likely to succeed (Astin, 1984; Jorgenson et al., 2018). Student involvement takes on many forms: absorption of work, participation of activities, and interaction with personnel (Astin, 1984).

These forms of student involvement are behavioral in meaning (Astin, 1984). Astin (1984) explains that the behavioral aspects are critical to understanding the involvement. It is not so much what the individual thinks and feels, but rather what an individual does or how he or she behaves (Astin, 1984; Milem & Berger, 1997).

In the study by Astin on student persistence, he associates noninvolvement as a contributing factor to a student's departure from college (Milem & Berger, 1997). The theory of involvement explains how desired outcomes for institutions of higher education relate to how students change and develop due to involvement in co-curricular activities (Richmond, 1986). The theory of involvement focuses more on what the student does and how much time they devote to the learning process (Astin, 1984; Parker & Aldred, 1986; Jorgenson et al., 2018). The most precious resource for student involvement is student time.

Colleges that encourage student involvement provide a unifying construct instructional personnel toward a common objective (Astin, 1984; Richmond, 1986). There are additional elements that contribute to the theory of involvement. The elements are student's inputs,

student's environment, and outcomes also referred to as the I-E-O model within theory of involvement (Ncube, 2020; Richmond, 1986; Srivastava & Beri, 2017; Zhou & Cole, 2017). All three of the elements affect a student's involvement. Student input includes demographics, background, and previous experience (Richmond, 1986). Environment includes all the experiences a student has during their time attending college (Richmond, 1986). Outcomes relate to characteristics, knowledge, attitudes, beliefs, and values that exist after graduation (Richmond, 1986). One way to involve students in the life of an institution and expand the environment is through personal contact. Institutions need to increase personal contact between faculty and students which has shown to be influential in expanding student involvement (Wirt & Jaeger, 2014; Zhou & Cole, 2017).

A qualitative study by Kahu et al. (2020), found first-year students from an Australian regional university are utilized to illustrate student and university factors that interact and influence student engagement. Variables utilized in the study do not guarantee student engagement but provide potential for engagement to occur (Kahu et al., 2020). The four different variables used were wellbeing, emotion, self-efficacy, and belonging (Kahu et al., 2020). The study utilized narratives to provide information about student engagement in their first year attending college (Kahu et al., 2020).

Being engaged, is an important part of performance and student engagement (Fisher et al., 2018). Student engagement is also a cornerstone for quality higher education and academic success (Ahmed & Osman, 2020; Fisher et al., 2018). Engagement is characterized by interest, belonging, participation, time, and effort invested in the process of learning (Fisher et al., 2018). Student engagement is foundationally laid by the instructors in both online and traditional classes (Li & Lefevre, 2020), however, how students will interact with the content and with each other is

determined individually (Ahmed & Osman, 2020). The earlier students develop relationships with their peers, the stronger the ability students will have to collaborate in the learning process (Jacobi, 2017).

It is important for higher education administration to realize that each student's journey in student engagement is idiosyncratic (Kahu et al., 2020). However, instructors can promote student engagement using the four pathways of wellbeing, emotion, self-efficacy, and belonging (Kahu et al., 2020). Student engagement may fall into one of the four pathways, but there may be a wider context and range of other factors influencing students' ability to engage within the learning environment (Kahu et al., 2020).

Both transactional distance theory and the theory of involvement inform this study. Transactional distance affects all different learning modalities. To lessen the transactional distance, students need to maintain high structure and dialogue (Moore, 1993). Without high structure and dialogue, there is potential misunderstandings caused by communication gaps between the instructor and the students (Moore, 1993). Students who are not involved in their own learning experience will struggle to be academically successful (Astin, 1984). Involvement requires the student to do, rather than think about doing (Astin, 1984). Students who are studying asynchronously or synchronously through WebEx need to engage with peers and faculty outside of class time to develop a sense of community; involvement will aid in retention (Astin, 1984). Being involved in the learning community and interacting with peers and instructors will build student engagement and raise academic achievement (Bolliger & Halupa, 2018; Milem & Berger, 1997).

Conclusion

With transactional distance, the research sought to decrease the transactional distance using a blended synchronous learning environment to increase student engagement and student achievement. With theory of involvement, the research sought to advance the literature regarding the degree to which blended synchronous students were involved in their institution and the impact that it had on student achievement. In a blended synchronous learning environment, it is possible for students with a high level of involvement to provide opportunities for engagement, which can lead to higher academic achievement. This study will investigate non-traditional graduate students in a theological institution to understand student engagement and student achievement based upon the learning environment. The research from this study will advance the existing literature and theories on transactional distance and involvement by adding to the understanding of blended synchronous and asynchronous online education for non-traditional students in a free-standing seminary.

Related Literature

Distance Education History

Distance education is in its infancy when compared to hundreds of years of higher education (Kentor, 2015). Modern adult distance education began in 1840 with Issac Pitman's idea of distributing correspondence courses through mail (Phillips, 1998). This option provided opportunities for students unable to come to a traditional college campus. Within 20 years, the idea grew to have presence all over the world (Phillips, 1998). By the early 1900's a whole department was dedicated to the distribution of courses by mail at the University of Chicago (Matthews, 1999).

The internet, which dates to the 1960's provided more options for higher education (Kentor, 2015). In 1969, the Open University in Great Britain began a new era of distance education with the addition of audio, video, television, radio, and personal tutors over the phone (Matthews, 1999). In 1982, National Technical University in Colorado began to use satellites to broadcast live and recorded lectures (Casey, 2008). The world wide web dating back to the 1990's and the creation of learning management systems in the 2000's provided institutions with opportunities to distribute classes online to those with internet connections (Bourdeau et al., 2018; Casey, 2008; Kentor, 2015). Video conferencing in higher education was first officially used in 1995 (Al-Samarraie, 2019). Since then, video conferencing has evolved and become more advanced for use in blended synchronous learning (Bower et al., 2015; Francescucci & Rohani, 2019). Online education has evolved from print-based correspondence courses to interactive classes that take place through the internet (Rehn et al., 2017).

Distance Education Currently

Online education is a descendent of distance education. Distance education has been defined by three key elements for the delivery of curriculum to students not physically onsite: non-contiguity, two-way communication, and communication mediated by technology (Kayode, 2018; Swinnerton et al., 2020). Distance education encompasses several different modalities including, but not limited to, asynchronous online, synchronous online, and blended synchronous learning. Asynchronous online is defined as students who complete course work online through a learning management system at their own pace, lacking social presence and immediate feedback (Wang & Huang, 2018). Synchronous online is defined as the student and the instructor not at the same place but learning at the same time through computer technologies (Francescucci & Rohani, 2019). Blended synchronous learning combines online students and face-to-face students

into one class simultaneously through web conferencing (Angelone et al., 2020; Nortvig et al., 2018; Wang et al., 2017). There is a range of definitions that conceptualize online learning, but a consensus is online learning involves engagement of learning experiences facilitated through technologies available (Burke & Lamar, 2021).

Although online higher education has been available for at least 20 years, several negative stereotypes persist (Ramirez & Gillig, 2018). For example, online education is not as rigorous as its face-to-face counterpart is a common stereotype (Ramirez & Gillig, 2018). However, the development of learning management systems and web resources has drastically transformed online education by speeding up the rate at which information is disseminated and digested (Hurlbut, 2018). The time it takes to relay communication has decreased (Hurlbut, 2018). Researchers have pointed out that the online platform presents a distinctive challenge engaging students and developing content but has become widely accepted as a common learning option (Ramirez & Gillig, 2018). Enrollment in online education is outpacing traditional face-to-face education for many accredited institutions (Ramirez & Gillig, 2018).

Increased broadband connectivity in the United States has rendered online learning accessible to larger segments of the population (Paulsen & McCormick, 2020). Students who were once unable or unlikely to access higher education can access higher education resulting in a stronger representation of the overall population (Burke & Lamar, 2021). This includes providing access to education for minorities and disadvantaged groups (Liu et al., 2020). The number of students participating in online courses has continued to rise for the 14th consecutive year (National Center for Educational Statistics, 2019). 37.2% of all United States post-secondary students are enrolled in at least one online course, and 17.6% are enrolled exclusively in online courses (National Center for Educational Statistics, 2019). With the expansion of online

courses, technologies used for communication have become a central part of both teaching and learning in academia (Abuhassna et al., 2020; Blau et al., 2017).

Asynchronous Online Education

The trend toward growth in online enrollment has steadily increased despite an overall decline in higher education enrollment (Martin & Bolliger, 2018). Higher education institutions have included fully asynchronous online courses as an integral part of their curriculum for the previous two decades (Abuhassna et al, 2020; Blau et al., 2017). For institutions to create continued online opportunities, updates need to be completed. Comprehensive learning experiences require continuous updating of technology to ensure integrity for delivering instruction (Al-Samarraie, 2019).

Rapid expansion of online learning in higher education necessitates the ongoing review of teaching and learning practices (Burke & Lamar, 2021). Online instructors require significant training in online pedagogical skills to enhance and develop an engaging online environment (Paulsen & McCormick, 2020). According to Netanda et al. (2019) the unavailability of instructors, lack of interaction between students and instructors, and isolation of online students can be addressed by developing engaging online learning environments. Student retention and success rests upon new teaching methodologies that provide support services to a changing demographic of student (Netanda et al., 2019; Paulsen & McCormick, 2020). Not only do new teaching methodologies need to be utilized, but changes to the students' experience of learning must be made.

Students in online learning programs benefit from being autonomous learners who oversee their own learning process (Netanda et al., 2019). For both autonomous and non-autonomous learners, the online courses need structure and clarity (Stapleford & Lee, 2020).

Structure and clarity assist students in engaging meaningfully with the content (Stapleford & Lee, 2020). The instructor must develop opportunities that promote interaction with peers and opportunities for collaboration (Netanda et al., 2019; Paulsen & McCormick, 2020). Online learning experiences where peer-to-peer interaction is lacking leads to social isolation and disengagement (Kayode, 2018; Lin & Gao, 2020).

Online Community

Within the online community there are three types of interaction that occur: learner-instructor, learner-learner, and learner-content (Rehn et al., 2017). Opportunities for interaction among students, and between students and their instructor are very important to overall student satisfaction and learning outcomes, however, it takes time and a conscientious effort (Burke & Larmar, 2021; Nortvig et al., 2018). For students in asynchronous classes, social interaction with peers and the instructor are not immediate (Lin & Gao, 2020). Lack of immediate interaction or feedback from the instructor can create challenges for students needing help (Kayode, 2018; Lin & Gao, 2020; Young & Bruce, 2020). When it comes to interaction, the mindset needs to be quality over quantity (Ahmed & Osman, 2020; Paulsen & McCormick, 2020).

Faculty need to reshape their availability to ensure online students have ways to connect (Berry, 2019; Nortvig et al., 2018). Instructors need to interact often on discussion boards, and assign group projects to facilitate interaction and reduce social isolation among students (Lin & Gao, 2020). Office hours should be made available to meet with online students (Lin & Gao, 2020). Communication plays an important role in distance education success (Kayode, 2018).

With the expansion of online learning, it is important to implement approaches that promote opportunities for students to have meaningful interactions with peers and provide opportunities for collaborative learning (Paulsen & McCormick, 2020). Interactions are

important in the online learning process to ensure quality of online learning and to create a feeling of connectedness (Blau et al, 2017; Li & Lefevre, 2020; Truhlar et al., 2018; Watts, 2016). Interactions and collaborative activities are not the only prerequisites for online learning students to feel as though they are part of the learning community (Li & Lefevre, 2020). The connection to the learning community, the ability to interact with other students and teachers, and developing areas for community in the online environment are part of creating a positive learning community.

