

STUDENT PERCEPTIONS AND STUDENT ACHIEVEMENT
IN A HIGHER EDUCATION PARTIALLY FLIPPED CLASSROOM

by

Katrina Atkins

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

2018

STUDENT PERCEPTIONS AND STUDENT ACHIEVEMENT
IN A HIGHER EDUCATION PARTIALLY FLIPPED CLASSROOM

by Katrina Atkins

A Dissertation Presented in Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

Liberty University, Lynchburg, VA

2018

APPROVED BY:

Michelle J. Barthlow, Ed.D., Committee Chair

Sarah Horne, Ed.D., Committee Member

Jennifer Stuart, Ed.D., Committee Member

ABSTRACT

The purpose of this non-experimental, causal-comparative and correlational study was to test Knowles' (1973) adult learning theory, which states adults are self-directed and internally motivated. The study also examined if student achievement was related to student perception of the flipped classroom in a general education speech communication course, for college students (N = 109) at Florida College (FC; a pseudonym). The Blended Learning Survey (BLS) was administered to participants in the Fall 2017 semester. An independent samples *t*-test was utilized to determine if a difference existed between the two groups: high and low achievers. Bivariate regressions were utilized to determine if there was a significant predictive relationship between student perceptions and student achievement in the flipped classroom. For the *t*-test, the independent variable of student achievement was defined as end-of-course grades, and categorized into high (A or B) and low (C or below) achievers. The dependent variable was defined as students' positive perception of the flipped course, as determined by the BLS. For the regression, the criterion variable was student achievement (end-of-course grades) and the predictor variable was student perception, as measured by the BLS. Results indicate that there is no relationship between high and low achievers and their perceptions of the flipped classroom, as well as no relationship between student perception and student achievement in the flipped classroom. These findings support empirical evidence that the flipped classroom may not be advisable for general education courses. Implications for practice and recommendations for future studies are included in this study.

Keywords: flipped classroom, student perception, student achievement, active learning

Dedication

This work is dedicated to my husband. I would not have even started this program without his absolute confidence in my ability. During the past few years, he was my #1 supporter. I am so grateful for his critical eye as he edited all my papers and helped me grow as a writer (I am sure he is done learning about education!). Thank you, Will, for being the gold standard for husbands. You continually exceed my expectations for what a healthy marriage should look like. Thank you for pushing me and growing together with me. I know the best is yet to come.

Acknowledgments

Above all others, I am grateful to my Heavenly Father. I started this program on the first of two of my husband's year-long deployments to Afghanistan. I was a single mother with a baby and we had just moved across the country to a city nowhere near our family. God blessed me with a daughter who was a great sleeper and all my school work was done during nap time. He also put people in my life who were there to help me when I needed it. Looking back, it seems impossible but with God all things are possible.

I am thankful to be blessed with an amazing dissertation committee. I asked several other people to be my chair but God had someone else in mind. I could not have asked for anyone better than Dr. Barthlow. Her guidance and support made this final stage of the process so much easier. I am also thankful for Dr. Horne and Dr. Stuart for their constructive feedback and timely review of paper. I have bragged about them on multiple occasions telling people I have the best committee. Thank you, ladies, for the time and effort you put in to helping me achieve a finished product.

Thank you so much to Professor Zed for teaching me about flipped learning and being the inspiration for this paper and most of my work throughout my doctorate. Thank you for letting me disrupt your class and for your wonderful editing skills. Without you this would have never happened. I hope one day I can return the favor when you get your doctorate.

Table of Contents

ABSTRACT.....	3
Dedication.....	4
Acknowledgments.....	5
Table of Contents.....	6
List of Tables.....	10
List of Figures.....	11
List of Abbreviations.....	12
CHAPTER ONE: INTRODUCTION.....	13
Overview.....	13
Background.....	13
Historical Background.....	14
Social Change.....	16
Theoretical Framework.....	17
Problem Statement.....	18
Purpose Statement.....	20
Significance of the Study.....	21
Research Questions.....	23
Definitions.....	23
CHAPTER TWO: LITERATURE REVIEW.....	24
Overview.....	24
Theoretical Framework.....	24

Adult Learning Theory	25
Pedagogy vs. Andragogy	27
Learning in Adults	28
Active Learning vs. Passive Learning	30
Related Literature.....	32
Flipped Classroom	32
Benefits of Flipped Learning	35
Disadvantages to flipped learning.....	37
Flipped vs. traditional instruction.	38
Student Achievement.....	41
Components of a Flipped Classroom.....	43
Pre-class Activities.....	43
Active learning during class time.	44
Student-centered classroom	46
Teacher’s role.....	47
Student Perceptions of the Flipped Classroom.....	49
Using Flipped Teaching in General Education Courses.....	51
Summary	53
CHAPTER THREE: METHODS.....	55
Overview.....	55
Design.....	55
Research Questions.....	56
Hypotheses.....	57

Participants and Setting.....	58
Instrumentation.....	59
Blended Learning Survey.....	59
Instrumentation Framework.....	60
Learning Outcomes.....	63
Procedures.....	64
Data Analysis.....	65
CHAPTER FOUR: FINDINGS.....	69
Overview.....	69
Research Questions.....	69
Null Hypotheses.....	70
Descriptive Statistics.....	71
Research Question 1.....	72
Research Questions 2-5.....	73
Results.....	73
Null Hypothesis One.....	73
T-test data screening.....	74
Null Hypotheses Two-Five.....	75
Data screening for bivariate regression.....	76
CHAPTER FIVE: CONCLUSIONS.....	79
Overview.....	79
Discussion.....	79
Research Question One.....	81

Null Hypothesis One.....	81
Research Question Two	82
Null Hypothesis Two	82
Null Hypothesis Three	83
Null Hypothesis Four.....	84
Null Hypothesis Five	85
Implications.....	86
Limitations	88
Recommendations for Future Research	89
REFERENCES	90
APPENDIX A.....	107
APPENDIX B	108
APPENDIX C	110
APPENDIX D.....	111
APPENDIX E	112

List of Tables

Table 1: Cronbach's Alphas for the Sub-scales of the BLS.....	72
Table 2: Descriptive Statistics for Research Question 1.....	73
Table 3: Normality Tests: Kolmogorov-Smirnov for t-test.....	75
Table 4: Normality Tests: Kolmogorov-Smirnov for bivariate regression.....	77

List of Figures

Figure 1: Outliers: Box and Whisker Plot	75
Figure 2: Histogram for Course Grades.....	76

List of Abbreviations

Blended Learning Survey (BLS)

Grade Point Average (GPA)

Statistical Package for the Social Sciences (SPSS)

CHAPTER ONE: INTRODUCTION

Overview

The flipped classroom is a relatively new concept in higher education, though it has been used primarily in K-12 classrooms (Bergmann & Sams, 2012; Nederveld & Berge, 2015). This dissertation considers how the flipped teaching can be beneficial to adult learners in a general education college class. This first chapter examines the historical, social, and theoretical theories behind the flipped classroom, as well as provides more information about how a flipped classroom is different from a traditional lecture classroom. This chapter then defines the problem and purpose statement regarding this study of student perception of the partially flipped general education course classroom. In addition, the significance of the study is discussed. Finally, the research questions and definitions are stated.

Background

Though the traditional lecture model of teaching is the most widely used in higher education today, it is understood to be the least beneficial for students (Aburahma, 2015; Albert & Beatty, 2014; King, 1993; Roehl, Reddy, & Shannon, 2013). Enter the flipped classroom concept, a new blended learning model that meets the needs of students by providing opportunities for them to engage in learning and take an active role in the learning process (Westermann, 2014). A sharp contrast to the traditional lecture model, which consists of passive learning and leads to negative student perception of the lesson (King, 1993), the flipped method uses active learning tools to engage students (Bergman & Sams, 2012). Recent studies suggest a more active and engaging learning environment results in higher course success (Nouri, 2016; Westermann, 2014) and the limited number of studies that exist in higher education have shown positive results using the flipped method (Beatty & Albert, 2016; Jenkins, 2015). In a pivotal

study on learning, Wang, Haertel, and Walberg (1997) confirmed that teaching methods have a significant impact on student outcomes, so understanding student perception of the flipped classroom and its relationship to student achievement may help determine if the flipped method could be a valuable teaching tool for higher education.

The present study focuses on how student perceptions of the flipped classroom relate to student achievement in a general education college course. Studies have shown that a positive classroom experience leads to greater course success and improved student achievement, such as grades and heightened learning (Beatty & Albert, 2016; Blair, Maharaj, & Primus, 2016). With their research, Awang et al. (2013) confirmed that students who enjoy their course have higher learning outcomes. They recommended that teachers build rapport and encourage students to actively participate to increase student success. Nwosis, Ferreira, Rosenberg, and Walsh (2016) discovered positive results in their study with partially flipping a classroom. In their research, they observed that the number of low grades (D or F) and withdrawals decreased with the partial addition of flipped lessons. The students in their course preferred this method and felt that it helped them succeed (Nwosis et al., 2016). Furthermore, Chen, Wang, Kinshuk, and Chen (2014) used a rigorous form of the flipped classroom, called the FLIPPED model, and discovered that the students were more satisfied with the course, attendance increased, and the students made more of an effort to study. Chen and colleagues felt that the flipped method of teaching is best saved for higher education because of the amount of self-discipline needed by the student, a concept that may need to be taught for the flipped classroom to be successful.

Historical Background

Higher education in the 21st century is extremely different than it was just a generation ago. One of these differences can be attributed to the number of students having access to

education. It is estimated that higher education enrollment increased from 4 million to 20 million students between 1960 and 2009 (Baum, Kurose, & McPherson, 2013). This rise is credited to an increase in the number of groups entering college that did not previously have access, such as female, disadvantaged, and older students. Federal and state governments encouraged growth in the student population by aiding those wishing to enter college by means of grants and loans (Baum, Kurose, & McPherson, 2013). However, despite this influx in higher education, many students are ill-prepared. The gap between the high school and college classroom is known by some as “The Great Divide” (Springer, Wilson, & Dole, 2014, p. 299). Despite receiving passing grades in high school, many of today’s students are not prepared for the rigor needed to succeed in college, triggering educators to question if alternative teaching styles can help students succeed.

Another factor that has contributed to this change in higher education is the use of technology in the classroom, as more instructors are varying teaching methods to include it in their lessons (Sahin, Cavlazoglu, & Zeytuncu, 2015). Students entering college today have never known a world without technology and prefer more interaction in the classroom as opposed to lecture-style teaching (Phillips & Trainor, 2014). Unfortunately, many professors in higher education still do not use technology in the classroom to its full potential and primarily teach using traditional methods, which include lecture and rote memorization (LoPresto & Slater, 2016; Roehl et al., 2013). Learning in this environment is passive and students do not interact with the teacher or other students during the lesson (King, 1993). This method of learning is antiquated, thus new methods have been gaining popularity. New research calls for more active learning that focuses on meeting the needs of students (Hamdan, McKnight, McKnight, & Arfstorm, 2014; Roehl et al., 2013). The flipped classroom is one such method that uses active

learning strategies to thwart potential passive learning. Active learning, which requires students to engage and take part in their learning outcomes, has been proven to increase student outcome success (Hamdan et al., 2014; Michael, 2006). Such learning cannot be achieved with the traditional model and requires a transformation in teaching.