Online Learning Benefits

One of the reasons online learning has continued to grow is flexibility and convenience that this modality offers (Shi et al., 2021). Students are increasingly requesting flexible options to complete their education due to their inability to attend classes face-to-face (Clark & Post, 2021; Shi et al., 2021). Studying online is widespread because it is not determined by time and location (Bornschlegl & Cashman, 2019). Using online courses, students avoid problems like traffic and work schedules. The learning does not need to be limited to certain times of the day or week. Online learning does not require the student to be physically present so, it suits introverted learners (Kotrikadze & Zharkova, 2021). Introverts express themselves more freely in the online environment (Blau et al., 2017). Students feel comfortable discussing differing viewpoints on a discussion thread (Lin & Gao, 2020). Asynchronous online classes create a strong classroom community through interacting, discussing, and sharing on a discussion board when facilitated by the instructor(s) (Lin & Gao, 2020).

Online learning potentially increases educational offerings, reduces the cost of the program, and increases enrollment; providing people with access to affordable higher education (Liu et al., 2020; Poulin & Straut, 2018). It provides students with the development of skills for

employment that can be transferred to innovation in the workplace (Liu et al., 2020; Noreen, 2020), such as the ability to collaborate, which is considered an important skill necessary in the 21st century work environment (Ahmed & Osman, 2020; Sobko et al, 2020). Instructors have a quicker turnaround on feedback to their students (Noreen, 2020; Paulsen & McCormick, 2020). Instructors and students have access to the latest online learning material available (Noreen, 2020).

Online education provides many opportunities including the ability to engage outside of one's home country spreading to global audiences, and removing geographical barriers to learning (Abuhassna et al., 2020; Kim; 2017; Li & Lefevre, 2020). Students can become self-directed lifelong learners regardless of location (Abuhassna et al., 2020; Ahmed & Osman, 2020). The ability to self-regulate one's study-related behaviors and cognitions is linked to educational achievement and career advancements (Broadbent & Lodge, 2021).

Online Learning Barriers

The educational technology revolution has many benefits, but there are also barriers. The barriers include, but are not limited to insufficient support, ineffective pedagogy, technology problems, inaccessibility, and retention issues (Liu et al., 2020; Swinnerton et al., 2020). Instructors lack training in the development of online content (Kayode, 2018; Noreen, 2020). The development of electronic content takes more time for instructors leading to barriers in the quality of online content (Kayode, 2018; Noreen, 2020). Instructors face difficulties using the learning management system to create instructional methods that engage learning (Kayode, 2018).

Several inequalities, presupposing reliable connectivity, devices that persons own, and digital and learning skill sets exist in higher education (Noreen, 2020; Swinnerton et al., 2020).

Perspective students and institutions should not assume that a digital divide does not still exist as inequalities are still looming (Kotrikadze & Zharkova, 2021; Swinnerton et al., 2020). Students in online courses must stay abreast of the latest technology and be technologically savvy, so they can use, maintain, and troubleshoot (McMillion & King, 2017). Technology provides capability and capacity to increase access to education, however, the development and implementation of the technology occurs at a pace that does not allow for proper evaluation of the outcomes (Kotrikadze & Zharkova, 2021). Access to student support services and informal interactions with the instructor and classmates are additional potential barriers (Young & Bruce, 2020).

Despite the popularity of distance education, this learning modality suffers from high dropout rates effecting both students and institutions (Bornschlegl & Cashman, 2019). Degree completions were at least 20% lower for fully online students (Dyment et al., 2020). The facelessness and lack of personhood within online learning environments have been identified as isolating and challenging for many students which may attribute to dropout rates (Burke & Larmar, 2021). Institutions need to look at dropout rates from all angles. In this instance, the students are the customers and ultimately the only one to judge the quality of the courses (MacLeod et al., 2019).

Transactional Distance Online

Transactional distance is the perceived psychological, cognitive, and affective distances between learners and instructors in online learning environments that can impact learning engagement and attaining academic achievement (McMillion & King, 2017). In online education, transactional distance is important to take into consideration because the teaching environment is separate from the learner environment which require specific teaching-learning techniques to be employed (Kayode, 2018). The theory of transactional distance states that as the

interaction between the teacher and the student decreases, the learner autonomy must increase (Quong et al., 2018). Transactional distance and learner autonomy are different for every student but can be bridged through student engagement and effective teaching strategies (Bolliger & Halupa, 2018). Faculty who reshapes their availability to provide access to online students reduce the feelings of isolation and lessen the transactional distance between faculty and students (Berry, 2019; Nortvig et al., 2018).

Student engagement breaks down transactional distance through effective contact with other peers even without effective contact with all peers in a class (Bolliger & Halupa, 2018). Effective teaching strategies bridge the transactional distance gap. The strategies include the teaching experience of the faculty, choosing the appropriate teaching method, and selecting the best educational technology tools for the online learning environment (Bolliger & Halupa, 2018; Yilmaz & Keser, 2017). Communicating with the instructor and peers through a digital space lacks human-like nuances that lead to feeling disconnected creating a larger transactional distance gap (Quong et al., 2018).

According to Bolliger and Halupa (2018) transactional distance can be bridged through student engagement and effective teaching strategies. They explored student perceptions on engagement, transactional distance, and outcomes in online courses. In their research of graduate and undergraduate students from three different private universities, students did not report a high level of transactional distance with the instructor or content, but they did with their peers (Bolliger & Halupa, 2018). Results showed that meaningful learning activities maximize student engagement and outcomes, but that instructors need to facilitate interactions to guide student learning (Bolliger & Halupa, 2018). Online learning has broken the geographic barriers; transactional distance remains a barrier in online learning (Bolliger & Halupa, 2018).

Student Involvement Online

Students who are more involved in the academic and social aspect of college life learn more (Astin, 1984). Academic involvement refers to a student's capacity to have an active role in their learning, creating a high-quality learning experience (Dyment & Downing, 2018; Jacobi, 2017). Asynchronous student involvement requires multiple pedagogies, variety of learning resources to meet different learners' needs, high instructor presence, quality of faculty-student interactions, academic support outside the classroom, and the promotion of class cohesion in the online learning environment is shown to create higher student achievement and satisfaction (Lockman & Schirmer, 2020). According to Paulsen and McCormick (2020) course design and instructor's involvement through assignment feedback and responsiveness to students is associated with student engagement and achievement. Teachers help students maintain a sustained pace in learning by diversifying activities to foster behavioral and emotional engagement (Heilporn et al., 2021), given that engagement does not automatically develop within a learning community (Li & Lefevre, 2020). Student engagement is malleable through pedagogy therefore student engagement is influenced by teaching strategies (Heilporn et al., 2021).

Online students need purposeful and regular engagement with faculty members (Olt, 2018; Shoepe et al., 2020). The relationship with both their peers and their instructor needs to be developed at the beginning of the class (Jacobi, 2017). The quality and effectiveness of student-faculty interaction is proven to raise academic performance in asynchronous online courses (Paulsen & McCormick, 2020). Student engagement in online classes primarily takes place through discussion boards (Dyment et al., 2020). Greater interaction with the content relates to higher student achievement and overall satisfaction (Lockman & Schirmer, 2020). Interactivity

leads to improved engagement and active participation (Ahmed & Osman, 2002; Kayode, 2018),

however mandatory postings to discussion boards clog the learning management system with

threads that lack coherence, structure, and logic (Dyment et al., 2020). Online learning

communities have disjointed conversations (Broadbent & Lodge, 2021). Students are left waiting

for a response which can negatively impact the academic experience especially if the question

requires an immediate response (Broadbent & Lodge, 2021).

The student's relationship with both their peers and their instructor needs to be developed

at the beginning of the class (Jacobi, 2017). One way to develop deeper community to aid in

student engagement is through small groups, which allows students to have more in-depth

conversation with a smaller amount of people (Berry, 2019; Jacobi, 2017). Students' academic

needs have to be met, but also the desire for support and interaction; this will help students have

a more active role in the learning process (Berry, 2019; Nortvig et al., 2018). Interaction is the

heart of distance learning, so it is important to develop an online course that provides regular

transactions that are varied (Dockter, 2016). Instructors with instructional designers need to

develop the curriculum that will allow for maximum student engagement (Sobko et al., 2020).

Online programs have started to develop strategies to monitor student involvement, such

as frequency of logging into the learning management system, posting to online discussions, or

downloading course information and materials (Dyment & Downing, 2018). Student experience

predicts a large amount of variance in student's overall satisfaction; entertainment positively

affected satisfaction while interaction with other students negatively affected satisfaction

(Bornschlegl & Cashman, 2019). User friendly technology tools, providing an orientation to

online instruction, and developing greater interaction with course content also led to student

satisfaction and achievement (Lockman & Schirmer, 2020). Student satisfaction with their experiences influence their plans to continue studies online (Young & Bruce, 2020).

In online education, social involvement in college life is limited due to distance. Students need opportunities to collaborate in the online environment, as it raises motivation and provides opportunity for social involvement (Ahmed & Osman, 2020; Olson & McCracken, 2015). A lack of personal connection in online courses give negative student experiences resulting in social isolation and lower student achievement (Jacobi, 2017). The quality of the courses effect both student satisfaction and academic success (Burke & Larmar, 2021; MacLeod et al., 2019).

Synchronous Learning

Synchronous learning takes place when the instructor and students are at different locations but learning simultaneously through computer-mediated technologies at specific times (Francescucci & Rohani, 2019; Olt, 2018). During a synchronous online class, information is disseminated from the instructor to the students directly and in real-time (Ahmed & Osman, 2020; Lin & Gao, 2020). Synchronous learning requires a distinct pedagogical approach, and the instructors need to pay attention to their roles (Cakiroglu, 2019; Dyment & Downing, 2018). When instructors are planning for synchronous learning, they need to plan carefully to avoid downtime and maintain a high level of interaction (Heilporn et al., 2021) that includes providing instant feedback (Ahmed & Osman, 2020). These methods could include, but are not limited to problem solving exercises, case studies, role-playing, or small group discussions (Heilporn et al., 2021).

This learning modality is gathering more traction than asynchronous learning due to advances in technology that increase students' feeling of connection to other students and the instructor (Francescucci & Rohani, 2019; Watts, 2016). Interaction is a key element affecting

learning outcomes (Kara, 2021; Yilmaz & Keser, 2017). Incorporating synchronous learning requires a significant investment in technology infrastructure for an institution, as well as faculty and student technical development (Cakiroglu, 2019; Dyment & Downing, 2018; Olson & McCracken, 2015). Synchronous online education relies upon stable functions on both the student and faculty side regarding software, hardware, the cloud, internet connections, power outages, equipment failure all effect student engagement (Blau et al., 2017; Lin & Gao, 2020). The technologies available and working properly create interpersonal interactions to create a positive social environment (Blau et al., 2017; Lin & Gao, 2020; Olson & McCracken, 2015).

Synchronous Learning Benefits

Synchronous learning provides benefits to students. Students attending synchronous sessions benefit from instant feedback and the privilege of interacting with their peers in real-time (Lin & Gao, 2020). Classes that take place in real-time help students feel less distanced from their peers and assist in building a learning community (Lin & Gao, 2020). Synchronous learning gives the feeling of a traditional face-to-face learning environment (Lin & Gao, 2020). Students in the natural learning conditions report greater enjoyment from the social interactions with their peers and the instructor (Blau et al., 2017). Social interactions with their peers are positively associated with students' perceived learning (Abuhassna et al., 2020).

Synchronous Learning Barriers

Synchronous learning offers many benefits to students, but there are also barriers. This learning modality requires students log in at a specific time, students who do not have a flexible schedule cannot navigate the time needed to attend sessions (Lin & Gao, 2020). Students who rely on public access to technologies are prevented from attending synchronous sessions (Lin & Gao, 2020; Reisdorf et al., 2020). Synchronous sessions, like traditional classes do not provide

enough time for students to reflect on the content before being required to respond (Lin & Gao, 2020; Olson & McCracken, 2015).

Barriers exist for the instructors as well. Teachers need to be familiar with the technologies being utilized in synchronous learning (Olson & McCracken, 2015). When instructors are familiar with the technologies, they can take full advantage of possibilities; by inviting real-world practitioners into class sessions (Blau et al., 2017; Nortvig et al., 2018). Checking body language for understanding is challenging, especially if students turn off their camera (Olson & McCracken, 2015; Nortvig et al., 2018). Microphones when not muted cause background noise that is distracting to other students and the instructor (Lin & Gao, 2020; Raes et al., 2020).

Students' backgrounds, experiences, and educational techniques contribute to students' achievement in online classes (Abuhassna et al, 2020; Li & Lefevre, 2020). Achievement in synchronous online classes is influenced by the educational methods that are utilized, not necessarily the technology made available (Abuhassna et al., 2020). However, there are synchronous tools that include real-time communication between the instructor, learners, and among learners for discussion and collaborating (Cakiroglu, 2019), to create active engagement that raises student motivation and commitment to learning (Ahmed & Osman, 2020; Lin & Gao, 2020; Olson & McCracken, 2015). Academic achievement and student satisfaction depend on prior knowledge and experience when it comes to online learning (Abuhassna et al., 2020). Students who also develop a stronger feeling of connection with peers and the instructor feel less distanced and have better engagement (Francescucci & Rohani, 2019; Lin & Gao, 2020). Adding synchronous portions to online classes do not necessarily increase students' level of achievement (Ahmed & Osman, 2019; Blau et al., 2017). Achievement is dependent on many items, not just

technology. According to a study by Al-Samarraie (2019) there was not any difference between students who participated in traditional classes and those that participated in synchronous online classes.

Blended Synchronous Learning

Blended synchronous learning is a combination of face-to-face learning and online learning formats where online students participate with students in the classroom simultaneously through web conferencing (Angelone et al., 2020; Nortvig et al., 2018; Wang et al., 2017). While the definition is straightforward, in practice, blended learning takes many forms with differences in time dedicated to each modality, expectations of face-to-face or online interactions, and other variables depending on the institution, learning outcomes, and learners (McKenna et al., 2020).

Blended synchronous learning is gaining more attention in higher education because of overall cost-savings through the reduction of space needed on campus and the number of staff required (Lakhal & Belisle, 2020; Luna & Winters, 2020), it is important to align the blended synchronous learning environment with the overall mission and vision of the institution (Groen et al., 2020). Institutions reach a broader base of potential students by offering the possibility to attend either face-to-face or through online media technologies (Angelone et al., 2020; Raes et al., 2020) as students are continuing to request flexible options for learning due to their inability to attend face-to-face classes on campus (Clark & Post, 2021). Blended synchronous learning provides a meaningful opportunity for students to attend classroom instruction through a two-way video conference in real-time (Angelone et al., 2020; Wang et al., 2017). In a post pandemic world blended synchronous learning provides a good alternative to reduce the number of students in face-to-face activities (Lakhal et al., 2021; Samson, 2020).

The blended synchronous learning modality evolved from distance and open education movements (Serranto et al., 2019) and takes full advantage of both online and face-to-face benefits (Baker et al., 2020; Bower et al., 2015). The classroom is crucial for learning and cannot be simply replaced with technology supported environments, but rather a new learning approach (Wang & Huang, 2018). It requires an appropriate instructional design for the content to support the fruitfulness of blended synchronous learning (Prasetya et al., 2020). The learning approach must be grounded in learning theory and shifted from a teacher-centered approach to a learner-centered approach (Kastner, 2020) and from passive learning to active learning with human touch to facilitate interactive content (Prasetya et al., 2020). Instructors must utilize emerging media technologies rather than strictly conventional teaching strategies in a blended synchronous environment (Alsalhi et al., 2021). Blended synchronous learning requires more than replicating classroom activities in online versions, it should be thought of as transformative, and the results should be more advanced and meaningful learning than achieved in the previous modes of delivery (Kastner, 2020). It is important to adjust teaching strategies because the educational field has shifted to a constructive learning approach instead of a knowledge transfer approach (Alsalhi et al., 2021).

Creating a seamless blended synchronous learning environment requires careful consideration to avoid technological issues that occur in this type of environment (Angelone et al., 2020). Classes rely on the quality of real-time audio and video communications, and selection of the software and tools chosen (Yang et al., 2019). Experience with the digital technology helps to eliminate the awkwardness of merging the environments (Angelone et al., 2020). Technologies implemented by the institution need to provide training to the participants on how to use and troubleshoot (Angelone et al., 2020; Bower et al., 2015). The success of

blended synchronous classes depends on the instructor's access to and use of the technology provided (Anthony et al., 2019; Lakhal et al., 2020).

The learning mode in blended synchronous is based on the availability to access live classes, instructor responsiveness, and communication among students and stable communication among students and the instructors (Anthony et al., 2019). To incorporate a blended synchronous environment requires effectively balancing attention paid to both students online and students in the classroom (Wang et al., 2017). When merged the online students and face-to-face students still saw the class as two distinct groups (Angelone et al., 2020; Wang et al., 2018), however, participants had a more authentic experience when they were face-to-face or included within the video than when they were off camera (Abuhassna et al., 2020; Angelone et al., 2020).

Blended Synchronous Benefits

Blended synchronous learning benefits both the instructor and the students. Instructors know immediately what needs to be covered again (Serrano et al., 2019). Interaction between the instructor and the students is beneficial to blended synchronous learning (Groen et al., 2020). There are several benefits afforded to students who study in a blended synchronous learning format. According to Thai et al. (2019) students studying in a blended learning modality report more satisfaction. Academic and social integration is strengthened by students' satisfaction in blended synchronous learning which aids in persistence and retention (Lakhal et al., 2020).

Blended synchronous learning diminishes remote students' sense of isolation and allows them to get to know other students better than in the asynchronous online modality (Lakhal et al., 2020). This method allows users to share video and audio files in real-time (Al-Samarraie, 2019; Blau et al, 2017). Students have an increase in grades, participation, and enhanced relationships

with other students (Groen et al., 2020). This learning modality provides a practical solution to facilitate the learning process that cannot exclusively be completed in the classroom, because of work, location, or undesirable circumstances such as disasters and diseases (Prasetya et al., 2020), and it is an alternative way for absent students to take part in the classroom instruction in real-time (Wang et al., 2017; Wang & Huang, 2018).

There is a boost in self-efficacy because students receive timely feedback which improves student expectation in the future (Clark & Post, 2021; Thai et al., 2019). Lectures are delivered at a set time, but they become a permanent resource when recorded (Clark & Post, 2021; Thai et al., 2019). These resources benefit the students from being able to replay, pause, and jump forward or backward to gain a deeper understanding (Clark & Post, 2021; Thai et al., 2019). Students are provided access to high quality learning resources for which improves the overall quality of their education (Shi et al., 2020; Yang et al., 2019).

Blended learning provides opportunities for synchronous activities between students in the classroom and students online (Martin & Bolliger, 2018). This increases students' confidence and interaction to engage in live learning practices to enhance the understanding of complex and challenging topics (Al-Samarraie, 2019). Using this method can help students to overcome the feelings of isolation and separation that occurs in asynchronous learning (Dyment & Downing, 2018). Synchronous activities enhance student-student, and student-instructor interactions which is valuable in online classes (Martin & Bolliger, 2018; Yang et al., 2019). Synchronous discussions help to foster critical thinking and problem-solving skills (Dyment & Downing, 2018).

Blended Synchronous Barriers

There are barriers that occur in blended synchronous learning for both the instructor and the students. These deficiencies relate to the misunderstandings and misuse (Angelone et al., 2020; Bower, 2011). Deficiencies can be overcome through support and training. Offering an introductory tutorial session outside of class time or provide just-in-time learning is another strategy (Angelone et al., 2020). Without adequate support and training the results of blended synchronous learning will be unsuccessful.

Institutions need to provide instructors with the time to develop the course design (Lakhal & Belisle, 2020). Instructors need to take into consideration that some students may lack technological skills, feel overwhelmed by the number of activities and resources to manage especially when instructors do not estimate the time students need to spend on each task, accessing course materials, or technological issues the arise (Lakhal & Belisle, 2020). One way is by improving the design of the blended synchronous learning environment (Halverson & Graham, 2019).

Blended synchronous learning is dependent on the teacher's competency in using the technology; instructors need to pay attention to both locations and perform certain operational actions on the learning platform (Raes et al., 2020). Instructors must adapt to the new learning environment such as talking to the camera and using a mobile device to present (Wang et al., 2018). Additional barriers that exist for instructors is the lack of shared resources, lack of collaboration with other instructors, and an underdeveloped strategic plan for implementing blended synchronous learning into an institution (Kastner, 2020).

Synchronous communications can be affected by weather; it is easy to be interrupted with network delays which affect teaching efficiency and student (Shi et al., 2021). Communication

can be insufficient due to instructor's microphone and video producing poor resolution or sound quality (Shi et al., 2021). Even with the advancement of technology, challenges still exist. Technical setup and bandwidth stability can potentially affect the audio and video quality, which negatively impacts both the teaching and learning (Al-Samarraie, 2019). Beyond bandwidth stability and technical setup, technical hitches and incompatible machines will frustrate students who are not technologically oriented (Al-Samarraie, 2019; Dyment & Downing, 2018).

Barriers exist for students also. Students may face time delays, background noises, and other hitches that could interfere with their learning (Al-Samarraie, 2019). Learning at multiple sites inevitably presents varied experiences and challenges, for example, technical difficulties due to the absence of a teacher or technical assistant, and a lack of classroom atmosphere resulting in increased social isolation (Wang et al., 2018). It is difficult for the remote students to make the teacher aware that they want to answer, which makes the online student frustrated and uninvolved (Raes et al., 2020).

Blended Community

Successful collaboration occurs when the teacher takes responsibility for ensuring students have adequate prerequisite technological competencies (Angelone et al., 2020; Berry, 2019). Students need to know not only how to receive and transmit information, but to collaborate with other students (Angelone et al., 2020). Learning requires the capacity to use the technology synchronously by enabling online presentations, video screen sharing, polling, and chat to enhance online engagement (Angelone et al., 2020). It is the instructor's responsibility guide students during the first session to develop competencies with web conferencing technology and establish a sense of community among the students (Angelone et al., 2020). Less efficient collaboration leads to total communication breakdown (Angelone et al., 2020).

Transactional Distance in Blended Learning

Transactional distance in blended learning is measured by students' subjective perception considering their performances (Elyakim et al., 2019). The environment affects the student's thinking and perception, and the student's perception affects the environment (Elyakim et al., 2019). Moore (1993) includes dialogue between students and teachers, and among students. Dialogue is said to create positive interactions and will enhance the learner's understanding (Best & Conceicao, 2017). Enhanced interactions will lessen the transactional distance among students (Best & Conceicao, 2017; Sobko et al. 2020). Blended learning may be able to lessen the impact of transactional distance upon student satisfaction (Best & Conceicao, 2017).

Student Involvement in Blended Learning

Blended learning as suggested by the literature has potential to optimize student engagement (Heilporn et al., 2021). Student involvement is one of the most crucial issues in learner satisfaction and success (Starr-Glass, 2020). Engagement cannot be sparked by others, it needs to be an individual's ability (Starr-Glass, 2020). Learner engagement is defined as a student's cognitive and emotional energy to accomplish a learning task, which correlates with educational outcomes, academic achievement, persistence, satisfaction, and sense of community (Anthony et al., 2019; Halverson & Graham, 2019). There are three dimensions that are interrelated as it pertains to student involvement and they are: behavioral, emotional, and cognitive (Heilporn et al., 2021).

Student behavioral engagement focuses on participation in activities that comply with rules or norms (Heilporn et al., 2021). To ensure that students are engaged in their course work, engagement needs to be facets that can be observed (Starr-Glass, 2020). Emotional engagement refers to reactions to their peers, teacher and the overall sense of belonging (Heilporn et al.,

2021). Students who can engage with both the content and peers will contribute to student success and create rich dialogue (Sobko et al., 2020; Starr-Glass, 2020). Lastly, cognitive engagement refers to the mastery of knowledge using metacognitive strategies (Heilporn et al., 2021). To sustain student involvement educators and designers need to work together to develop an innovative learning experience (Sobko et al., 2020).