Social Change

The idea of flipping the classroom gained popularity in 2007 when Bergmann & Sams (2012), two chemistry teachers, began posting their lectures on the Internet. These teachers were trying to meet the needs of students who were unable to come to class due to extracurricular activities and illness. Posting the lectures online provided an opportunity for students who missed class to still learn the lesson and allowed students who were present in class to review any concepts they did not understand (Bergmann & Sams). Bergmann and Sams observed their students needed more help on applying knowledge than they did on understanding the lecture. The result was the development of the flipped classroom, where the traditional model of education is “flipped” and can be described as blended learning, reverse teaching, or an inverted classroom (Bergmann & Sams; Nwosis et al., 2016). In the flipped classroom, students learn the lesson through videos and other media outside of class and then class time is used to work on what was traditionally known as homework (assigned problems) (Chen et al., 2014; Nwosis et al., 2016).

As an alternative to the traditional classroom, the flipped classroom focuses on outcome-based learning and relating lessons to the real world. Students in the flipped class are encouraged to participate and engage in learning (Beatty & Albert, 2016; Herreid & Schiller, 2013). As the student’s role changes in the classroom, so does the educator’s (King, 1993; Phillips & Trainor, 2014). In traditional education, teachers were content experts and lectured on

their specialty (Bergmann & Sams, 2012; King, 1993). In the flipped classroom, teachers take on the role of facilitator and spend time interacting individually with students (Phillips & Trainor, 2014). The lecture is no longer the center of the classroom; instead the student becomes the focus of the lesson, creating student-centered learning as opposed to teacher-centered instruction (Hamdan et al., 2014). Student-centered learning empowers students to feel important and that their opinion matters. This method of teaching thus engages and motivates students and gives them the drive to achieve their learning goals (Christensen, Horn, & Johnson, 2011).

Theoretical Framework

The traditional (lecture) model is mostly used in higher-level classes, such as in higher education, where lecture is the most common form of direct instruction (Roehl et al., 2013). Up until the 1970s, pedagogy (teaching children) was the most researched and understood method of teaching. Malcom Knowles was the first to popularize the idea that adults (people older than 18 years of age) learn differently than children, making andragogy more common (Peterson & Ray, 2013). In the fundamental work on andragogy, Knowles (1973) first proposed that there were four basic assumptions about how adult learners differed from children. In later years, two additional assumptions of adult learners were added to adult learning theory, resulting in the following: (1) need to know, (2) learner's self-concept, (3) role of experience, (4) readiness to learn, (5) orientation to learning, and (6) motivation (Knowles, Holton, & Swanson, 2005). Andragogy differs predominantly from pedagogy in that the focus is on student-centered learning as opposed to teacher-centered instruction (Knowles et al., 2005). Incorporating these new ideas about learning, educators have slowly started to make changes in higher education that have had a positive impact on student success (Jenkins, 2015; Nouri, 2016). Even pedagogical teachers

have said their teaching was more effective when they implemented some of Knowles' assumptions (Knowles et al., 2005).

While Knowles was the first to specifically address adult learners, previous theorists had similar thoughts about learning. Early theorists, such as Rousseau and Pestalozzi, shared an idea about learning that focused on the student being the center of the classroom (Guttek, 2011). They believed that for learning to occur, the student had to think critically about a subject instead of being given the answer. Furthermore, John Dewey was a firm believer that education should be adaptable to meet the needs of a changing society (Dewey, 1938). When traditional methods of teaching are used, despite research against them, educators are not meeting the needs of a changing society. To meet those needs, educators must disrupt the classroom and utilize new and more modern ways of teaching students (Christensen et al., 2011). Thinking outside of traditional education methodology and researching new methods of teaching may help educators move toward a more effective paradigm.

Problem Statement

This study examined how student perceptions of a partially flipped classroom are related to student achievement in a general education course. Most higher education classrooms today use traditional passive style lecture that does not encourage engagement in the lesson (King, 1993; Roehl et al., 2013). Passive lecture hinders deeper understanding of concepts; thus, emerging research conflicts with this method and instead supports the use of active learning techniques (Aburahma, 2015; Prince, 2004). Unlike passive learning, active learning increases retention of material and improves student success while focusing on meeting the needs of the learner (Freeman et al., 2015; Michael, 2006). In response to these needs, the flipped classroom uses active learning techniques to engage students. While there is an increasing amount of

evidence to support the flipped classroom's use in higher education, it is still a relatively new method of teaching and more empirical research needs to be done to better understand if this method works in a variety of classrooms (Beatty & Albert, 2016; Phillips & Trainor, 2014). Student perception is important because students who have a positive perception of a course tend to perform better and have a continued interest in the topic (Davies, Dean, & Ball, 2013), important in general education courses since they tend to have lower success rates because students are not as invested as they are with courses within their major (Strayer, 2012).

Improving student satisfaction is vital, as studies show there is a strong correlation between perception and student achievement (Struyven, Dochy, & Janssens, 2005). However, empirical data on student perception of the flipped classroom has shown varying results. Several studies on the flipped classroom have displayed an increase in student achievement but a low student perception of the flipped method itself (Missildine, Fountain, Summers, & Gosselin, 2013; Van Sickle, 2016). Students in a study by Van Sickle (2016) reported lower overall course satisfaction of the flipped method but had higher achievement compared to a traditionally taught class. Contrary to Van Sickle, Jenkins (2015) found positive student perceptions and an increase in student achievement when teaching a comparable introductory course using the flipped method. These mixed results indicate that more research needs to be completed to develop a better understanding of student perceptions of the flipped method.

Hamdan, McKnight, McKnight, and Arfstorm (2014) acknowledged that the flipped classroom can be adapted to a variety of classrooms, as it provides students more opportunities to become actively engaged in the lesson and is more focused on student-centered learning. When students are actively engaged in learning, their perception of the course and their outcomes increase (Awang et al., 2013; Chen et al., 2014; Westermann, 2014). The flipped classroom

could potentially be a method that improves active learning and engage students in the lesson while improving student achievement and satisfaction (Bishop & Verleger, 2013; Gross, Marinari, Hoffman, DeSimone, & Burke, 2015). Due to the numerous potential benefits for utilizing the flipped classroom, additional research is required to determine applicability in higher education and specifically in general education courses. The problem in higher education today is the lack of research on the impact of passive learning strategies, such as lecture, on the level of student engagement in the post-secondary classroom, though studies have shown passive learning has a negative effect on student learning and student achievement (Roehl et al., 2013).

Purpose Statement

The purpose of this quantitative causal-comparative and correlational study was to investigate if there was a relationship between student perceptions of the flipped classroom and student achievement in a higher education environment. The study also examined if students were self-directed and internally motivated according to Knowles' (1973). These characteristics are developed as the learning matures (Knowles, Holton, & Swanson, 2005), such aspects of learning are essential if the flipped method is to be successful in higher education. The study surveyed student perceptions of a partially flipped classroom. The dependent and predictor variables for this study were student perceptions of the flipped classroom, as measured by subscales of the Blended Learning Survey (Owston, York, & Murtha, 2013). Student perception is defined as students' personal views on learning (Beatty & Albert, 2016). Although the subject is heavily debated, students are typically considered to be valid and reliable reporters when evaluating their own learning (Gravestock & Gregor-Greenleaf, 2008), and evaluating student preference in previous research on flipped learning is widely accepted (Beatty & Albert, 2016; Jenkins, 2015; Nouri, 2016; Owston et al., 2013). The independent variable was the students'

end-of-course grades. The independent variable was divided into two categories: high (A or B grades) and low (C or below grades) achievers. The criterion variable was the students' end-of-course grades (0-100), which is a compilation of the total assignment grades (Camiel et al., 2016). Grades were collected by the professor after the semester was finished. The students surveyed were freshmen and sophomores enrolled in a general education speech course to fulfill the college's requirements for graduation. All students enrolled in Professor Zed's (pseudonym) course who were over the age of 18 were asked to voluntarily participate. Students were not penalized if they chose not to participate in the study.

Significance of the Study

The main purpose of this study was to determine if the flipped classroom could improve learning in higher education. Most students who attend higher education institutes are adult learners, over the age of 18 (Knowles et al., 2006). Per Knowles' (1973) adult learning theory, adult learners have different learning needs than children. The study sought to discover if the flipped classroom can meet the unique needs of the adult learner better than the traditional classroom by creating an active and engaging environment. Student perceptions were observed because studies show that students who enjoy a class tend to perform better than those who do not and are more likely to continue taking courses in the subject (Awang et al., 2013). In addition, the flipped classroom has had encouraging outcomes with the adult population, as student perception of the flipped classroom has frequently shown positive results in higher education. Nouri (2016) studied student perception of the flipped course and found that students had a very positive view toward flipped learning and enjoyed the teaching method. The adult students studied also reported an increase in motivation, engagement, and learning using the flipped method. Additionally, adult students in a study conducted by Gilboy, Heinerichs, and

Pazzaglia (2014) felt they were more connected with the teacher and learned the material more effectively than in a traditional classroom. These results indicate that the flipped method should continue to be explored to further support these findings.

Furthermore, this study aimed to increase empirical research on the connection between student perception of the flipped classroom and student achievement. There are limited studies that connect perception of the flipped classroom to achievement, but the few that exist tend to show positive results. Davies, Dean, and Ball (2013) discovered that students in the flipped class were more satisfied with the course and experienced higher academic gains compared with other forms of learning. The researchers believed that the flipped method was more effective and allowed the students the ability to pace themselves. In a similar study by Talley and Scherer (2013), students demonstrated large achievement gains while learning under the flipped method approach as well as felt they increased learning and could recall information better than in a traditional classroom. Considering these results, it is essential to conduct more research to determine the capability of the flipped classroom to improve student achievement.

Finally, this study examined if the empirical findings that the flipped classroom is beneficial for general education courses can be supported. Some researchers believe that students in general education courses may not have the skills and interest required by the flipped classroom (Hamdan et al., 2014; Strayer, 2012). Davies et al. (2013) contradicted this view and found that students who take general education courses have a wide range of experience in the course, making a flipped classroom more adaptable to meeting the needs of students. If students have a positive experience and an increase in student achievement, then the flipped method should be considered for more general education courses. The researcher aimed to lessen this gap in research and determine if the flipped classroom was beneficial to college general

education courses. This study could appeal to higher education institutions by demonstrating a greater range of courses that can adapt the flipped method, in particular, general education courses.

Research Questions

RQ1: Is there a significant difference in students' perceptions, as measured by the sub-scale of overall perception of the Blended Learning Survey, of a flipped classroom for an introductory speech education course between high (A or B) and low (C or below) achieving students, as measured by end-of-course grades?

RQ2: Is there a significant predictive relationship between students' perceptions, as measured by the sub-scales of the Blended Learning Survey, of a flipped classroom for an introductory speech education course based on end-of-course grades?

Definitions

1. *Adult* - A person over the age of 18 (Knowles et al., 2005)
2. *Active learning* – When students engage in their learning and are encouraged to reflect on ideas they have learned (Michael. 2006)
3. *Andragogy* – The study of how adults learn (Knowles, 1973)
4. *Flipped Classroom* – A teaching method in which students learn the material outside of class through a technology medium and class time is used for working on assigned problems and collaborative activities (Chen et al., 2014; Nwosis et al., 2016)
5. *Passive learning* – Teachers convey knowledge as opposed to engaging students in learning (Love, Hodge, Grandgenett, & Swift, 2014)
6. *Pedagogy* – The study of how children learn (Knowles et al., 2005)

CHAPTER TWO: LITERATURE REVIEW

Overview

The flipped classroom has potential to be a valuable teaching method in higher education, as it supports adult learning theory (Knowles, Holton, & Swanson, 2005), which states that adults are self-directed, self-motivated, and active learners (Betihavas, Bridgman, Kornhaber, & Cross, 2016). The flipped classroom provides more opportunities for students who are internally motivated to take control of their learning outcomes, creating self-directed learners (Kang, 2015). Currently, there is a great deal of research supporting the success of the flipped method in K-12 classrooms, but research is lacking in higher education (Beatty & Albert, 2016; Bishop & Verlger, 2013; O’Flaherty & Phillips, 2015). The following chapter provides a theoretical framework for a study intended to lessen this gap in research, followed by a literature review about the flipped classroom. This chapter will highlight the advantages of the flipped classroom in higher education as well as determine whether there is an association between student perception and student achievement. The first section will discuss the theoretical framework and will propose a connection between Knowles’ adult learning theory (Knowles et al., 2005) and the flipped classroom by way of active learning. The literature review will examine previous research on the flipped classroom and evaluate the benefits and downfalls of flipped learning, as well as evaluate the components of the flipped classroom.

Theoretical Framework

The process of education is a synthesis of teaching methods combined with student learning. The goal of the classroom should be focused on what students can learn as opposed to how well the teacher can teach (Correa, 2015). To excel at teaching and to meet the needs of a changing society, educators must consider the best way to reach the current generation of

students who have different learning needs than past generations. Higher education institutes have known for decades that adult learners need varied instruction (Betihavas et al., 2015; Castillo, 2013). Before the 1970s, learning was defined as a change in behavior and was consequently independent of the learner and their previous experiences (Carpenter-Aeby & Aeby, 2013). Challenging this theory, Malcolm Knowles (1973) postulated that adults learn differently than children, popularizing the already-coined term *andragogy*. Previously, adults were taught using the same methods as younger students, known as pedagogy (Castillo, 2013). Despite some criticism of Knowles' work, it is now commonly accepted that children and adults acquire knowledge differently and therefore need to be taught using differentiated techniques (Knowles et al., 2005).

Adult Learning Theory

Knowles' adult learning theory is based on the principles of andragogy, a set of learning principles that apply to adult learners (Knowles et al., 2005). To better understand the unique needs of the adult learner, Knowles et al. established a set of six assumptions about adult learners, leading to the development of adult learning theory. The first assumption is that adults need to know why they are learning something before learning can begin (Knowles et al.). According to Knowles et al. the educator must present the material in a way that helps adult learners understand why they are learning the subject and make the content applicable to all learners. The second assumption is that adults have a different concept of the self than children because adults take more responsibility for their decisions, making their learning more self-directed (Knowles et al.). Educators play a vital role in helping adult learners transition from the dependent learners they were as children to independent learners as adults. The third assumption is that adult learners have more life experiences than younger students (Knowles et al.). Adults

bring these life experiences into the classroom, which can either help or hinder learning. The instructor should use students' experiences to bring diversity into the classroom and encourage students to use their knowledge to teach one another. The fourth assumption is that the adult learner has an increased readiness to learn (Knowles et al.). Children are developmentally unable to understand concepts because they have yet to experience life, whereas adults are capable of learning more complex concepts if these concepts are applied directly to their real-life circumstances (Samaroo, Cooper, & Green, 2013). If the adult has not developed the appropriate readiness, the educator can use simulations, models, and other techniques to achieve success (Knowles et al.). The fifth assumption postulates that adult learners have a different orientation to learning than younger students. Adults are motivated to learn if it helps them improve their situation in life by advancing their career or by bringing self-fulfillment. The final assumption about adult learners is that they are internally motivated to learn. Adults exhibit increased motivation, primarily due to a desire to improve job satisfaction and quality of life, whereas children learn because they are required to do so (Knowles, 2005).

These six assumptions have been adapted throughout the years, most recently by Fornaciari and Lund Dean (2014) who interpret them as follows:

Theoretically, andragogy accepts six general principles: adults need to know the “why” of learning; adults learn through trial-and-error experience; adults should own their own decisions about learning; adults prefer learning which is immediately relevant to their lives; adults learn better from problem-based than content-based environments; and adults learn better with intrinsic versus extrinsic motivators. (p. 702)

Pedagogy vs. Andragogy

As mentioned previously, adult learners differ greatly from younger learners, therefore changing the learning environment. The term pedagogy refers to the art of teaching children, whereas andragogy refers to teaching adults (Fornaciari & Lund Dean, 2014). Andragogy states that the learner's idea of self-concept demands a major change, as opposed to changing through forced learning (Knowles et al., 2005). A child has a dependent nature and needs more guidance in learning (Samaroo et al., 2013). In this instance, the teacher takes on the role of the authority figure. Due to the adult's mature self-concept, adult learning should be more self-directed so the teacher plays more of a facilitator role (Knowles et al., 2005). In such cases, the relationship between the educator and the adult learner is one of respect and collaboration, as opposed to authority. Likewise, there is also dissimilarity in the readiness to learn between adult and young learners. Children depend on a teacher who can diagnose their learning needs to determine their readiness to learn, while adults are better able to self-diagnose their own learning needs (Carpenter-Aeby & Aeby, 2013).

These distinctions in learning can be attributed to cognitive development. To support Knowles' theory of adult learning, Hagen and Park (2016) found a link between andragogical instructional practices and how these practices impact cognition and learning. The researchers connected the assumptions of adult learners to neural networks related to memory and cognition. For example, the concept of self, influenced by individual experience, is attached to the right fronto-temporal region of the brain, which is not developed until adulthood (Hagen & Park). Life experiences are scaffolded (or built upon) with new information, allowing faster recall of information and therefore longer retention. Their research supports the claim that adults learn differently than children because their brains are developmentally different (Hagen & Park).

Another one of Knowles' assumptions about adult learning that has had a profound effect on the classroom is the role of experience. Adults have a variety of life experiences that younger students lack (Garwood, 2015). According to Hagen and Park (2016), experience combined with instruction provides opportunities for adult learners to reflect on their learning. Adults' life experiences are underutilized if the primary method of learning is lecture, which only uses passive learning techniques. Allowing adults to share their knowledge and experience enhances the learning environment for all students present in class. Leigh, Whitted, and Hamilton (2015) studied the impact of past experiences on students who returned to school to obtain a higher degree in nursing. Participants in the study had all previously worked as nurses, bringing with them past experiences that were beneficial to themselves and the class. The researchers used andragogical teaching methods to improve the learning experience by showing respect for the adult students and encouraging them to share their past experiences during class. The students in the study improved their course outcomes and had high ratings of course satisfaction (Leigh, Whitted, & Hamilton). This is one example of the ways that changes to teaching methods should differ when teaching adults in higher education.

Learning in Adults

Tainsh contended through research that "the adult learner is most successful in a welcoming, collaborative, respectful, transparent, and challenging learning environment with clear expectations" (2016, p. 9). The learning environment is an important factor in helping the students achieve their learning goals. Lecture alone cannot meet the needs of the adult learner (Correa, 2015). Adult learning theory supports learning techniques that use problem-based and collaborative learning activities to engage the learner (Knowles et al., 2005). Higher education instructors should vary their techniques to motivate and engage learners and to meet the diverse

needs of the adult learner. Robb (2013) asserted that students today are of a generation that prefers the use of technology, not typically employed in a formal lecture. The flipped classroom meets these preferences by using technology to aid learning, moving the lecture outside of the classroom, and using active learning techniques during class time. Additionally, active learning has been shown to improve learning outcomes (Prince, 2004). Active learning has gained widespread popularity in K-12 education, but it also has the potential to help adults gain a deeper understanding of the content (Nguyen, Miranda, Lapum, & Donald, 2016).

According to the theory of adult learning, the curriculum for adults needs to be thoughtfully planned to provide a more meaningful learning experience. Knowles et al. (2005) suggested a learning process that includes (a) preparing the learner (b) a mutually respectful climate, (c) mutual planning by students and educators, (d) mutual assessment of needs, (e) mutual negotiation of learning objectives, (f) learning plans that involve learning contracts and projects, (g) learning inquiry and independent study projects, and (h) evaluation through evidence. To test this process of adult learning, Carpenter-Aeby and Aeby (2013) had students and instructors collaborate to develop a classroom learning climate that met the unique needs of the students, instructional strategies that tailored teaching to the adult learner, and learning activities centered on adult learning theory. As Knowles et al. (2005) advocated, students in this learning environment were treated with respect and their opinion and experiences were valued. The students who participated in the study showed an increase in self-directedness, which was attributed to collaboration with peers and instructors. The researchers concluded that participation, investment, and collaboration are key factors in learning success in adults (Carpenter-Aeby & Aeby, 2013).

Additionally, while some adult learners excel as autonomous learners, others may need guidance to develop these skills (Knowles et al., 2005). Providing opportunities for learners to develop self-directed learning techniques can be beneficial to adult learners because it encourages them to become independent learners. To analyze this theory, Ranvar (2015) evaluated the relationship between self-directed learning and its effect on performance, assessment, motivation, and engagement. Ranvar concluded that students who were more self-directed had a higher readiness to learn, resulting in a positive relation to student achievement. Self-directed learning is an important component for adult learners, but many are not taught how to develop such learning habits in K-12 education. Grover, Miller, Swearingen, and Wood (2014) surveyed 400 English-language learners and discovered that many of the students were unaware of self-directed learning strategies, indicating students may need assistance to become more cognizant of such strategies. Active learning techniques, such as those found in the flipped classroom, assist students in developing self-directed learning techniques to enable students to become more autonomous learners.

Active Learning vs. Passive Learning

Taking an active role in learning enables the student to gain a better understanding of the material and increase retention, allowing the student to use the material outside of the classroom (Shattuck, 2016). For students to become actively engaged in learning, the teacher must create an environment that encourages students to participate during class. This type of environment is not possible in a traditional lecture classroom (Lage, Platt, & Treglia, 2000). To create an active classroom, teachers must deviate from merely teaching as their predecessors did through use of didactic lecture, a method used since the Renaissance to teach the masses before books were readily available (Mazur, 2009). The traditional lecture is considered a passive learning

environment because students are not encouraged to think critically on the subject being taught (Ghilay & Ghilay, 2015). Instead, students in the traditional classroom are required to sit passively and take notes while the teacher, or “sage on the stage,” conveys his or her knowledge about the subject (King, 1993, p. 30). This teaching method has long since become outdated as teachers come to recognize that active learning is more beneficial to the student (Shattuck, 2016).

Studies continue to show that there are many benefits to changing from a passive to an active classroom. One such benefit is students becoming engaged in the classroom and therefore taking a more active role in their learning outcomes (Ghilay & Ghilay, 2015). As a result, students show improved grades, better retention of course material, and more confidence with the subject (Shattuck, 2016). A study by Chen, Wang, Kinshuk, and Chen (2014) revealed the outcomes of creating a more active learning environment in a traditional classroom. The researchers did not completely remove the traditional lecture methods, but instead incorporated a few collaborative learning activities to the lessons. As a result, student satisfaction in the course improved, more students started coming to class, and many students made more of an effort to study outside of class time. The researchers observed that some students had “residual passive learning habits” that created a barrier to fully evolving to active learning (Chen et al., 2014, p. 26).