Blended learning may lead to more fully engaged students (Halverson & Graham, 2019; Young & Bruce, 2020). Improving the design to blended learning requires when students are engaged in their learning, and when students begin to disengage (Halverson & Graham, 2019). Instructors play an essential role in blended learning from course design, to facilitating interactions, and supporting student achievement (Heilporn et al., 2021). There are three challenges to learner engagement in blended settings. They are the nature of blended learning, combining human and technology mediated instructions, and the ability to measure engagement under different conditions (Halverson & Graham, 2019; Starr-Glass, 2020).

Engagement is influenced by contextual variations that include, but are not limited to, environments or strategies that are deployed by the instructors (Heilporn et al., 2021). Faculty who offers face-to-face office hours through web conferencing provide students time to consult and receive additional assistance increasing student success (Kastner, 2020). Instructor presence and the interaction between instructors and students through active learning activities on student engagement and achievement is important to blended synchronous learning (Groen et al., 2020), better communication exists between the instructor and the students (Thai et al., 2019). Communication increases engagement and provides the space for feedback, to increase student achievement (Groen et al., 2020; Serranto et al., 2019; Thai et al., 2019).

Blended learning aims to extend thinking and discourse over time and space to enhance student engagement (Heilporn et al., 2021; Lakhal & Belisle, 2020; Lakhal et al., 2020). Students who engage do more than attend and perform academically, they put forth an effort and persist (Heilporn et al., 2021). However, low levels of engagement for remote students need to be taken seriously as student engagement is associated with positive learning outcomes and higher retention rates (Raes et al., 2020).

Students appreciate being able to respond in a timely manner, offer their perspectives, exchange information and feedback, share personal experiences, and experience a unique identity in their learning community which encourages a sense of involvement (Young & Bruce, 2020). Blended synchronous learning assists students in having stable communication, staying on task, feeling a greater sense of participation, and tending to experience better task and course completion rates (Lin & Gao, 2020).

Summary

The theoretical lens of transactional distance theory and student involvement theory was used to ground this study. Transactional distance theory was developed by Michael Moore (1972), but the work of this theory can be traced all the way back to Dewey (1896). The basis of the transactional theory is indicted by the geographical distance between the student and the instructor. Student involvement theory developed by A.W. Astin (1984), is associated with the amount of growth and learning based on the quality of the students' involvement in the learning process. Both theoretical lenses provided the foundation for this study.

Online education is continuing to grow in popularity and breaking geographical barriers. For institutions to keep up with the growing demand, they need to keep up with the technology demands and changes. Technology advances have allowed for institutions to offer synchronous

online options, blended, synchronous blended, and fully virtual classes through videoconferencing. Videoconferencing technology has advanced to allow for synchronous blended virtual classes through web conferencing. Students and the instructors in a classroom can be connected to online students virtually anywhere through a web conference in real-time. It provides an opportunity to build community.

Student engagement is a cornerstone of academic success. The engagement is developed by instructors for both the online and traditional classes. Online engagement can be developed through discussion boards. Discussion boards create interaction which is at the heart of online learning. Traditional engagement allows for students to build relationships during synchronous class time. The engagement still needs to be learner-centered to promote active learning. The developing of student engagement is enhanced through the instructor. Students in a blended synchronous session through web conferencing also need to build engagement between both traditional and virtual students.

CHAPTER THREE: METHODS

Overview

This chapter introduces the research methodology of the study on different delivery methods of instruction in higher education. The purpose of this quantitative causal-comparative study was to determine if there was a deeper understanding of student engagement and student achievement in a blended synchronous learning environment. This chapter includes the research question and hypothesis, participants and setting, instrumentation, procedures, and data analysis.

Design

This quantitative study examined the differences in blended synchronous learning and asynchronous online learning with respect to student engagement and student achievement for non-traditional students using a causal-comparative design. A causal-comparative design investigates the possible cause-and-effect relationship between a non-manipulated independent variable, which in the present study is the learning environment, and two dependent variables, which were student engagement and student achievement within a specific population (Gall et al., 2007). Causal-comparative research is a nonexperimental study (Creswell & Creswell, 2018) and the best option for this study because the groups had already been formed without the researcher assigning the participants to a specific group (Gall et al., 2007).

The independent variable, the learning environment, contains two categories: blended synchronous and asynchronous online. Blended synchronous learning combines online students and face-to-face students into one class simultaneously through computer technologies (Angelone et al., 2020; Nortvig et al., 2018; Wang et al., 2017). Asynchronous online learning allows students to complete course work online through a learning management system at their own pace, without social presence or immediate feedback (Wang & Huang, 2018). Dependent

variables in this study were student engagement and student achievement. Student engagement is defined as the amount of energy a student devotes to their studies and how that relates to student persistence (Astin, 1984). Student achievement is defined as the amount of academic content a student learns during a set time and the extent to which a student has reached their short-or-long term goals (Top Hat, 2019). A non-traditional student population was chosen because of the lack of research on post-secondary, non-traditional students utilizing blended synchronous learning (McKenna et al., 2020). Non-traditional students meet one of seven characteristics: delayed enrollment into post-secondary education, attends college part-time, works full time, is financially independent for financial aid purposes, has dependents other than a spouse, or is a single parent (National Center for Educational Statistics, 2019).

Research Question(s)

This study sought to answer the following research question:

RQ1: Is there a difference in student engagement and student achievement for students participating in blended synchronous learning or asynchronous online learning for non-traditional students?

Hypothesis(es)

The null hypothesis for this study is:

H₀: There is no statistically significant difference in student engagement as measured by the Distance Education Learning Environment Survey, or student achievement measured by the Online Self-Regulated Learning Questionnaire, for non-traditional students participating in blended synchronous learning or asynchronous online learning.

Participants and Setting

Population

The population was drawn from a seminary in a low-income city of southwest Ohio. Students are geographically located across the United States and around the world from varying economic and social backgrounds. Seminary students include non-traditional students who attend seminary classes in either asynchronous online or blended synchronous learning modalities. The total enrollment at the seminary is 412.

Participants

The participants for this study were drawn from a convenience sample of students. A convenience sample was chosen because the groups of students were naturally occurring, available, and easy to study (Gall et al., 2007). The researcher did not manually assign students to the asynchronous online or the blended synchronous courses (Gall et al., 2007). Students opted for the learning environment that was conducive to their needs.

The survey link was provided to the students during summer, 2022. The number of participants sampled was 160 which exceeded the required minimum of 72 students per group with the statistical power of 0.7 at the .05 alpha level when assuming a medium effect size. According to Gall et al. (2007), 144 students is the required minimum for a MANOVA. A total of 182 possible surveys were delivered.

The sample came from five different courses. Each course was offered in an asynchronous online and a blended synchronous modality. Students were selected from courses required by all students attending seminary, and included the following introductory courses, Old Testament, New Testament, Church History, Theology, and Pastoral Care. After the data was collected, 144 surveys were needed to meet the criteria. Surveys were randomly chosen from the

total surveys collected. Demographic statistics for this study were derived from data collected.

Participants' self-reported demographic information regarding age, gender, degree program, and

the number of asynchronous online and blended synchronous classes taken overall are recorded

in Table 1.

Table 1

Demographic Statistics

	Asynchronous Online	Blended Synchronous
Gender		
Male	38	40
Female	28	20
Did not disclose	6	12
Age Range		
35-39	10	23
40+	62	49
Degree Program		
MDiv	49	49
MACM	2	10
MMin	14	10
MTS	4	3
MA	3	0
Number of Asynchronous Courses Taken		
1-5	15	37
6-10	22	12
11-15	18	19
16-20	17	4
Number of Blended Synchronous Courses Taken		
1-5	62	57
6-10	8	10
11-15	0	3
16-20	2	2

The faculty for this study comprised of five different faculty members in the fall semester

and six different faculty members in the spring semester. There were four males and one female,

three Caucasians, one Asian, and one African American. The spring semester contained two

female and four males. There were two African American, three Caucasian, and one other. All

faculty are full-time residential faculty who teach both asynchronously online and blended synchronously. The faculty have completed an online teaching and learning certificate program to aid them with the necessary skills to teach asynchronously online.

Setting

The free-standing accredited seminary used in this study is in southwest Ohio. The seminary is accredited through The Association of Theological Schools and the Higher Learning Commission to offer degrees in theological education. This seminary was founded in 1871. It derived from a seminary for the United Brethren in Christ Church, to the Evangelical United Brethren Church, and more recently The United Methodist Church. The seminary offers several master's degrees, a Doctor of Ministry degree, and several non-degree options. The master's degrees are the only program that offers courses in both asynchronous online and blended synchronous modalities (United, 2022).

Asynchronous online and blended synchronous graduate courses were used in this study. Courses delivered in fall of 2021 began on September 13th and ended on December 17th. Spring 2022 courses were delivered between February 7th and May 13th. Each semester was fourteen weeks in length. The survey link was provided to the students who attended the introductory classes in the fall of 2021 and spring of 2022 during the summer of 2022.

The courses were delivered asynchronously via the internet through the learning management system (LMS), Canvas. At the time of the study, Canvas was a popular LMS, with over 30 million users ("Instructure's Company Story", n.d). Instructure is the parent company that owns Canvas ("Instructure's Company Story", n.d.). According to "Instructure's Company Story" (n.d), Instructure is a large company with a market value of over 1 billion dollars. Based on this information, Canvas was a prominent LMS in online learning.

Canvas LMS was used to deliver content, post student grades, and provide opportunities for student engagement and communication among students and the instructor. This was where students gathered information, turned in assignments, and participated in discussion forums. The primary engagement in the asynchronous environment was weekly discussion forums. Students engaged in the weekly discussions, for each of the fourteen weeks of the course. The weekly discussions began by students responding to the posed open-ended question(s). Students then responded to other student posts to engage in dialogue. Discussions allowed for threaded replies for all who were involved in the discussion. The instructor requires that students interact with one another. Some discussions received numerous responses and others received no responses. The instructor interjected or made corrections as they saw necessary.

The courses that were delivered in the blended synchronous modality used Cisco WebEx and Canvas LMS. At the time of the study, Cisco WebEx had 324 million users ("WebEx", 2021). The Cisco WebEx platform was trusted by 85% of Fortune 500 companies ("WebEx", 2021). It provided a flexible, inclusive, and secure platform for participants to have virtual conferences, or in the case of the study, live classrooms.

Cisco WebEx provided the platform for the students in the classroom and the instructor to participate together during class time. Live discussions took place. Students and the instructor shared content, sessions were recorded for later reviewing, and emoji's were used to convey expressions during the live session. Cisco WebEx provided different ways of engaging during the sessions, including polling, Q&A, and chat. Students in the blended synchronous session used Canvas LMS to access the lecture recordings, turned in assignments, received feedback, and dialogued with other students and the instructor outside of class time.

Instrumentation

Distance Education Learning Environment Survey

For the purposes of this study, the researcher gathered a variety of data. The Distance Education Learning Environment Survey (DELES) was used to gather data on student engagement (Walker & Fraser, 2005). See Appendix A. The purpose of the instrument's development was to emerge and validate a new learning environment questionnaire for distance education in higher learning measuring two distinctively different fields: social ecology and distance education (Walker & Fraser, 2005). The new instrument investigated the association between the nature of distance education environment and student's enjoyment of their studies (Walker & Fraser, 2005).

DELES used a three-stage approach (Walker & Fraser, 2005). Stage one identified learning environment scales to address the three social organizational dimensions of relationship, personal development, and system maintenance and change that consisted of a literature review, review of previous instruments, develop scales, and expert reviews (Walker & Fraser, 2005). Stage two involved a three-step process to write individual items, including considering negatively worded items, adopting items previously validated, and subjecting the entire set of items for validation by experts (Walker & Fraser, 2005). The third stage was field testing and analysis which required two steps using a large sample of the target audience to remove items to enhance the instrument (Walker & Fraser, 2005). Responses were collected from 186 undergraduate students, 364 masters, and 130 doctoral students (Walker & Fraser, 2005).