However, passive learning environments still inundate higher education. In a study conducted by Higher Education Research Institute, 50% of professors still use extensive lecturing methods despite research against it (Eagan et al., 2014). Lecture does appeal to a select group of students; however, it does not meet the diverse needs of an entire class (Love, Hodge, Grandgenett, & Swift, 2014). The key is to understand the students and make adjustments based on their needs. The flipped classroom provides such an opportunity.

The flipped classroom is only successful when active learning strategies are used properly. Michael (2006) defined active learning as a process of students engaging in an activity that requires them to reflect on ideas and how they are using those ideas. Many empirical research studies have been conducted supporting the use of active learning in the classroom (Prince, 2004; Tsang & Harris, 2016). One of the fundamental reviews of active learning research was conducted by Prince (2004), who advocated that active learning techniques are effective in enhancing students' recall of information and that students take more interest in improving their learning outcomes. In addition to students taking an interest in their learning outcomes, active learning has also led to improvement in learning outcomes, measured through course grades. In a meta-analysis conducted by Freeman et al. (2014), it was revealed that students are 1.5 times more likely to fail in a traditional classroom compared to a classroom that uses active learning. Freeman et al. also found that exam scores improved by six percent when using active learning strategies compared to lecture-based learning. The results of this study have led to an upsurge in support for flipped learning.

Related Literature

Flipped Classroom

The idea of "flipping" a classroom is not a new concept (Butt, 2014; Tucker, 2012). As early as the 19th century, the model was being used at US Military Academy (West Point) by General Thayer, the president of the school at the time, and was known as the Thayer method. Students were responsible for learning core content prior to coming to class (Gross, Marinari, Hoffman, DeSimone, & Burke, 2015). A similar method, known as the flipped classroom, was popularized in K-12 education by two chemistry teachers, Bergmann and Sams (2012). To determine if this type of teaching method is effective, there has been a rise in empirical studies

testing its effectiveness in higher education. Researchers believe this style of learning creates a generation of students who are active and creative thinkers (Roach, 2014). Supporters of the flipped classroom claim that this method of teaching engages learners through active learning techniques, thus improving student perception of the course and associated student outcomes (Davies, Dean, & Ball, 2013; Talley & Scherer, 2013). Critics argue that this type of instruction is not suitable to all subjects, especially introductory courses (O’Flaherty & Phillips, 2015) and is not ideal for all student learning preferences (Herreid & Schiller, 2013). However, some believe these opposing views may be due to lack of a consistent definition (Margulieux, McCracken, & Catrambone, 2016).

The flipped classroom has also been referred to as inverted, blended, or reverse instruction (Bergman & Sams, 2012). Providing an exact definition of the flipped classroom is a difficult task, as each teacher adapts the model differently, creating misunderstandings of the meaning of the term (Kang, 2015). The general idea is that the content (what is traditionally taught through lecture) is learned outside of class, and class time is used for what was previously considered homework (Chen, Wang, Kinshuk, & Chen, 2014). To reach the ultimate objective of helping students develop self-directed learning habits, the flipped classroom focuses on providing students quality time with the instructor when they need it most: in the application of concepts. In the flipped classroom, students are the “agents of their own learning” instead of the “object of instruction,” thus encouraging students to think for themselves and take ownership of learning (Hamdan, McKnight, McKnight, & Arfstrom, 2014, p. 4). Another benefit of the flipped classroom is that instructors can monitor learning and clarify misconceptions. The instructor focuses class time on ensuring learners maximize their retention of core concepts through review and practice (Nederveld & Berg, 2015). Creating such a learning environment is

a challenging task. For instructors to successfully execute the flipped classroom, Hamden et al. (2014) argued they should focus on the four pillars of flipped learning.

Hamden et al. (2014) outlined four pillars of flipped learning, using FLIP as an acronym, which they believe to be the key in successfully flipping a class: flexible learning environment (F), shift in learning culture (L), intentional content (I), and professional educators (P). A flexible learning environment is one that can adapt to the learning goal for the day, where educators adjust the course timeline to fit student learning needs. To create a flexible learning environment, teachers may want to rearrange the chairs to create a more relaxed atmosphere. Additionally, a shift in the learning culture moves away from the teacher as the center of the lesson, focusing instead on meeting the individual needs of the students (Chen et al., 2014), partly by creating thoughtful lessons. Educators must create intentional content that ensures students are gaining conceptual understanding of course topics, as opposed to merely memorizing facts (Hamdan et al., 2014). By replacing lecture with active learning, the instructor can verify the students are learning concepts by working with them during class and encouraging participation; this cannot be accomplished by unqualified instructors. Instructors in the flipped method must be highly professional in order to meet the diverse needs of students and to give real-time answers to problems the students may have with their assignments (Chen et al., 2014; Hamdan et al., 2014).

The flipped classroom gained popularity in K-12 classrooms (Bergmann & Sams, 2012) but more research is showing its value in higher education. One reason for this is because the flipped classroom works well with older learners, as it allows them to have more responsibility in their learning outcomes, thus appealing to autonomous learners (Correa, 2015). By flipping the classroom, students can work independently and at their own pace outside of the classroom to

gain understanding of course concepts (Vaughan, 2014). Therefore, class time can be used to enhance learning that has already occurred, as opposed to lecturing on new concepts (Doman & Webb, 2017). Flipped classes also coincide with adult learning theory because of the adult learner's readiness to learn (Knowles et al., 2005). In most cases, adults are making a choice to attend college, so they are typically more internally motivated to learn. The flipped classroom allows adults to question their learning and engage with their professor to deepen their understanding of a topic (Leigh et al., 2015).

Another benefit to flipped classrooms is the ability to provide innovative teaching techniques. As classroom dynamics and student learning have changed over the course of time, teaching methods need to change alongside them. Current research points to encouraging the adaptation of flipped classes in higher education. The primary benefit is that this teaching method provides instructional resources outside the classroom, allowing class time to be used for instructional activities that encourage active participation in the lesson (Enfield, 2013). In addition, active learning has been shown to increase learning and comprehension when used to convey educational material (Michael, 2006; Prince, 2004). By using active learning in lieu of lecture, the flipped classroom can provide students with a more collaborative learning environment where they can work with their peers and get support from their teachers (Findlay-Thompson & Mombourquette, 2014; Roehl, Reddy, & Shannon, 2013).

Benefits of Flipped Learning. In an effort to promote student learning, teachers often have to be diligent and intentional in their means of instruction and presentation. Studies show that alternatives to lecture, such as the flipped classroom, lead to increased learning and improved learning outcomes that far outweigh traditional teaching methods alone (Goffe & Kauner, 2014). One of the reasons learning is increased is because the flipped classroom covers

more material (Mason, Shuman, & Cook, 2013). Core concepts are learned outside of class at the students' own pace, thus allowing more opportunity to dedicate class time to employing higher order thinking skills with the help of the instructor (Geist, Larimore, Rawiszer, & Al Sager, 2015). When students work with the teacher on difficult concepts, they further improve their understanding of core concepts and improve student achievement (Kim, Kim, Khera, & Getman, 2014).

Educators who have adapted their lessons to incorporate flipped learning have seen an array of improvements. Chen et al. (2014) used the flipped classroom and had success; attendance and study habits improved and student satisfaction in the course increased. In a related study, McLaughlin et al. (2014) used the flipped classroom with first-year pharmacy students. Like Chen et al., there was an increase in attendance and student learning, as well as an increase in how positively students perceived the flipped model of learning. The researchers proposed that students in the study may have been able to adapt more easily to the flipped method because it was introduced early in their program. In support of this theory, Mason, Shuman, and Cook (2013) found that students who are taught the flipped method early in their program adapt quickly and enjoy the method more than traditional lectures. The research suggested that once this method is implemented in more programs, students may be able to adjust more easily to a new learning method.

Empirical research continues to point to encouraging the use of the flipped classroom due to the benefits discovered from using this method. Some of those benefits are increased engagement during class (Clark, 2015; Gross et al., 2015; Vaughan, 2014), increased motivation (Davies et al., 2013), improved student satisfaction (Clark, 2015; Gross et al., 2015), and improved student achievement (Bethivas et al., 2015; Davies et al., 2013; Missildine, Fountain,

Summers, & Gosselin, 2013). While these benefits appear to improve the classroom environment, the principal reason for altering teaching methodology should be drastic improvement, especially regarding student achievement. If student achievement is improved, then the flipped method should be considered as a replacement for traditional lecture.

Disadvantages to flipped learning. Despite all its apparent advantages, there are some who believe there are disadvantages to using the flipped classroom. One such belief is that students may not know how to fully appreciate this type of learning (Tsang & Harris, 2016). The flipped classroom requires self-regulation and discipline, attributes that are not taught in the traditional classroom (Moffett, 2015). The traditional classroom relies on memorizing information passed down by the instructor. Students who have difficulty in the flipped classroom may not be able to distinguish between rote memorization and actual learning (Tsang & Harris, 2016). It is common for students who are accustomed to learning in passive environments in K-12 to be resistant to active learning in higher education, as it is possibly the first time they have been required to participate in their learning (Della Ratta, 2015). Being able to fully participate in active learning techniques requires the learner to be mentally present and engaged. The added amount of work needed to become engaged in learning may be a difficult adjustment for some students (Herreid & Schiller, 2013). Students who are more motivated may adapt better to this change in the learning environment. This could potentially cause problems with less motivated students who may have difficulty changing their passive learning habits, feasibly hindering the flipped process (Chen et al., 2014).

The availability of technology is a potential disadvantage for flipped classrooms. For one, the video quality may not be adequate to allow students to learn the lesson and they may come to class unprepared (Blair, Maharaj, & Primus, 2016). To overcome this challenge,

Bergmann and Sams (2012) recommend educators spend time learning how to make videos properly and then to ask colleagues to critique the videos. For example, Bergmann and Sams worked together to develop the video curriculum for their joint classes, each making a different chapter of the textbook and then critiqued each other's videos. Another obstacle to note is the lack of availability of technology to disadvantaged students (Blair et al., 2016). If videos and course material are only posted online, students may not have access to a computer or internet at home. A way to circumvent this hurdle is to provide appropriate pre-class homework or multiple modality for access. For example, if videos are the means of learning, students should have the multiple media to view the lesson such as a CD, flash drive, an app for their phone, or extra time before or after class to use the computers (Bergmann & Sams, 2012).

The flipped classroom could also be problematic for teachers adjusting to this new type of teaching since educators who use the flipped classroom must have a complete understanding of the course they are teaching. In the flipped method, students are encouraged to ask questions to develop a better understanding of the course material so teachers need to be prepared to answer these questions on the spot (Berrett, 2012). This type of method may not be advantageous for teachers who are new to teaching or new to their field. Additionally, the flipped classroom requires a great deal of time to create active learning activities, which could pose a possible barrier to implementation (Herreid & Schiller, 2013). Nonetheless, once the initial activities are created, it becomes easier to plan and adjust lessons in the flipped classroom. The disadvantages to using the flipped method are outweighed through meeting the needs of students by creating an active and flexible learning environment (Simpson & Richards, 2015).

Flipped vs. traditional instruction. The traditional model of teaching has not changed since before the Industrial Revolution, when schooling was aimed at educating the masses and

“standardizing” individuals to equip them for work in factories (Buchanan, Harlan, Bruce, & Edwards, 2016, p. 2). In the traditional teaching model, learning occurs in large groups and is teacher-driven (Hamdan et al., 2014), while the flipped teaching method appreciates that students learn in their own individual space so the lesson is student-driven (Vaughan, 2014). In student-centered classrooms, the emphasis of the lesson revolves around meeting the needs of the students and adjusting learning based on those needs. Customarily, traditional teachers prepare a semester’s worth of lessons at the start of the term without considering the ability of students to learn the material. Teachers utilizing the flipped method prepare lessons that are more adaptable and capable of corresponding to diverse learning needs (Talley & Scherer, 2013). If students in the flipped model take longer to comprehend a concept, then the teacher spends more time on that topic (Bergmann & Sams, 2012). Other topics may be mastered more quickly than expected, and instructors can modify their instruction accordingly (Doman & Webb, 2017).

Moreover, the flipped method differs in the way that knowledge is transmitted to students. The traditional classroom primarily uses didactic lecture to transfer knowledge to students, which does not encourage application of content and allows for minimal engagement (Mehta, Hull, Young, & Stoller, 2013). Lecture is an oral presentation given by the educator to convey a topic to students (Crews & Butterfield, 2014). The focus of lecture is short-term recall and memorization, which may have negative effects on learning outcomes (Blissitt, 2016). The traditional lecture method meets the needs of only a select number of students by appealing solely to a specific learning style, which could cause students with different learning styles to learn less and become less interested in the subject (Lage et al., 2000). The flipped classroom has the capacity to disrupt the current educational model to better meet the needs of students, as the passive transfer of knowledge happens outside of class time. During class, students engage

in active learning and use higher levels of critical thinking such as analysis, synthesis, and evaluation (Murray, McCallum, & Petrosino, 2014). This simple transformation in the structure of learning has the potential to reach a diverse selection of learners, especially the current generation of students.

The population of students currently attending higher education institutions is referred to as the millennial generation and is best identified by their reliance on technology (Vaughan, 2014). This generation began entering higher education in 2000 and require a change in the way they are educated, including the use of technology in learning (Phillips & Trainor, 2014). Due to the innovation of computers and smart phones, millennials come to class with the capability of instantaneous knowledge, communication, and collaboration at their fingertips. Thanks to technology, teachers are relieved of being the sole means of learning, as now education is available to all through the Internet. However, they are unable to utilize technology within the traditional classroom setting (Vaughan, 2014). Learning through traditional methods alone cannot compete with the daily learning opportunities afforded to millennial students equipped with smart phones (Means, Toyama, Murphy, & Baki, 2013). To reach this generation, teaching methods must be flexible and adapt to fit their learning needs. One of the many benefits of the flipped classroom is that it meets the needs of digitally savvy students by incorporating technology into their learning to explain core concepts outside of the classroom using video and the Internet (Della Ratta, 2015). This adds a level of convenience to learning, as students can study when they are mentally prepared to learn new concepts.

The flipped classroom has the potential to utilize technology in a way that produces a student-centered learning environment. The benefits of this type of advanced learning are just surfacing in higher education. One such benefit was discovered by Missildine, Fountain,

Summers, and Gosselin (2013), who uncovered that students' grades only improved when the flipped method was used in a blended environment, one where teaching technologies were combined with an interactive classroom. Creating a learning environment where student needs are met can encourage students to take control of their learning. Ghilay and Ghilay (2015) surveyed teachers and found that many believe an active learning approach is better for students to understand the material but they do not know how to adapt their instruction to meet the demands of a changing culture. Fortunately, the flipped method is designed to make this transition easier for educators. Videos and lesson plans are readily available online through websites like Khan Academy and The Flipped Network. Flipping a classroom takes time and is a learning opportunity for some teachers; however, this change is believed to benefit the students' learning experience. Students who fully grasp course concepts have an enhanced perception of the course and a generally higher grade.

Student Achievement

Discovering ways to better help all students succeed in college is a topic that should be explored. Mason et al. (2013) used a traditional classroom as a control group to compare a flipped teaching method. The results indicated that the flipped classroom allowed more time to cover course material and students performed as well or better than in the traditional classroom. Likewise, Wilson (2013) had improved learning outcomes in a flipped class when compared to courses previously taught in traditional lecture format. The students in the class felt they could get immediate feedback, which enhanced their learning process and decreased their anxiety about the course. In a related study conducted by Sahin, Cavlazoglu, and Zeytuncu (2015), students' overall achievement drastically improved, as did their perception of the course when comparing flipped to non-flipped courses. Sahin and colleagues believed that the flipped method

helped students to better prepare for class, improved student comprehension of the topic, and gave students a higher level of self-efficacy to complete the course, which led to a considerable increase in student achievement.

The flipped classroom has been shown to have a positive impact on high and low achievers alike (Chiu & Chen, 2017; Nouri, 2016; Park & Choi, 2014). In a large-scale study completed by Chiu and Chen (2017), over 80,000 students were surveyed regarding the impact of active learning strategies on their learning. It was discovered that an active learning environment is beneficial to all students, no matter their academic abilities. The students surveyed were a mixture of high, medium, and low achievers and all had improved learning gains. Park and Choi (2014) agree that active learning can remove positional discrimination and improve the student learning experience. They compared a traditional lecture class with an active learning classroom to uncover if there were learning differences between the two settings. The students with higher grade point averages (GPA) were the ones who participated most in the traditional classroom, whereas all students in the active learning classroom participated equally regardless of their grades (Park & Choi, 2014).

Despite these positive conclusions, there have been mixed results in empirical data regarding students' preference in teaching styles. For instance, Nouri (2016) found that low achievers responded more positively to the flipped classroom when compared to high achievers, leading the researcher to encourage the use of the flipped classroom as a method to reach all students. In a similar study, Owston et al. (2013) found a strong relationship between student perception and grades. The results from their study indicated that high achievers were more satisfied with blended learning than low achievers. Apart from these mixed results, it seems that students can still benefit from learning outside of the traditional model. McNally et al. (2017)

determined that though there were students who supported the use of the flipped classroom and others who did not, in both cases, students still performed better than in a traditional classroom.

Decreasing withdrawal and failure rates is an important task for all college professors, as retention rates are vital to colleges. Keeping students in school ensures a steady income that allows the college to continue to thrive (Swart & Wuensch, 2016). The flipped classroom has had success in reaching students who might not have the persistence to finish. Shattuck (2016) compared a partially flipped class to a traditional lecture-based classroom and observed a 54% decrease in withdrawal rates and a 25% increase in A and B grades. Additionally, Nwosis, Ferreira, Rosenberg, and Walsh (2016) came to the same conclusion. The participants in their study either completely eradicated or drastically reduced the number of D or F grades and withdrawals. These results indicated that the flipped classroom may possibly be able to reach a wider array of students by assisting them in meeting their educational goals by creating an active learning environment where all students can actively participate in learning.

Components of a Flipped Classroom

Pre-class Activities. At the core of the flipped classroom is the necessity of completing pre-class activities. The flipped classroom “reverses the expectations of the common classroom, requiring students to prepare before a class session and then apply what was learned in [face-to-face] class meetings” (Murray et al., 2014, p. 36). Without proper preparation, active learning cannot occur in class. The pre-class activities address lower levels of critical thinking, such as gaining knowledge and comprehension (Moffett, 2015). One popular way to help students learn fundamental course concepts outside of class is by using videos that can be made by the instructor or found online (Bergmann & Sams, 2012). It is important to ensure these videos are not just a high-tech version of antiquated instruction (Hoffman, 2014). Teachers cannot merely

add arbitrary activities as pre-class homework and call it a flipped classroom, as this has a negative effect on student engagement. Activities must be meaningful and help to prepare the student for the in-class lesson (Tucker, 2012).

Videos are not the only means to prepare students for the lesson. Some other pre-class activities include reading texts, listening to podcasts, and exploring online material (Moffett, 2015; Ziegelmeier & Topaz, 2015). No matter the medium, to be successful the pre-class activity must be interactive and connected with in-class activities (O'Flaherty & Phillips, 2015). Students who complete the pre-class activities are more engaged in class when compared to a traditional classroom (Simpson & Richards, 2015). These activities allow the teacher to prepare student-centered learning, and without this arrangement the flipped classroom cannot succeed (Geist et al., 2015). Teachers can encourage participation in pre-class activities by assigning a quiz before or during class to check for comprehension of the material. This has been shown to improve completion of the required pre-class assignments (Kim et al., 2014). Having a recourse to doing the homework gives students an incentive to complete it while ensuring students are prepared for the active learning that occurs during class (Eichler & Peeples, 2015).

Active learning during class time. At the heart of the flipped classroom's success is the replacement of passive learning (lecture) with active learning techniques. There has been substantial evidence that demonstrates active learning techniques have a positive experience on improving exam scores and lowering failure rates (Tsang & Harris, 2014). Love, Hodge, Grandgenett, and Swift (2014) used the flipped classroom to increase active learning through problem-based learning and practice exercises. The researchers found that students in the flipped classroom performed better at exams taken throughout the course than in the traditional classroom. In an associated study conducted by Missildine et al. (2013), active learning

techniques were implemented and resulted in improved student exam scores compared to two other types of lecture courses. Students in the flipped classroom were more engaged, reflected more on their learning, and could use their knowledge and skills in more practical ways than the traditional students (Missildine et al., 2013). These studies support the claim that active learning strategies improve learning.

Supporters of the flipped method believe that by moving the lecture outside of class, students are more likely to become self-sufficient learners and that learning continues to happen outside of the classroom (Ryan & Tilbury, 2013; Ziegelmeier & Topaz, 2015). To help develop self-sufficient learning, students in the flipped classroom are encouraged to ask questions and engage in learning to spark curiosity in the subject and promote active learning (Koo et al., 2016). Though some educators feel this active learning takes away from learning fundamental concepts that need to be taught through lecture, Roach (2014) established that the flipped design allows more time for active learning techniques without limiting essential course material. Some studies even suggest that more class time can be devoted to learning concepts (Mason, Shuman, & Cook, 2013). Others feel that the flipped method is just rearranging the outdated traditional model and moving passive lecture outside of class (Hoffman, 2014). However, the flipped classroom requires more than just rearranging the lecture portion of the class. Instead, it involves the strategic rearrangement of course content, thus allowing class time to be dedicated to active learning activities (Bergmann & Sams, 2012). Examples of some active learning strategies in the flipped classroom include: discussions of pre-class work, problem-solving, games, and other engaging collaborative activities (Phillips & Trainor, 2014; Ziegelmeier & Topaz, 2015). To free up class time for such activities, pre-class work needs to be completed to gain understanding of fundamental course concepts.

Once the student has prepared for the lesson before class, the educator is able to use class time to do the harder work of absorbing that knowledge through tactics such as problem solving, discussion, or debates (Forsey, Low, & Glance, 2013). Through such tactics, students can examine higher order thinking, such as synthesis and application, on course topics, allowing them to develop a deeper understanding of the material (Correa, 2015). Students can also gain clarity on difficult subjects by interacting with the teacher during class, an aspect that is lost in the traditional lecture (Bergmann & Sams, 2012). Using technology to move the lecture portion out of the classroom also provides a better learning environment for students. In fact, the U.S. Department of Education (2010) found that when students engage in online learning combined with face-to-face classrooms, performance improved. This method of teaching is probably more effective because it allows the teacher to be a facilitator of learning and class time is used more efficiently to expand on pre-class learning, thus creating a student-centered learning environment.