The survey was designed to assess an important learning environment that had not previously existed (Walker & Fraser, 2005). This study contributes to distance education research, higher education studies, and learning environments (Walker & Fraser, 2005).

Instructors and instructional designers seeking to develop high quality distance education must look further into strategies for student interaction and collaboration. The instrument was used in numerous studies (Ferrer-Cascales et al., 2011; Sahin, 2008; Wickersham & McGee, 2008). For this study, the DELES was a valid instrument, Cronbach's alpha was greater than .7 see table 2 below.

Validity

In the development of the survey, the target population was that of higher education students in both public and private universities. During the development of the DELES an intuitive-rational strategy was used to keep only items with high internal consistency in the final instrument (Walker & Fraser, 2005). According to Walker and Fraser (2005), validity was determined using factor analysis with varimax rotation and Kaiser normalization. The highest proportion of variance is the scale of Student Interaction and Collaboration at 14.31%, followed by Instructor Support at 14.10%, Personal Relevance at 13.88%, and then Authentic Learning at 10.35% (Walker & Fraser, 2005). Those four scales account for over half of the variance within the instrument. Student Autonomy accounts for 8.50%, and Active Learning for 6.01% (Walker & Fraser, 2005). A cumulative variance for all subscales is 67.15% leaving approximately 33% of variance unaccounted for (Walker & Fraser, 2005).

Reliability

Table 2

DELES Subscales and Alpha (Walker & Fraser, 2005)

Subscale	Cronbach's Alpha
Instructor Support	.84
Student Interaction and Collaboration	.94
Personal Relevance	.92
Authentic Learning	.89
Active Learning	.75
Student Autonomy	.79
Student Satisfaction	.95

Note. Walker, S. L., & Fraser, B. J. (2005). Development and Validation of an Instrument for Assessing Distance Education Learning Environments in Higher Education: The Distance Education Learning Environments Survey (DELES). *Learning Environments Research*, *8*(3), 289–308. https://doi.org/10.1007/s10984-005-1568-3

      The internal reliability ranged from .75 to .94 for each of the six DELES scales (Walker & Fraser, 2005). To ensure reliability, Cronbach's alpha will be calculated for this study.

      The DELES consist of 34-question survey was used to assess participants engagement based on six different areas. A final area with eight questions on student satisfaction were included bringing the total number of questions to 42 on the survey. Students responded to a five-point Likert scale (5-always, 4-often, 3-sometimes, 2-seldom, 1-never) to a variety of questions divided into the six different areas mentioned above. Each of the six subsets calculates a mean score, each of the mean scores are combined into a total mean. The lowest possible mean score is 1.2 indicating that a participant marked never for all 42 items. The highest possible mean

score is 6 revealing that a participant marked always for all 42 items on the DELES. See table 3

below for potential scores of each subsection.

Table 3

DELES Scales and Potential Scores

Scale	Total Questions 5-Point Likert Scale	Potential Scores
Instructor Support	8	1.6 to 8
Student Interaction and Collaboration	6	1.2 to 6
Personal Relevance	7	1.4 to 7
Authentic Learning	5	1 to 5
Active Learning	3	0.6 to 3
Student Autonomy	5	1 to 5
Student Satisfaction	8	1.6 to 8
Total	42	8.4 to 42
Average Mean		1.2 to 6

Note. Walker, S. L., & Fraser, B. J. (2005). Development and Validation of an Instrument for

Assessing Distance Education Learning Environments in Higher Education: The Distance

Education Learning Environments Survey (DELES). *Learning Environments Research*, *8*(3),

289–308. https://doi.org/10.1007/s10984-005-1568-3

The DELES was provided by Scott Walker, who owns the copyright for the DELES.

Permission to use the survey was granted and can be found in Appendix B.

Online Self-Regulated Learning Questionnaire

The Online Self-Regulated Learning Questionnaire (OSLQ) was used to gather data on

student achievement (Barnard et al., 2009). See Appendix C for instrument. The purpose of this

instrument was to measure self-regulation in the online learning environment because the understanding of teaching and learning in the online environment was lagging traditional teaching and learning (Barnard et al., 2009). The goal was to develop an instrument to measure student's ability to self-regulate their learning in an environment wholly or partially web-based (Barnard et al., 2009).

This instrument was developed across two main studies. The first study consisted of students enrolled in blended courses (Barnard et al., 2009). It consisted of 434 students enrolled in a course having a blended or hybrid format at a large public university located in the southwestern portion of the United States (Barnard et al., 2009). The OSLQ was administered online; after the questionnaire was completed some items were recoded and reversed per instructions, but no modifications were made to the instrument (Barnard et al., 2009). The second study consisted of students enrolled in fully online courses (Barnard et al., 2009). It consisted of 628 students enrolled in online courses at a large public institution in the southwestern portion of the United States (Barnard et al., 2009). The same procedure was followed as in study one, the survey was administered online (Barnard et al., 2009). Based upon study one and two, the evidence indicated reliability and validity in the OSLQ instrument for assessing self-regulation learning skills for both students in blended environments and online environments.

The instrument was used in numerous studies (Fung et al., 2018; Lu et al., 2021; Vilkova & Shcheglova, 2021). For this study, the OSLQ survey was a valid instrument, Cronbach's alpha was greater than .8 see table 4 below.

Validity

Two studies were utilized to determine the validity and reliability. In study one a confirmatory factor analysis was utilized to construct validity (Barnard et al., 2009). There were

five statistics reported to reflect fitness. Chi-square goodness of fit was significant with p<.05; ratio of chi-square statistic to degrees of freedom with a value of 3.08, which is acceptable fit, the root mean square error of approximation with a value of 0.04 which is acceptable, Tucker Lewis Index with a value of .95, and the Comparative Fit Index with a value of .96 both of which indicate a good fit (Barnard et al., 2009).

The second study used the same five statistics to test validity. Chi-square goodness fit was significant with p<.05, ratio of chi-square statistic to degrees of freedom with a value of 2.77 which is an acceptable fit, the root mean square error of approximation with a value of 0.06 which is acceptable, Tucker Lewis Index with a value of .93, and the Comparative Fit Index with a value of .95 both of which indicate a good fit (Barnard et al., 2009).

Reliability

A reliability .70 or better is acceptable (Barnard et al., 2009). Each of the subsets, the internal consistency was examined ranging from .67-.90 which revealed a sufficient score for reliability in the first study (Barnard et al., 2009). The internal consistency scored .90 during study one. In the second study, each of the subsets, the internal consistency was examined and ranged from .87 to .96 revealing a sufficient score for reliability (Barnard et al., 2009). The internal consistency scored a .92 during study two.

Table 4

OSLQ Subscales and Alpha Values

Subscale	Cronbach's Alpha
Goal Setting	.88
Environment Structuring	.92
Task Strategies	.85
Time Management	.91
Help-Seeking	.92
Self-Evaluation	.89

Note. Barnard, L., Lan, W. Y., To, Y. M., Paton, V. O., & Lai, S. L. (2009). Measuring self-regulation in online and blended learning environments. *The Internet and Higher Education*, *12*(1), 1–6. https://doi.org/10.1016/j.iheduc.2008.10.005

The internal reliability ranged from .85 to .92 for each of the six OSLQ scales (Barnard et al., 2009). To ensure reliability, Cronbach's alpha will be calculated for this study.

The OSLQ, 24-question survey was used to assess participants achievement based on six different areas: environment structuring, goal setting, time management, help seeking, task strategies, and self-evaluation (Barnard et al., 2009). This instrument measures achievement upon their ability to understand and control the learning environment. The survey is broken down into six-subsets: goal setting, environment structuring, task strategies, time management, help seeking, and self-evaluation (Barnard et al., 2009). Students responded to a five-point Likert scale (5-strongly agree, 4-agree, 3-neutral, 2-disagree, 1-strongly disagree) to a variety of statements divided into the six-subsets listed above (Barnard et al., 2009). The lowest possible mean score is 1.2 meaning low levels of self-regulated learning and the highest is 6.0 meaning high levels of self-regulation.

Table 5

OSLQ Scales and Potential Scores

Scale	Total Questions 5-Point Likert Style	Potential Scores
Goal Setting	5	1 to 5
Environment Structuring	4	1 to 5
Task Strategies	3	0.6 to 3
Time Management	3	0.6 to 3
Help-Seeking	4	1 to 5
Self-Evaluation	4	1 to 5
Total	23	5.2 to 26
Mean Average		.087 to 4.33

Note. Barnard, L., Lan, W. Y., To, Y. M., Paton, V. O., & Lai, S. L. (2009). Measuring self-regulation in online and blended learning environments. *The Internet and Higher Education*, *12*(1), 1–6. https://doi.org/10.1016/j.iheduc.2008.10.005

The OSLQ does not require permission for use. See Appendix D for the survey.

Procedures

Prior to the study beginning the researcher obtained permission from Liberty University's Institutional Review Board (IRB). See Appendix E for approval. Written approval from the IRB office at the seminary for the research site was obtained (see Appendix F). Once the approvals were met participants were secured, and the research was conducted. All students who registered for the introductory courses of New Testament, Old Testament, Theology or Church History in either the asynchronous or blended synchronous courses received a recruitment email requesting their participation in the study. In the recruitment email, the researcher explained to the students that their participation was completely voluntary, confidential, and will not impact their standing

with the seminary. See Appendix G for a copy of the recruitment email.

The students were provided a link to the survey in Evaluation Kit, during the summer of 2022 through Canvas, which contained the consent form. The consent form described the purpose of the study, explained the procedures, and provided a space for participants to agree to the participation. See Appendix H for consent form. The survey stayed open for four weeks. Students who had not completed the survey received weekly reminders until the survey closed.

Data Collection

The researcher entered the DELES and OSLQ items into one combined survey on Evaluation Kit for distribution. The link to the survey was provided through the Canvas LMS course sites for the students participating in the study. The survey took approximately 20-25 minutes to complete which was explained on the informed consent. After the survey was administered, the responses were downloaded from Evaluation Kit in four different formats. This included the raw statistical data, the mean score, and the percentage of completion.

Data Security

At all stages of the data collection, all information that could identify individual participants were protected. The data was stored securely with a password only the researcher had access to the records. Data stored on a password protected computer, in a password protected file. When not utilized, the password protected file was closed and the computer locked. The data was retained for three years after the completion of this research study.

<div align="center">

Data Analysis

</div>

The null hypothesis was tested through a multivariate analysis (MANOVA). A MANOVA is a tool for measuring the statistical significance of an independent categorical variable, learning environments (blended synchronous and asynchronous online) and multiple

dependent variables, student engagement and student achievement (Creswell & Creswell, 2018; Gall et al., 2007). The MANOVA provided the inferential statistics and the descriptive statistics for each group in the independent variable (Gall et al., 2007). Since this study is causal comparative, the inferred results will show a possible statistically significant relationship between the type of learning environment, student engagement and student achievement.

Data screening included a visual screening to check for missing data points and inaccuracies. A box and whisker plot were used to determine if the data was skewed or if there are extreme outliers that needed to be removed from the data (Warner, 2021). After the completion of the data screening, assumptions then will need to be tested.

The assumption of normality was assessed with the use of the Kolmogorov-Smirnov test, with the sample size greater than 50, and a Mahalanobis distances value. To assess the assumption of multivariate normal distribution a scatterplot matrix was created between each pair of dependent variables for each group of the independent variable. Each scatterplot of the matrix was examined for the classic "cigar shape."

The Assumption of Homogeneity of Variance-Covariance matrices will test this assumption in SPSS using Box's M test of equality of covariance. If the data fails this assumption with $p < .05$, then the SPSS would be used to carry out Levene's test of homogeneity of variance to determine where the problem lies. The null hypothesis was rejected at the 95% confidence level. The absence of multicollinearity was assessed by examining the correlation between dependent variables.