Student-centered classroom. One of the challenges facing the traditional model of education is that it does not meet the diverse learning needs of all students (Coorey, 2016). Students do not all learn the same way; therefore, there cannot be a one-size-fits-all approach to education, as suggested by the traditional lecture model (Correa, 2015). Instead, learning should be tailored to meet the diverse needs of the students, creating a student-centered environment. To do this, the educator must interact with the students to better evaluate those needs. The flipped classroom provides this opportunity by freeing up class time for more student-centered activities (Gilboy, Heinerichs, & Pazzaglia, 2014; McLaughlin et al., 2014). The teacher is no longer standing at the front of class performing a didactic lecture. In place of lecture, the teacher is interacting with students, answering questions, and encouraging self-guided learning (King,

1993). This type of learning uses student-centered techniques to clarify and reinforce pre-class lessons (Mason et al, 2013). The goal of student-centered learning is creating an environment where the learner can take an active part in the classroom, as opposed to passively listening to a lecture. Teachers in the flipped classroom do this by focusing lessons around active and problem-based learning, which encourages learners to think critically about subjects and gain a richer understanding of concepts (Clark, 2015).

Student-centered learning helps create students who are autonomous learners (Knowles et al., 2005). The flipped classroom provides opportunities for the learner to develop such skills through problem-solving and collaboration with peers and instructors. Murray, Koziniec, and McGill, (2015) discovered that students in the flipped classroom felt they interacted more with their peers and instructors, though there was no group assignment and the instructor's office hours were decreased by half. This result could be because teachers in the flipped classroom have more one-on-one time with students and more of a connection is made among students. Della Ratta (2015) used the flipped method on nursing students and discovered that student-teacher interaction improved and the instructor could better individualize instruction, which allows struggling students to get the attention they need to succeed (Tucker, 2012). Together with the instructor, students work on difficult problems instead of trying to complete them alone at home (Bergmann & Sams, 2012). The teacher's role is vital in this process.

Teacher's role. The instructor is the most indispensable part of the flipped classroom, as it is impossible to learn without a guide (King, 1993). Eric Mazur, a supporter of alternative teaching methods, encouraged educators to redirect their teaching methods away from lecture and focus on using technology to put to practice the student-centered classroom that has been discussed by educational leaders but has never been implemented (Forsey et al., 2013). In the

flipped classroom, educators take on the role of facilitator, where they observe and support students in the learning process (Nederveld & Berge, 2015). By doing so, educators partner with students in their learning endeavor (Carpenter-Aeby & Aeby, 2013). In this environment, it is the students' responsibility to learn fundamental concepts outside of class, which teaches independent learning skills. The instructor can then guide the students to better understand concepts and to clarify misconceptions (Koo et al., 2016). When a classroom is flipped, the teacher is no longer the sole distributor of information because that leaves no room for self-directed learning. Instead, the teacher focuses on designing educational experiences that engage the learners and help them develop autonomous learning habits (Love et al., 2014). These habits are necessary for adults to continue as lifelong learners.

In accordance with adult learning theory, Leigh et al. (2015) stressed the need for open communication between faculty and learners. Adult students need to be treated as adults and as co-owners of their learning outcomes (Knowles et al., 2005). The flipped classroom provides such opportunity through active learning, where students work toward understanding of the material and are not simply given the answer. There must be a balance between student-centered learning and relying on the instructor to bring their expertise to the classroom to create a cooperative environment (Beaudoin, 2015). The role of the instructor needs to remain central in education but requires change and adaptation to a new era of learning. Beaudoin (2015) argued that educational leaders today must make continual changes that are meaningful and transformative. Continuing to use outdated traditional methods does not create a transformative learning environment.

Although there is a plethora of research to support active learning, most professors continue to use traditional teaching methods (LoPresto & Slater, 2016). In higher education

today, 70% of class time is spent on lecture (Goffe & Kauper, 2014). This could be because students are more comfortable with teacher-centered learning methods (O’Flaherty & Phillips, 2015). Developing independent learning skills takes time, effort, and guidance, all of which cannot be developed in the traditional classroom. In addition, professors find it difficult to transition to active learning techniques (Freeman et al., 2014). To be successful in an active learning classroom, the professor must know the material well enough to answer on-the-spot questions. An additional hindrance is preparation and time, which might prevent professors from adapting new teaching methods (Goffe & Kauper, 2014). The flipped method requires time to adapt to learning techniques, but many believe the benefits outweigh the cost (Davies et al., 2013; Goffe & Kauper, 2014; O’Flaherty & Phillips, 2015).

Student Perceptions of the Flipped Classroom

Studying student perceptions about the flipped classroom gives more insight into its effectiveness in higher education. In addition to student achievement, student perceptions have been found to be an alternative means of determining if students are learning what was intended, so are useful for gathering evidence of the impact of new teaching methods (Kuhn & Rundle-Thiele, 2009). Moreover, student perception has been linked to increased performance (Berrett, 2012; Butt, 2014; Baepler, Walker, & Driessen, 2014). Chen, Yang, and Hsiao (2016) discovered that students’ feelings about the course and how well it was designed were correlated to student achievement. The researchers concluded that student perceptions could be used as motivational strategies to encourage active participation to improve grades. Beatty and Albert (2016) stated, “Understanding student preferences and levels of satisfaction with various aspects of the ... classroom should inform faculty and institutions about how they can better meet both the legitimate instructional needs and the personal learning preferences of students” (p. 325).

Studies repeatedly show that student perceptions have an influence on student learning, as students who have a positive experience in a class tend to have increased performance. Ferreira and Santoso (2008) confirmed that student achievement is linked to perception. They found students who had a positive perception of the course had improved student achievement. The opposite is also true: negative perceptions had a negative effect on student achievement. In a similar study, Awang et al. (2013) came to a comparable conclusion that perception impacts student achievement. In response to these results, these researchers recommend that teachers create an enjoyable learning environment by developing relationships with students, making it easy to diversify instruction because instructors would better know their students.

There have been a few studies that look at the correlation between student perception and student achievement in the flipped classroom. Nouri (2016) discovered that students' positive perception of the flipped classroom was correlated to an increase in motivation, engagement, and learning. Camiel et al. (2016) asserted that positive perception of the flipped classroom coincides with better performance. Their study revealed that those who have a negative perception do not perform any worse than those who preferred the flipped method. They concluded that the flipped method has enough positive learning gains that it should still be used despite the few students who prefer traditional lecture.

Apart from these positive results, there have been some mixed reviews regarding student perception and student achievement in the flipped course. In general, students have reacted positively to the flipped classroom and have improved learning outcomes (Bishop & Verleger, 2013). Conversely, several studies have shown the opposite to be true: Students had a low perception of the flipped classroom but had improvements in course achievement (Gilboy et al., 2014; Missildine et al., 2013; Van Sickle, 2016). It seems that students' preference for the

traditional over the flipped classroom has a negative effect on student perception of the course but not necessarily on their learning outcomes (Khanova, McLaughlin, Rhoney, Roth, & Harris, 2015). Hanson (2016) suggested these findings raise “the question of whether students, even as adult learners, have the necessary skills to make judgments about what combinations of teaching and learning options best supports their academic learning” (p.84).

Nevertheless, students are noted as being valid and reliable interpreters of their learning needs (Gravestock, & Gregor-Greenleaf, 2008). Several researchers have given possible rationalizations for these mixed results. Butt (2014) found that student perception of the flipped classroom was higher at the end of the course than at the beginning. Butt contemplated that the students may need time to adjust to a new teaching method if they had previously only been exposed to traditional methods. Learning a new method takes adjustments not only on the part of the teacher, but also the student. Additionally, Hanson (2016) observed that student perception increases when teachers explain the potential benefits. Allowing students time to adjust to a new teaching method and explaining the benefits may be beneficial to establishing course success. Students need buy-in to succeed; they need to know why they should change from traditional passive learning to active learning (Knowles et al., 2005; O’Flaherty & Phillips, 2015).

Using Flipped Teaching in General Education Courses

There are mixed opinions as to whether the flipped method is adaptable to certain types of courses. Though studies have continually shown positive results in major and general education courses alike, the flipped method in general education courses has received some criticism. The most notable of these critics is Strayer (2012), who postulated that students in a general education course may lack the motivation that is needed to be successful in a flipped

classroom. Such courses are compulsory to complete a graduation requirement and students may consider them a waste of time or not as significant as core courses. Others suggested that students in an introductory course may not have developed the self-directed learning habits that are required to participate in flipped learning (Blissitt, 2016; Hamdan et al., 2014). Due to the unfamiliarity of the general education subject, students may feel frustrated and dissatisfied if the course is taught using the flipped method (Strayer, 2012). Furthermore, students in these courses may not be motivated to dedicate the time to completing the additional work because they have no connection to the material (Missildine et al., 2013). If the flipped classroom does improve student satisfaction, then it would be more likely to improve students' appreciation for general education courses.

Although there is limited research, the research that does exist shows positive results using the flipped method in general education courses. Jenkins (2015) partially flipped an introductory course on politics and found that the students were more engaged in learning compared with the traditional lecture model. The students in the study appreciated being able to learn outside of class and then address their questions during class time. Davies, Dean, and Ball (2013) flipped a general education course and found it to be effective and scalable to learning needs, and students preferred the flipped method to the traditional method. Furthermore, success of the flipped classroom may depend on the timing of the introduction of the method. Sinouvassane and Nalini (2016) introduced the flipped method to first- and third-year health science students. The first-year students had a more positive experience than the third-year students, participating and enjoying the active learning aspect of the flipped classroom. The researchers determined that the third-year students were set in their ways, so it was more of an inconvenience for them to learn a new method (Sinouvassane & Nalini, 2016). The flipped

classroom may have more success if introduced early in a program of study, as is the case with most general education courses.

Summary

In conclusion, adult learners have different needs than younger students. Knowles' (1973) adult learning theory supported the change from pedagogical to andragogical teaching methods by creating a student-centered learning environment, which is present in the flipped classroom. To create such an environment, the teacher must become a facilitator of learning and support students' quests to become autonomous learners (Nederveld & Berge, 2015). This can be accomplished by using active learning techniques to incorporate the students' past experiences and by guiding independent learning in the classroom (Carpenter-Aeby & Aeby, 2013). The flipped classroom encourages self-directed learning by designing activities that focus on collaboration and problem-based learning (Murray, Koziniec, & McGill, 2015). Moreover, the flipped classroom can address the fact that many students have not had instructors who promote and encourage self-directed learning by giving students more direct guidance from the instructor during class time (O'Flaherty & Phillips, 2015). Students who interact with the instructor tend to have a positive view of learning and thus improved satisfaction with the course (Phillips & Trainor, 2014), and increasing student perception of a course is an important factor in improving student achievement (Camiel et al., 2016).

The research provided in this chapter shows the importance of tailoring instructional methods based on the needs of the student. This study seeks to determine whether student perception of a flipped course affects student achievement. Gaining a better understanding of student perception and student achievement using the flipped method could help determine if this method should be implemented in more general education courses. Students in general

education courses usually have a low perception of the course and therefore lack motivation to do well (Hamdan et al., 2014). If students' perception of the flipped classroom improves learning, then it should be considered for more general education courses. However, if students have a negative opinion of the flipped classroom and receive less than standard grades, then supplementary methods of teaching should be explored.

CHAPTER THREE: METHODS

Overview

The purpose of this quantitative, non-experimental, causal-comparative and correlational study was to determine if student success was related to students' perception of the flipped classroom. The instrumentation used was the Blended Learning Survey (BLS), developed by Owston, York, and Murtha (2013), and student achievement was measured by the end-of-course grades. The following chapter discusses the methods of the study. The research questions and hypotheses examined if there was a relationship between student achievement and students' perception of the flipped classroom. The participants were students over the age of 18 who attended a general education speech communication course at a state college. The final section will address how the quantitative data was analyzed using an independent samples *t*-test and a bivariate regression.

Design

This study was a quantitative, non-experimental causal-comparative and correlational study. The researcher used an independent samples *t*-test and bivariate regressions to determine if there was a relationship between college students' perception of the flipped classroom in an introductory speech communication course and student achievement, as measured by end-of-course grades. First, an independent samples *t*-test was examined to determine if student perception of the flipped classroom influenced student achievement. Achievement was determined by the students' end-of-course grades and placed into categories. Category 1 was high achievers (A or B) and category 0 was low achievers (C or below). A causal-comparative analysis was best suited for this type of research question because it provides information on

cause-and-effect relationships and is used when the independent variable is measured in the form of a category (Gall, Gall, & Borg, 2007).

Next, the researcher used bivariate regression analysis to determine if there was a relationship between college students' perception of the flipped classroom in an introductory speech education course and course outcomes, as measured by end-of-course grades. A correlation design was best suited for this research question as it provides information as to the extent to which the criterion behavior (course outcomes) are related to students' perception of the flipped classroom (Gall, Gall, & Borg, 2007). Paper copies of the BLS were distributed to students by the researcher, without the teacher present, to determine students' perception of the flipped classroom. Students' responses were anonymous to prevent students from skewing their answers and securely kept until the completion of the study; however, students were asked to write their student identification number on the last page. Students' grades were reported by the professor at the completion of the course and matched to student identification numbers on the surveys. An independent samples t-test and bivariate regressions were performed to test the null hypotheses that there was no significant relationship between students' perception of the general speech education flipped classroom and students' student achievement.

Research Questions

The research questions for this study were:

RQ1: Is there a significant difference in students' perceptions, as measured by the sub-scale of overall perception of the Blended Learning Survey, of a flipped classroom for an introductory speech education course between high (A or B) and low (C or below) achieving students, as measured by end-of-course grades?

RQ2: Is there a significant predictive relationship between students' perceptions, as measured by the sub-scales of the Blended Learning Survey, of a flipped classroom for an introductory speech education course based on end-of-course grades?

Hypotheses

The null hypotheses for this study were:

H₀1: There is no significant difference in students' perceptions, as measured by the sub-scale of overall perception in the Blended Learning Survey, of a flipped classroom for an introductory speech communication course between high (A or B) and low (C or below) achieving students, as measured by end-of-course grades.

H₀2: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of satisfaction in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

H₀3: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of engagement in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

H₀4: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of convenience in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

H₀5: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of overall perception in the Blended Learning

Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

Participants and Setting

The participants for this study were drawn from a convenience sample of college students attending Florida College (FC). The research was completed during the fall semester of the 2017-2018 school year. FC is in a large urban area with campuses in four different cities within the county. The college prides itself on preparing students for the workforce and improving the community through education. The school district is in one of the wealthiest counties in Florida; however, the college's low tuition rates tend to attract low income students. Over 50% of the students that attend FC receive federal assistance. Almost 50,000 students attend FC each year, and the college has a very diverse student population: 40% white, 27% African American, 29% Hispanic, and four percent other. Students who attend FC are predominately between the ages of 18-24.

For this study, 109 students were sampled from five sections of a required general education introductory speech communication course. Participation in the study was voluntary and students signed a waiver agreement to participate (see Appendix B). Gall, Gall, and Borg (2007) recommended a minimum sample size of 66 for a regression and 100 for a *t*-test for a medium effect size with a statistical power of 0.7 at the 0.05 alpha level. The sample size of 109 met these recommendations and increased the validity of the study (Warner, 2013). Adhering to these statistical requirements allowed the researcher to generalize the findings beyond the scope of the college. The sample came from a convenience sample of students who were enrolled in an introductory speech communication course taught by Professor Zed (pseudonym). Normally, Professor Zed has approximately 130 students enrolled in her courses. Students were not

randomly selected, as Professor Zed was the only speech teacher who uses the partially flipped method. The course, a survey course on effective communication in interpersonal, group, and public situations, was taught by multiple professors. Students were aware of the teacher they selected for the course. The sample consisted of 68 females and 41 males.

Instrumentation

Blended Learning Survey

The Blended Learning Survey (BLS) was used as the dependent and predictor variable for this study. The BLS was developed by Owston et al. (2013) to compare student perception to end-of-course grades to determine if perception affected student outcomes in a blended learning classroom. In the study, Owston and colleagues discovered a strong relationship between student perception and grades. The researchers also discovered that high achievers perceived the course more positively than low achievers. Awang et al. (2013) confirmed this research that student perception of the course can positively affect student achievement. The current study used the BLS to determine if these results can be applied to general education courses, as studies have mixed results on the flipped classroom in such courses (Hamdan et al., 2014; Strayer, 2012). The BLS consists of 25 Likert-style questions on a 6-point scale (A=Strongly Agree, B=Agree, C=Neutral, D=Disagree, E=Strongly Disagree, and F= N/A) and six multiple choice general information questions (Owston et al., 2013).

The BLS is a combination of four previously validated surveys. Additionally, Owston et al. (2013) found the survey to be highly reliable, with a Cronbach's alpha of 0.908 for the Likert items. The questions were taken from previously validated surveys. Each item on the Likert-scale was tested for reliability using an analysis of covariance (ANCOVA). The effect size for the survey was tested using partial eta-squared and the results indicated a medium effect with

scores ranging from 0.029 to 0.102 (Owston et al., 2013). Owston and colleagues did not determine the Cronbach's alpha for the sub-scales used in their research. The sub-scales they used were student preferences and course satisfaction, student perception of convenience, and student engagement. Permission was granted by the researchers to use the instrumentation (R. Owston, personal communication, February 16, 2017) and can be found in Appendix A. Istifci (2016), and Zilinskiene, Malinauskiene, and Smith (2016) have also used the survey to gain a better understanding of student perception of similar courses.

The BLS was administered by the researcher during a scheduled class meeting in the eighth week of a 16-week course, as research suggests that students' perception increases as students become more accustomed to this type of learning (Butt, 2014). The survey asked questions in four different categories (respond to enrollment pressure, better experience for commuter student, increased engagement, improve learning). The BLS also contained questions specific to the local university where the creators were affiliated (Owston et al., 2013). These questions were useful for the current survey as they provide demographic information on the current student population. The survey took approximately 15 minutes to administer, and candy was provided for those who finished the survey early. Students who participated were selected for a \$5 gift card to Starbucks for every 11th person that turned in a survey. For this gift card, surveys were counted after all the participants completed the survey.

Instrumentation Framework

The BLS was developed by Owston, York, and Murtha (2013). It is a combination of the Classroom Survey of Student Engagement (CLASSE, n.d.), Blended Learning in Higher Education (Garrison & Vaughan, 2008), the Blended Course Student Survey from the Blended Learning Toolkit (Cavanagh, 2011), and student surveys from Cook, Owston, and Garrison

(2004). The CLASSE survey was developed by the National Survey of Student Engagement (NSSE), designed to be used in college classrooms to gain a better understanding of student engagement. Each section of the NSSE survey was tested for reliability and validity and proven to be an effective form of measuring student engagement in a course. The premise behind studying student engagement in the classroom was summarized by Kuh (2009):

... the more students study a subject, the more they know about it, and the more students practice and get feedback from faculty and staff members on their writing and collaborative problem solving, the deeper they come to understand what they are learning and the more adept they become at managing complexity, tolerating ambiguity, and working with people from different backgrounds or with different views (p. 5).

The Blended Course Survey from the Blended Learning Toolkit (Cavanagh, 2011) was developed in response to the growing need for universities to include more blended learning courses, based on the U.S. Department of Education's (2010) determination that students in blended courses outperform those in traditional face-to-face (or lecture) classes due to the use of technology to enhance learning. The flipped classroom is considered blended learning because it moves the content outside of class time using a technological medium. Additionally, the Blended Learning Toolkit is a resource for educators to create flexible course material that is convenient for students. The Blended Course Survey offers the ability of assessing students' opinions of the course to make immediate changes to the curriculum in the hopes of improving student performance and retention (Cavanagh, 2011).

The BLS was adapted from these existing surveys, and questions were added that applied specifically to the researcher's university setting. Four main criteria were addressed in the original creation of the survey and questions were combined into four sub-scales: response to

enrollment pressure, better experience for commuter students, increased engagement, and improved learning (Owston, York, & Murtha, 2013). Owston et al. (2013) created the study to determine the aspects of learning that the students responded to most. Similar to the present study, they wanted to provide research that connected student perception to student achievement, an area that lacks adequate research (Owston et al., 2013). Such research could help universities determine if this method should be implemented. The questions were specifically selected to examine a difference in preference for differentiated teaching methods for students with various levels of abilities (Owston et al., 2013). For instance, the survey asks questions to determine if higher achievers respond differently to teaching methods than low achievers. This survey is useful in determining student preference for the flipped classroom.

For the purpose of this study, the BLS was divided into four sub-scales: satisfaction, engagement, convenience, and overall perception of the course and each sub-scale was tested for reliability. In the present study, the researcher coded the answers as follows: 1=A, 2=B, 3=C, 4=D, 5=E, and 6=F. The answers with F (or 6) were removed because the questions were not applicable to the student, making the possible range of answers for the sub-scales 1-5. Student satisfaction (five questions) was determined by questions that addressed if the student was satisfied with the course. For example, students were asked if they would take a similar course in the future and if the style of the course improved their understanding of course material. Student engagement (eight questions) asked questions about how engaged the student felt during the lessons. These questions had the student decide if they felt engaged with the professor and other students during class time. The convenience questions (two questions) were not particular to this class but were included on the BLS and evaluated. These questions addressed courses that allowed students to work from home instead of going to class. The school that was studied

offered such classes at a different campus. The final category was the overall perception of the course (17 questions), these questions asked students about positive or negative feelings toward the course. Some of the questions overlapped in categories. Five of the questions were reverse coded. The purpose of the BLS was to measure students' perception of a class. In this study, the BLS was administered by the researcher without the professor present. The researcher also scored the survey. The sub-scales were checked for reliability using Cronbach's Alpha and the results were: satisfaction .784, engagement .862, convenience .895, and overall perception .857.