The SPSS software package was used by the researcher to evaluate the relationship between student engagement and the asynchronous online course based on the DELES survey results. Then, the researcher used the SPSS software to evaluate the relationship between student

achievement and the asynchronous online course based on the OSLQ survey results. The researcher then used the SPSS software package to evaluate the relationship between student engagement and the blended synchronous online course based on the DELES survey results. Lastly, the researcher used the SPSS software package to evaluate the relationship between student achievement and the blended synchronous online course based upon the OSLQ survey results.

Ethical Considerations

The students' identities remained anonymous. No identifying information was collected, and the researcher did not have access to the names of the student participants. The survey was distributed through Evaluation Kit in Canvas that provided access to only students who meet the qualifications of New Testament, Old Testament, Theology, and Church History. Using a third party to distribute the survey helped avoid any potential conflict of interest between the researcher and the participants.

The respondents were all adult age, participants acknowledged privacy rights and informed consent as part of the electronic survey process prior to beginning the survey. Informed consent was accomplished by responding to item one of the surveys on the opening page. A negative response to item one ended the survey. After responding affirmatively to item one, participants were directed to an electronic version of the DELES and OSLQ.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this quantitative, causal-comparative study was to investigate graduate students' engagement and achievement based on content delivery mode. The researcher utilized the results of the DELES and the OSLQ survey administered for the 2021-2022 academic school year. This chapter includes the research question, null hypothesis, descriptive statistics, and the results of this study.

Research Question(s)

RQ1: Is there a difference in student engagement and student achievement for students participating in blended synchronous learning or asynchronous online learning for non-traditional students?

Null Hypothesis(es)

H₀: There is no statistically significant difference in student engagement as measured by the Distance Education Learning Environment Survey, or student achievement measured by the Online Self-Regulated Learning Questionnaire, for non-traditional students participating in blended synchronous learning or asynchronous online learning.

Descriptive Statistics

The final participants in this study consisted of 144 students from the seminary. 182 students completed the survey, but only 144 were valid for the data analysis. Of the 144 students, 54% were male, 33% were female, and 13% did not disclose. Descriptive statistics were obtained on the dependent variables for each group of the independent variable. Descriptive statistics are found in Table 6.

Table 6

Dependent Variables: Student Engagement and Student Achievement

	Environment	*M*	*SD*	*n*
	Asynchronous Online	3.5023	.89578	72
Student Engagement	Blended Synchronous	3.7292	1.01724	72
	Total	3.6157	.96184	144
	Asynchronous Online	3.7161	.41685	72
Student Achievement	Blended Synchronous	3.5724	.30155	72
	Total	3.6443	.36963	144

Results

Hypothesis: The null hypothesis was that there was no significant difference in student engagement as measured by the DELES, or student achievement measured by the OSLQ, for non-traditional students participating in blended synchronous learning or asynchronous online learning. Data analysis was conducted to address this null hypothesis and answer the research question.

Data Screening

Data screening was conducted on each group's dependent variable, and data were scanned for entry errors and inconsistencies. No data errors or inconsistencies were identified. Students who did not meet the requirements (age and non-traditional) were removed from the data file. All data points were retained.

Assumptions

MANOVA requires that the following assumptions be tenable:

- o linearity (Use scatterplots)

- o no multicollinearity (Use Pearson correlations between the dependent variable. The assumption is tenable if the correlation is moderate and less than .9).

- o no univariate or multivariate outliers (Use Box plots to check for univariate outliers and use Mahalanobis distance test for multivariate outliers)

- o multivariate normality (Use Wilk's Lambda)

- o homogeneity of variance-covariance matrices (Use Box's M)

- o homogeneity of variances (Use Levene's test of equality of variance)

Assessment of Linearity

Scatterplot matrices were used to determine if there was a linear relationship between the dependent variables and each group of the independent variable. The scatterplots show a linear relationship between the dependent variables in each group; therefore, the assumption of linearity is tenable. Refer to Figure 1 and 2 below.

Figure 1

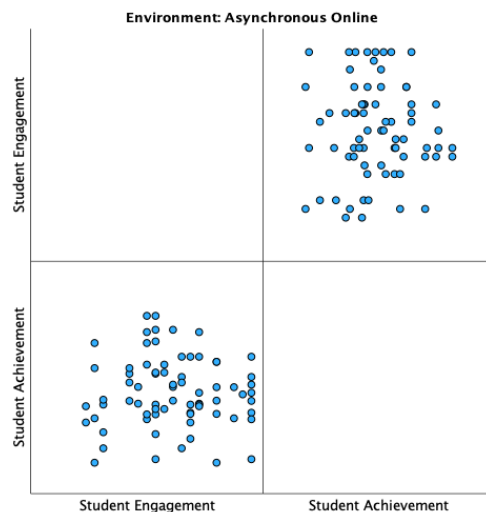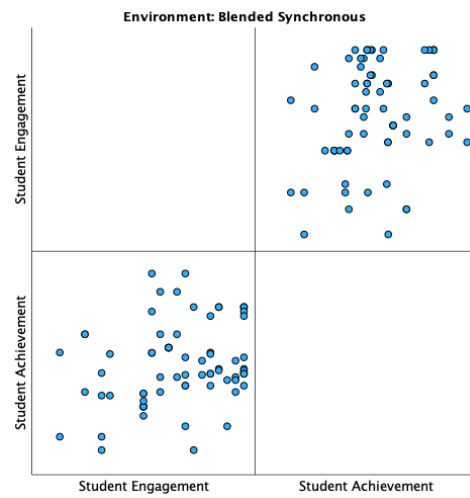*Scatterplot Matrix: Asynchronous Online and Dependent Variables*

Figure 2

Scatterplot Matrix: Blended Synchronous and Dependent Variables

Assumption of No Multicollinearity

   Pearson correlations between the dependent variables were used to test this assumption. The dependent variables should show a slight correlation. The assumption is tenable if the correlation is moderate and less than .9. As seen in Table 7, the correlations are both less than .9; therefore, the assumption of multicollinearity is tenable.

Table 7

Pearson Correlations

	Dependent Variables			
			Student Engagement	Student Achievement
Student Engagement	Pearson Correlation		1	.078
	Sig. (2-tailed)			.351
	η		144	144
Student Achievement	Pearson Correlation		.078	1
	Sig. (2-tailed)		.351	
	η		144	144

Note. Correlation is significant at the 0.01 level (2-tailed).

Assumption of no Univariate Outliers or Multivariate Outliers

Box plots were used to detect extreme univariate outliers in each dependent variable. The Boxplot revealed no extreme outliers. See Figure 3 and Figure 4 for box and whisker plots.
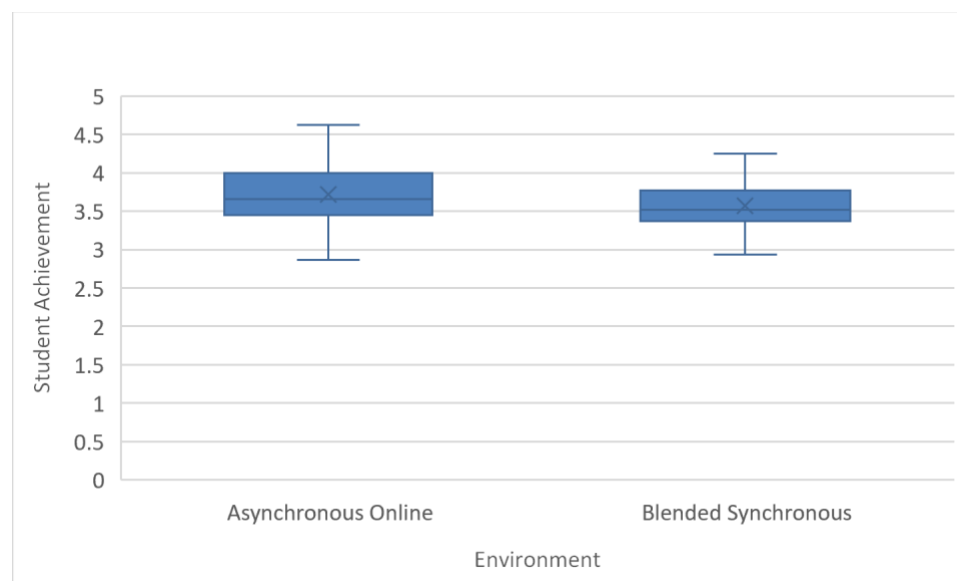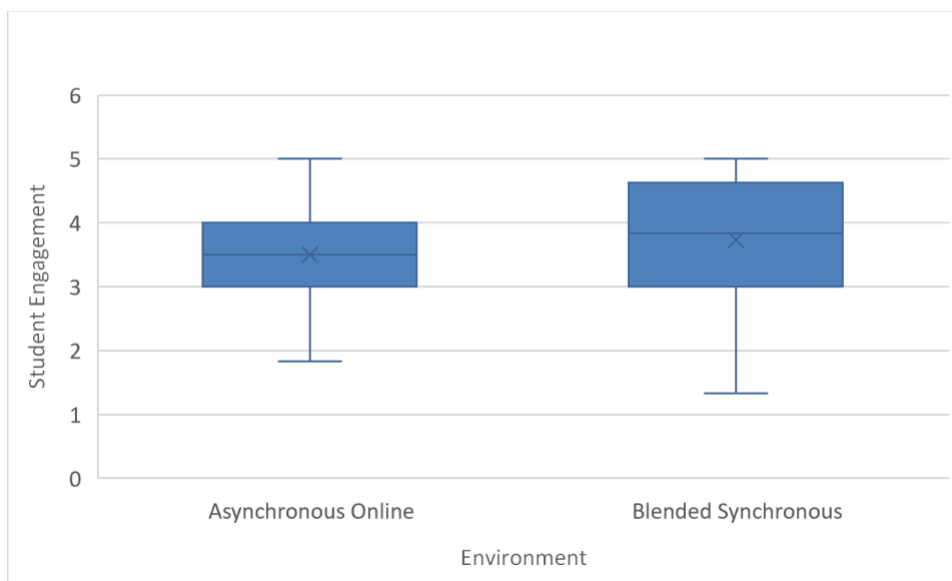
Figure 3

Box Plots: Student Achievement

Figure 4

Box Plots: Student Engagement

Mahalanobis distance was used to test the assumption of no multivariate outliers. To determine if a calculated Mahalanobis distance was a concern, the computed value was compared to a chi-square (x^2) distribution with degrees of freedom equal to 2, the number of dependent variables and an alpha level of .001 (Tabachnick & Fidell, 2014). The chi-square critical value is 13.82. The largest Mahalanobis distance was 7.03 which is less than 13.82. Therefore, the assumption of no multivariate outliers was tenable.

Assumption of Multivariate Normality

Kolmogorov-Smirnov test was used to test for multivariate normality as the sample size was greater than 50. Table 8 provides the results of all Kolmogorov-Smirnov tests. The *p* value for student achievement, blended synchronous is .073 which is greater than .05. Only student engagement, blended synchronous' value of .024 is less than .05. Further normality tests were conducted using Q-Q plot for student engagement, blended synchronous, see Figure 5. All other Kolmogorov-Smirnov values are tenable.

Table 8

Test of Normality

		Statistic	df	p
Kolmogorov-Smirnov				
Groups				
Blended Synchronous	Student Engagement	.113	72	.024
	Student Achievement	.100	72	.073
Asynchronous Online	Student Engagement	.091	72	.200*
	Student Achievement	.089	72	.200*

*This is a lower bound of the true significance.

[a] Lilliefors Significance Correction

Figure 5

Normal Q-Q Plot of Student Engagement: Blended Synchronous
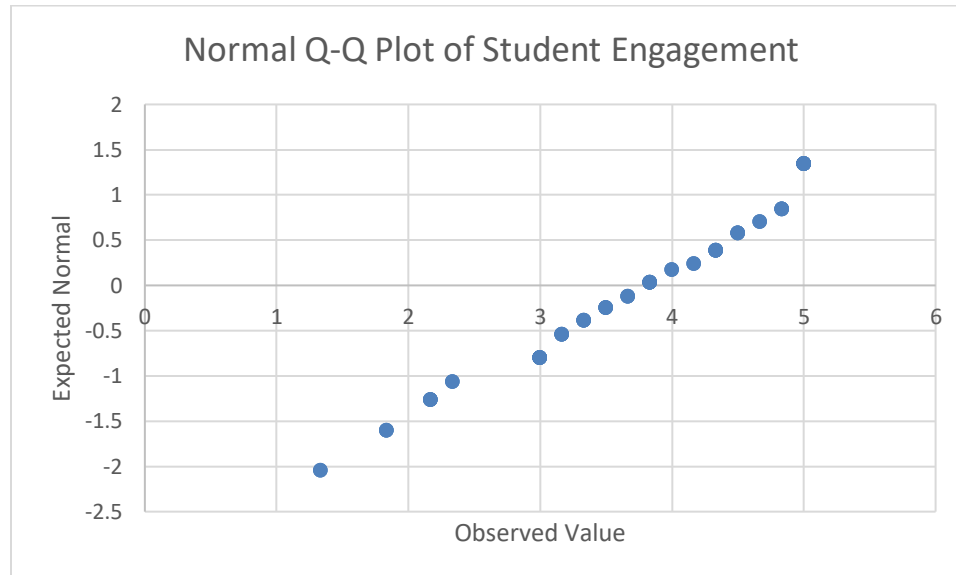
Assumption Homogeneity of Variance Covariance Matrices

Box's M, also called the Box's Test of Equality of Covariance Matrices, was used to test the assumption of equality of variance-covariance. There was homogeneity of variance-

covariance matrices as assessed by Box's test of equality of covariance matrices ($p = .009$): the

assumption of equality of variance-covariance was not tenable. See Table 9. Because this

assumption was not met, a Levene's test of homogeneity of variance was completed.

Table 9

Box's Test of Equality of Covariance Matrices

Box's M	11.751
F	3.857
df 1	3
df 2	3629520.000
Sig.	.009

Tests the null hypothesis that the observed
covariance matrices of the dependent variables are
equal across groups.
a. Design: Intercept + Learning_Environment

Assumption of Homogeneity of Variance

The assumption of homogeneity of variance was examined using the Levene's test. The

assumption of homogeneity of variances showed that $p > .05$ for the dependent variable student

engagement. This resulted in no statistical significance for that dependent variable and equal

variances. However, the variable student achievement was .01, thus violating the assumption of

variance for that variable (see Table 10). MANOVA is robust to some violation of the

assumption of homogeneity of variance when the sample size is sufficiently large, and the groups

are of equal size.

Table 10

Levene's Test of Equality of Error Variances

		Levene Statistic	*df*1	*df*2	*p*
Student Engagement	Based on Mean	1.560	1	142	.214
	Based on Median	1.359	1	142	.246
	Based on Median and with adjusted df	1.359	1	139.857	.246
	Based on trimmed mean	1.454	1	142	.230
Student Achievement	Based on Mean	6.881	1	142	.010
	Based on Median	6.615	1	142	.011
	Based on Median and with adjusted df	6.615	1	132.770	.011
	Based on trimmed mean	6.890	1	142	.010

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Learning Environment

Results for null hypothesis

Wilk's Lambda was used to test the null hypothesis that there was no significant

difference in student engagement and student achievement for non-traditional students based

upon learning environment. The statistical significance was between learning environments and the dependent variables where F (2, 141) = 4.184, p .017; Wilks' Λ = .944; partial η^2 = .056. This showed that there was a statistical significance where $p < .05$, therefore the researcher rejected the null hypothesis stating there was no significant difference between student engagement and student achievement based on learning environment (See Table 11). The researcher chose to continue with post hoc testing in the form of univariate one-way analysis of variance (ANOVA).

Table 11

Multivariate Tests[a]

				Hypothesis			
Effect		Value	*F*	*df*	Error *df*	*p*	Partial Eta Squared
Intercept	Pillai's Trace	.991	7712.823[b]	2.000	141.000	<.001	.991
	Wilk's Lambda	.009	7712.823[b]	2.000	141.000	<.001	.991
	Hotelling's Trace	109.402	7712.823[b]	2.000	141.000	<.001	.991
	Roy's Largest Root	109.402	7712.823[b]	2.000	141.000	<.001	.991
Learning Environment	Pillai's Trace	.056	4.184[b]	2.000	141.000	.017	.056
	Wilks' Lambda	.944	4.184[b]	2.000	141.000	.017	.056
	Hotelling's Trace	.059	4.184[b]	2.000	141.000	.017	.056
	Roy's Largest Root	.059	4.184[b]	2.000	141.000	.017	.056

a. Design: Intercept + Learning_Environment
b. Exact statistic

Post Hoc Testing

To further examine where statistically significant differences existed, the researcher

conducted between-subjects tests, or multiple one-way ANOVAs. Results for this test are shown

in Table 12.

Table 12

Univariate One-Way ANOVAs

Source	DV	Type III SS	*df*	*MS*	*F*	*p*	η_p^2
Corrected Model	Student Engagement	1.853[a]	1	1.853	2.017	.158	.014
	Student Achievement	.744[b]	1	.744	5.618	.019	.038
Intercept	Student Engagement	1882.596	1	1882.596	2049.428	<.001	.935
	Student Achievement	1912.418	1	1912.418	14449.647	<.001	.990
Learning Environment	Student Engagement	1.853	1	1.853	2.017	.158	.014
	Student Achievement	.744	1	.744	5.618	.019	.038
Error	Student Engagement	130.441	142	.919			
	Student Achievement	18.794	142	.132			
Total	Student Engagement	2014.889	144				
	Student Achievement	1931.956	144				
Corrected Total	Student Engagement	132.293	143				
	Student Achievement	19.537	143				

a. R Squared = .014 (Adjusted R Squared = .007)
b. R squared = .038 (Adjusted R Squared = .031)

Tests of between-subjects effects revealed that the variable of student achievement, $p =$

.029, was contributing to the statistical significance, $F(2, 242) = 5.618$, $p < .05$, partial $\eta^2 = .038$.

Participants in the asynchronous online learning environment scored higher on student achievement (M = 3.72 SD = .42) than participants in the blended synchronous learning environment (M = 3.57 SD = .30).

Since there are two dependent variables, a Bonferroni correction was made, meaning to assert statistical significance, $p < .025$, instead of $p < .05$. Even with this correction, student achievement for the two groups showed statistically significant differences, $p < .0005$. The researcher rejected the null hypothesis stating no statistically significant difference when comparing student engagement and student achievement based on learning environment.

CHAPTER FIVE: CONCLUSIONS

Overview

The current study was conducted to fill a gap in the literature that exists comparing blended synchronous and asynchronous online courses based on student engagement and achievement for non-traditional students. Recent research has focused on comparing a learning modality to either student engagement or student achievement, and only a few studies have focused on comparing learning modalities to student engagement and student achievement. The following chapter addresses a discussion of results from the current study, implications from those results, limitations of the study, and recommendations for future research.

Discussion

The purpose of this quantitative causal-comparative study was to investigate graduate student engagement and student achievement based on content delivery model. The research hypothesis stated that there was no statistically significant difference in student engagement as measured by the DELES, or student achievement as measured by the OSLQ, for non-traditional students participating in blended synchronous learning or asynchronous online learning. Analysis of the data indicated there was a statistically significant difference between the dependent variables of student engagement and student achievement and the learning environment, see Table 11. Post hoc testing was conducted to determine where the statistical differences existed and found that student achievement was contributing to the statistical significance, $F(2, 242) = 5.618$, $p < .05$, partial $\eta^2 = .038$. A Bonferroni adjusted α level of .025 was used for both dependent variables. Even with this correction, student achievement for both groups showed statistical significance. The research hypothesis was rejected.

According to current research on student engagement, Bolliger and Halupa (2018) transactional distance and student autonomy are different for every student but can be bridged through student engagement and effective teaching strategies. The current study supports these findings as the smaller transactional distance existed in the blended synchronous environment which resulted in higher student engagement thus supporting Bolliger and Halupa (2018) research. Bolliger and Halupa (2018) and Best and Conceico (2017) showed that learning activities maximized student engagement, but instructors need to facilitate interactions and build student engagement strategies into all different learning modalities. In the current study, instructors facilitated interactions among the students in the blended synchronous modality where student engagement was higher, further supporting Bolliger and Halupa (2018) and Best and Conceico (2017) study. Neither Bolliger and Halupa (2018) or Best and Conceico (2017) specifically looked at student engagement from varying learning modalities or types of students therefore this current study helped to fill the gap in research.

Yang et al. (2019) revealed that students who attended courses online had better student achievement than those who attended traditional classes. The results of the current study further support the research by Yang et al. (2019) by demonstrating student achievement in the asynchronous online courses. Permanent video content posted online provide students with the ability to replay, pause, and jump forward or backward to aid students in higher achievement. The current study further supports the research by Yang et al. (2019) by showing that students having access to instructional content that they can refer to result in higher student achievement than those participating in the blended synchronous learning environment. A study by Zhou and Cole (2017) found that student achievement was influenced by student involvement within the institution, including contact between students and their faculty which refuted the findings of the

current study. In the current study, students in the blended synchronous courses had greater contact with their faculty and the institution, but the student achievement was lower statistically when compared to the asynchronous online courses.

TDT comprised of distance teaching and student autonomy (Moore, 1972). It was one of the theories within the theoretical framework for the current study. TDT was demonstrated in the blended synchronous learning environment where students and instructors have regularly scheduled time together. Lessened transactional distance suggests a higher level of student engagement within blended synchronous courses. Based on this current study, the transactional distance was lessened in the blended synchronous learning environment, and student engagement was a higher mean score of 3.73 when compared to those participating in the asynchronous online learning modality with a mean score of 3.50. This means that the transactional distance was lessened in the blended synchronous courses resulting in better student engagement, adding Moore's TDT.

Student involvement theory was the other theory within the theoretical framework for this study in relationship to student achievement. Astin (1984) defined student involvement as the amount of physical and psychological energy a student devoted to their academic experience. Increased student involvement would suggest that student achievement would have been higher in the blended synchronous courses where students are required to show up at a specific time. However, the results of the current study found that student achievement was statistically lower in the blended synchronous courses where students had greater physical access to the institution, instructor, and students. This refutes Astin's student involvement theory as the students participating together physically did not result in statistically higher student achievement, 3.57 as compared to 3.72 in the asynchronous online modality according to the OSLQ.

Learner preference in both blended synchronous and asynchronous online plays a role in both student engagement and student achievement (Heilporn et al., 2021; Lakhal et al., 2020; McKenna et al., 2019). In the current study participants chose their preferred learning method. The results of the DELES and the OSLQ surveys in both learning environments indicated that students probably chose their preferred environment and engaged and achieved at a level typical for them. When comparing the independent variable - learning environment, participants had an average mean of 3.50 for student engagement and 3.72 for student achievement in the asynchronous online courses as compared to 3.73 for student engagement and 3.57 for student achievement in the blended synchronous courses. The overall total average mean was 3.61 for asynchronous online and 3.65 for the blended synchronous. This suggests that the participants surveyed had an overall higher average of student engagement and student achievement in the blended synchronous learning environment than the asynchronous online learning environment.

According to Lockman and Schirmer (2020), greater interaction with the content relates to higher student achievement and overall satisfaction. A lack of personal connection in asynchronous courses gave negative student experiences resulting in social isolation and lower student achievement. This data supported research that student engagement and student achievement are influenced by course design, instructional context, and instructor guidance (Heilporn et al., 2021; Kara, 2021; Lakhal et al., 2020; Samson, 2020). Additionally, instructors and students could both hinder and encourage the academic and social interaction of asynchronous online learners and blended synchronous learners (Lakhal et al., 2020). This current study supported Lakhal et al. (2020) that without further information from the participants about the type of interactions that existed between the instructors and the students one cannot prove that students' engagement or achievement results of this study were neither

hindered nor engaged in the participating courses.

Implications

This study provides a starting point for institutions to leverage areas around faculty and course development to create the best learning environment for students regardless of the learning modality. This study addressed the gap in research comparing the learning environments to student engagement and student achievement for non-traditional students. The significant difference that was found illustrates the need to better understand the factors that affect a students' engagement in the asynchronous online, and the students' achievement in the blended synchronous learning environment. Several implications raise student engagement in the asynchronous online courses. Instructors facilitate interaction to guide student learning and build student engagement (Bolliger & Halupa, 2018).

It is important for educators and policymakers in higher education institutions to understand the needs of their students to provide learning environments that will aid in the highest levels of engagement and achievement. Both asynchronous online and blended synchronous courses have continued to grow despite the overall drop in higher education (Kara, 2021) increased student engagement and student achievement improve student retention. Without research to understand the ways that instructors facilitate courses to create learning environments that maximize student engagement and achievement, institutions will not be able to fully realize the benefits of the different learning modalities. Student engagement and student achievement are influenced by course design, faculty involvement, and social interaction within the course (Heilporn et al., 2021; Kara, 2021; Lakhal, 2020; Samson, 2020), therefore, this information should not be ruled out.

Data from this study yielded mixed results where student engagement was higher in blended synchronous courses, but student achievement was higher in asynchronous online courses. The researcher does not believe that this means blended synchronous courses have better engagement and asynchronous courses have higher achievement. Much of student engagement and student achievement is driven by the individual student, how they learn best, what instructional method works best for them, and whether they are able in each semester to devote enough time to any type of class they are attending. However, overall student involvement increases through personal contact between faculty and students (Wirt & Jaeger, 2014; Zhou & Cole, 2017). Students in the blended synchronous classes should have a higher level of student involvement due to the required class session, however, the results for the study refute that. The current study did not support that student engagement and student achievement was greater in blended synchronous courses. Educators should continue to ask questions about what is needed to improve the learning environment.

Limitations

There were several limitations of this study. First, participants were from a convenience sample as the students self-selected their preferred learning modality based upon personal preference and/or availability. This means that participants could have been in an asynchronous online course due to the timing and not necessarily preference. Second, a larger number of participants would ensure greater power for the data analysis and a random sampling of participants in the blended synchronous courses. Third, generalizations of this study are limited because the study examined a particular population of students in a completely religious curriculum. A similar study in a different context and a different population could yield entirely different results. Lastly, the use of a causal comparative design is a limitation because it can only

investigate the possible cause-and-effect relationship and the groups are already formed not allowing for manipulation of the variables (Creswell & Creswell, 2018).

The statistical analysis revealed a limitation in that the variable of student achievement was .01, thus violating the assumption of variance for that variable. Also, the correlation between student engagement and student achievement was 0.1, suggesting a strong correlational relationship between these two variables, which should be considered when analyzing the data. A strong correlation does not equal a causation meaning that just because there is a strong relationship between student engagement and student achievement does not mean that one variable caused the other.

Recommendations for Future Research

The aim of this study was to address the gap in the literature regarding student engagement and student achievement based on different learning modalities for non-traditional students. The following are recommendations for future research:

1. Conduct a similar study with a larger sample population across different institutions.

2. Administer a mixed-method or qualitative study to focus on individual participants' experiences in each of the learning environments.

3. Organize a similar study with different demographics to see how traditional students or undergraduate students' asses the learning environments.

4. Conduct a similar study over an entire degree program to reveal how learning modalities impact student engagement and student achievement throughout a program.

5. Administer a similar study using a different testing instrument for student achievement.

6. Organize a study comparing blended synchronous to asynchronous online for non-traditional students at a different type of institution (2-year, 4-year).

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APPENDIX A: Distance Education Learning Environment Survey (DELES)

Survey has been removed due to permissions

APPENDIX B: Permission to Use DELES

Distance Education Learning Environments Survey
Includes Forms and Scoring Key

By Scott L. Walker, ScEdD

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APPENDIX C: Online Self-Regulated Learning Questionnaire (OSLQ)

Uses a 5-point Likert-type response format having values strongly agree (5), agree (4), neither agree nor disagree (3), disagree (2), strongly disagree (1).

Goal Setting Subscale
1. I set standards for my assignments in online courses.
2. I set short-term (daily or weekly) goals as well as long-term goals (monthly or for the semester).
3. I keep a high standard for my learning in my online courses.
4. I set goals to help me manage studying time for my online courses
5. I don't compromise the quality of my work because it is online.

Environment Structuring Subscale
6. I choose the location where I study to avoid too much distraction.
7. I find a comfortable place to study.
8. I know where I can study more efficiently for online courses.
9. I choose a time with few distractions for studying for my online courses.
10. I try to take more thorough notes for my online courses because notes are even more important of learning online than in a regular classroom.

Task Strategies Subscale
11. I read aloud instructional materials posted online to fight against distractions.
12. I prepare my questions before joining in the chat room and discussion.
13. I work extra problems in my online courses in addition to the assigned ones to master the course content.

Time Management Subscale
14. I allocate extra studying time for my online courses because I know it is time-demanding.
15. I try to schedule the same time every day or every week to study for my online courses, and I observe a schedule.
16. Although we don't have to attend daily classes, I still try to distribute my studying time evenly across days.

Help Seeking Subscale
17. I find someone who is knowledgeable in course content so that I can consult with him or her when I need help.
18. I share my problems with my classmates online so we know what we are struggling with and how to solve our problems.
19. If needed, I try to meet my classmates face-to-face.
20. I am persistent in getting help from the instructor through e-mail.

Self-Evaluation Subscale
21. I summarize my learning in online courses to examine my understanding of what I have learned.
22. I ask myself a lot of questions about the course material when studying for an online course.
23. I communicate with my classmates to find out how I am doing in my online classes.
24. I communicate with my classmates to find out what I am learning that is different from what they are learning.

APPENDIX D: Permission to use Online Self-Regulated Learning Questionnaire (OSLQ)

No permission was needed.

APPENDIX E: Institutional Review Board Approval (Liberty)

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

July 1, 2022

Heather Shellabarger
Laura Mansfield

Re: IRB Exemption - IRB-FY21-22-1062 A QUANTITATIVE STUDY ON STUDENT
ENGAGEMENT AND STUDENT ACHIEVEMENT BASED ON LEARNING ENVIRONMENT:
ASYNCHRONOUS ONLINE AND BLENDED SYNCHRONOUS ONLINE

Dear Heather Shellabarger, Laura Mansfield,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance
with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA)
regulations and finds your study to be exempt from further IRB review. This means you may begin your
research with the data safeguarding methods mentioned in your approved application, and no further IRB
oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which
human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic,
aptitude, achievement), survey procedures, interview procedures, or observation of public behavior
(including visual or auditory recording).
The information obtained is recorded by the investigator in such a manner that the identity of the human
subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

**Your stamped consent form(s) and final versions of your study documents can be found under the
Attachments tab within the Submission Details section of your study on Cayuse IRB.** Your stamped
consent form(s) should be copied and used to gain the consent of your research participants. If you plan to
provide your consent information electronically, the contents of the attached consent document(s) should
be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to
your protocol must be reported to the Liberty University IRB for verification of continued exemption
status. You may report these changes by completing a modification submission through your Cayuse IRB
account.

If you have any questions about this exemption or need assistance in determining whether possible
modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

APPENDIX F: IRB Approval from research site

IRB #: United-21-22-82
Title: A QUANTITATIVE STUDY ON STUDENT ENGAGEMENT AND STUDENT ACHIEVEMENT BASED ON LEARNING ENVIRONMENT: ASYNCHRONOUS ONLINE AND BLENDED SYNCHRONOUS ONLINE
Creation Date: 5-25-2022
End Date:
Status: Approved
Principal Investigator: Heather Shellabarger
Review Board: United IRB
Sponsor:

Study History

Submission Type	Initial	Review Type	Expedited	Decision	Approved

APPENDIX G: Recruitment Email

Dear Student:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirement for a doctoral degree, and I would value your assistance. The purpose of my research is to explore whether there is a relationship between student engagement and student achievement based on learning environment. I am writing to invite you to join my study.

You are receiving this email because you were enrolled in an introductory course during the 2021-2022 academic school year.

Participants must be non-traditional graduate students, age 35 and above, must have been enrolled in one of the following courses during the 2021-2022 academic school year: Old Testament, New Testament, Introduction to Theology, or Introductory Church History. Participants will be asked to complete an online survey which consists of the Distance Education Learning Environment Survey (DELES) and the Online Self-Regulated Learning Questionnaire (OSLQ). You can expect the survey to take approximately 20-25 minutes. Participation will be completely anonymous, and no personal, identifying information will be collected.

To participate, please click on the survey link provided in this email. A statement of informed consent is available at the survey link. The consent document contains additional information about my study, and no signature is required. If you choose to proceed with the survey, please respond "yes" to item one on the survey indicating that you have read the consent information and would like to take part in the survey.

Click on link to survey to begin the survey.

If you choose to participate, you may be compensated for participating in this study. Participants who complete the survey within the first two weeks of receiving the initial recruitment email will be qualified to enter a raffle for a $20 Starbucks gift card. If participants want to be entered into the raffle, they should respond yes to the last question on the survey and click on the link to a new survey to maintain anonymity, where they can enter their name and email address.

Please feel free to contact me at ███████████████████ or my advisor, Dr. Mansfield, at ████████████████ if you have any questions.

Sincerely,

Heather Shellabarger
Ph.D. Candidate

APPENDIX H: Participant Informed Consent Form

Participant Consent Form

Title of the Project: A Quantitative Study on Student Engagement and Student Achievement Based on Learning Environment: Asynchronous Online and Blended Synchronous
Principal Investigator: Heather Shellabarger, Ph.D. Candidate, Liberty University School of Education

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must have been enrolled in an introductory course (Church History, New Testament, Old Testament, Theology) during the 2021-2022 academic school year and be a non-traditional graduate student over the age of 35. Taking part in this research project is voluntary.
Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to investigate graduate student engagement and student achievement based on content delivery model. The study is being done to improve online learning environments for non-traditional adult students.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following things:
1. Respond to the combined Distance Education Learning Environment Survey (DELES) and the Online Self-Regulated Learning Questionnaire (OSLQ). You can expect the survey to take approximately 20-25 minutes.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include supporting research that seeks to approve online learning environments for non-traditional adult students.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.
- Your survey responses will be anonymous and any published reports, journal article, etc. will not include any information that will make it possible to identify a subject.

- Research records will be stored securely until destroyed. Only the researcher will have access to the records. Data will be stored on a password protected computer, in a password protected file. After three years, all electronic records will be destroyed.

How will you be compensated for being part of the study?

Participants may be compensated for participating in this study. Participants who complete the survey within the first two weeks of receiving the initial recruitment email will be qualified to enter a raffle for a $20 Starbucks gift card. If participants want to be entered into the raffle, they should respond yes to the last question on the survey and click on the link to a new survey to maintain anonymity where they can enter their name and email address. Participants who complete the survey more than 2 weeks after the initial recruitment email will not be entered into the raffle.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University or United Theological Seminary. If you decide to participate, you are free to not answer any question or withdraw at any time prior to submitting the survey without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Heather Shellabarger. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at ▇▇▇▇▇▇▇▇▇▇▇▇▇▇▇. You may also contact the researcher's faculty sponsor, Dr. Laura J. Mansfield, at ▇▇▇▇▇▇▇▇▇▇▇▇▇▇.

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. You can print a copy of the document for your records. If you have any questions about the study later, you can contact the researcher using the information provided above.