Learning Outcomes

The next variable used was measurements of student achievement. First, end-of-course grades were collected by the professor at the end of the course in categorical form (A, B, C, D, and F) and then categorized into high (A or B) and low (C or below) achievers. This was the independent variable for the independent samples *t*-test. The end-of-course grades were also collected from the professor in continuous form (0-100). These were used as the criterion variable for the bivariate regression. Many researchers have used grades to determine the effectiveness of the flipped classroom (Blair et al., 2016; Clark, 2015; Jenkins, 2015). Beatty and Albert (2016) used course grades and discovered a positive relationship between student perception of the flipped classroom and student achievement. Students who performed better enjoyed the flipped experience more than students who did not perform as well (Beatty & Albert, 2016). Nouri (2016) also discovered a correlation between student perception of the flipped classroom and grades. In this study, students who were low achievers responded more favorably to the flipped classroom (Nouri, 2016). To better meet the needs of students, it is important to determine how the flipped classroom affects student achievement.

Grades in the speech course that were used for this study were based on a percent system,

with 90-100% representing an A, 80-90% representing a B, 70-80% representing a C, 60-70% representing a D, and 0-50% representing an F. Students who withdrew from the course after the survey was complete received a W. Course grades are calculated to include out-of-class multiple-choice chapter quizzes, student in-class speeches, participation and essays. The class was a flipped classroom because students are required to learn the course material outside of the class by reading the chapter and taking a comprehension online quiz. In-class time was reserved for collaboration and actively learning about the topic.

Procedures

Prior to research being conducted, the researcher obtained Institutional Review Board (IRB) approval from both Liberty University and Florida College (see Appendix C and D). Florida College's IRB was contacted and a formal letter of consent was obtained to gain permission for this study. Professor Zed agreed to participate in the study and provided a letter of agreement (Professor Zed, personal communication, April 2016, Appendix E). The data was collected during a 16-week fall semester. Professor Zed normally teaches five introductory speech courses a semester and usually has approximately 130 students total each semester. Professor Zed flips her class by requiring the class to read the chapter and take a quiz before class. Class time incorporates active learning strategies, such as small group discussions, experiential activities, application of skills, discussion, and pair-and-shares, to engage learners.

Students over the age of 18 who were enrolled Professor Zed's introductory speech communication course in the Fall 2017 semester and who were present and on time the day of the survey ($N = 109$) were asked to participate. Students filled out a participation consent acknowledging their participation in the study was voluntary and confidential, no extra credit or deduction of grades would be given, and their end-of-course grade would be collected (Appendix

B). To protect privacy, student surveys and student achievement data were collected anonymously, and the instructor did not have access to the individual results of the survey; however, each section of the course was individually collected and labeled and student identification numbers were used to pair course grades with student perception. The BLS was administered in paper form to ensure maximum participation. The students who participated had the opportunity to earn a \$5 gift card to Starbucks and were given candy after they filled out the survey. Gift cards were distributed to every 11th participant after all the surveys had been collected. Students who were absent or late that day did not take part in the survey. To allow students to respond freely, Professor Zed left the class while the students completed the survey and the professor did not know which students participated.

The survey was administered by the researcher to students in the middle of the semester. The fall semester began in August and the survey was administered in October, as studies have shown that students' perceptions of the flipped classroom change with time (Butt, 2014). This timeframe also allowed for students to form an opinion of the flipped classroom while keeping opinions about the course itself and the professor at a minimum. The final course grades were obtained from the professor after the classes finished for the semester. The gathered data was kept in a secure location and protected for the privacy of the participants. The researcher entered the data into an SPSS file immediately after the participants completed the survey and participant identification was hidden. Final course grades were collected from the professor and matched to student surveys at the end of the 16-week semester.

Data Analysis

An independent samples *t*-test and bivariate regressions were performed to determine if there was a relationship between student achievement and student perception of the flipped

classroom. For the independent samples *t*-test, the dependent variable was the Blended Learning Survey (BLS) and the independent variable of end-of-course grades was measured in categorical form and was not continuous; therefore, a *t*-test was best suited for this research question (Gall et al., 2007). For the *t*-test, college end-of-course grades were divided into two categories: high achievers (with grade of A or B) and low achievers (with a grade of C or below). The dependent variable (BLS) was a Likert-type survey score and is considered in social sciences to be a continuous interval variable (Warner, 2013). For the regression, the predictor (BLS) and criterion (end-of-course grades) variables were continuous and a relationship was being studied; therefore, a bivariate regression was best suited for this research question (Gall et al., 2007). The predictor variable was divided into four sub-scales of the BLS: satisfaction, engagement, convenience, and overall perception.

The first research question and null hypothesis was analyzed using a *t*-test. To begin the *t*-test analysis, data was screened. First, outliers, which are extreme values, were not identified using a box and whisker plot. A box and whisker plot gives a detailed picture of the measure of central tendency and variability and displays the means and standard deviations for each quantitative variable (Green & Salkind, 2014). Next, a Kolmogorov–Smirnov test was used to test for the assumption of univariate normality since the sample was larger than 50 ($N = 109$). The Kolmogorov-Smirnov test had an alpha level of greater than 0.05, which indicated tenability of the assumption, normality was assumed, and the parametric *t*-test was performed (Warner, 2013). Data is reported on the Assumption Testing, Descriptive statistics (M , SD), Number (N), Number per cell (n), Degrees of freedom (df), t value (t), Significance level (p), Effect size and power.

For the second research question and null hypotheses 2-5, a bivariate regression was performed to determine if there was a relationship between the predictor variables (sub-scales of the BLS) and the criterion variable (end-of-course grades). To measure the effect the variables had on each other, data was screened to determine if a Pearson product-moment correlation (Pearson's r) could be utilized. A Pearson's r is best used with studies in education when the variables are continuous in nature because r has a small standard error (Gall et al., 2007). A correlation coefficient (r) of 0.10, 0.30, and 0.50 (regardless of sign) are respectively considered small, medium, and large indications of effect size (Cohen, 1988; Green & Salkind, 2013).

For null hypotheses 2-5, data was screened to check for outliers using a box and whisker plot. Analysis yielded one outlier that did not affect the data, therefore it was not removed. A histogram was completed but the data was skewed to the right. Next, a Kolmogorov-Smirnov test was completed to test for the assumption of univariate normality since the sample was larger than 50 ($N = 109$). The Kolmogorov-Smirnov test had an alpha level of less than 0.05, thus indicating non-tenability of the assumption; therefore, normality was not assumed (Warner, 2013). Due to the results of the Kolmogorov-Smirnov tests being significant, a nonparametric Spearman rank test was run in addition to Pearson's r . (Warner, 2013).

A scatterplot of the variables was created between each of the predictor variables (x ; sub-scales of the BLS) and the criterion variable (y ; end-of-course grades) to determine if there was a linear relationship between the two variables and to check for skewness and kurtosis. There was not a relatively straight line, therefore the assumption of linearity was non-tenable. Finally, homoscedasticity was assessed. Homoscedasticity assumes that the variability in scores of both variables is similar (Warner, 2013). To determine if homoscedasticity was present, the scatter plot between the predictor variables (x ; sub-scales of the BLS) and criterion variable (y ; end-of-

course grades) was examined to determine if there was a “cigar shape” (Warner, 2013). There was not a cigar shape. Data screening and assumption testing was conducted for each of the null hypotheses.

In the final analysis, Assumption testing, Descriptive Statistics (M , SD), Number (N), Degrees of Freedom (df), observed r and r^2 , F value (F), Significance Level (p), B , beta, and SE B , Regression equation, and Power were reported. In each of the tests, a significance level of more than 0.05, a p -value above 0.05, was not considered significant and the null hypotheses were not rejected. A significance level of 0.05 allows the researcher to be 95% confident that the decision about the null hypotheses are correct (Gall et al., 2007).

CHAPTER FOUR: FINDINGS

Overview

The purpose of this causal-comparative and correlational, non-experimental study was to investigate variables to determine if the flipped classroom influenced student achievement. The researcher sought to determine if students who learned under the flipped method would have improved academic performance. This study focused on a general education course, as students enrolled in such courses tend to take them out of requirement and tend to put forth minimal effort (Missildine, Fountain, Summers, & Gosselin, 2013). Finding a method that engages students could increase perception of the course and in turn increase interest in the topic, which could lead to students taking more classes in the field of study (Davies, Dean, & Ball, 2013). The students who participated were enrolled in the Fall 2017 semester of a general education speech communication course. They were taught using the partially flipped method, which consisted of interactive online reading and taking quizzes prior to class time and participating in active learning during class. The dependent and predictor variables were student perceptions of the flipped classroom, as measured by the Blended Learning Survey. The independent and criterion variables were the students' end-of-course grades. All but one of the students present that day, who were over the age of 18, participated in the study. The following chapter provides the research questions, null hypotheses, descriptive data, and the results of the *t*-test and bivariate regression to determine if students' perception of the flipped classroom affected achievement.

Research Questions

RQ1: Is there a significant difference in students' perceptions, as measured by the sub-scale of overall perception of the Blended Learning Survey, of a flipped classroom for an

introductory speech education course between high (A or B) and low (C or below) achieving students, as measured by end-of-course grades?

RQ2: Is there a significant predictive relationship between students' perceptions, as measured by the sub-scales of the Blended Learning Survey, of a flipped classroom for an introductory speech education course based on end-of-course grades?

Null Hypotheses

H₀1: There is no significant difference in students' perceptions, as measured by the sub-scale of overall perception in the Blended Learning Survey, of a flipped classroom for an introductory speech communication course between high (A or B) and low (C or below) achieving students, as measured by end-of-course grades.

H₀2: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of satisfaction in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

H₀3: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of engagement in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

H₀4: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of convenience in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

H₀₅: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of overall perception in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

Descriptive Statistics

The data set contained 109 student responses to the BLS and was used to answer the research questions. The BLS was tested by the developer and was found to have a high reliability with a Cronbach's alpha of .908 (Owston, York, & Murtha, 2013). Additionally, the present study found the survey to have a high reliability with a Cronbach's alpha of .868. Individual Cronbach's alpha coefficients for the survey tool were calculated for each of the four sub-scales used in this research study: satisfaction, engagement, convenience, and overall perception. All sub-scales were determined to have high reliability with Cronbach's alpha of 0.7 or above (see Table 1). These values indicated an acceptable reliability (Warner, 2014). The BLS consists of 25 Likert-style questions on a 6-point scale (A=Strongly Agree, B=Agree, C=Neutral, D=Disagree, E=Strongly Disagree, and F= N/A) and six multiple choice general information questions (Owston et al., 2013). The researcher for this study coded the answers as follows: 1=A, 2=B, 3=C, 4=D, 5=E, and 6=F. The answers with F (or 6) were removed because the questions were not applicable to the student.

Table 1

Cronbach's Alphas for the Sub-scales of the BLS

Sub-scale	<i>n</i>	<i>M</i>	<i>SD</i>	Cronbach's Alpha
Satisfaction	5	8.01	2.72	.784
Engagement	8	13.89	4.59	.862
Convenience	2	6.51	2.11	.895
Overall Perception	17	31.23	7.595	.857

Research Question 1

Table 2 shows the descriptive statistics for the first research question addressing the differences between high and low achievers' perception of the flipped classroom based on the class mean answers for the survey. High achievers were defined as students who had an end-of-course grade of an A or B. Low achievers were defined as students who had an end-of-course grade as C or below (Nouri, 2016). The possible range for overall positive perception was 1-6 with an actual range of 1-5 ($M = 1.98$, $N = 109$, $SD = .494$). The range of grades for research question 1 was A-F ($M = 4.4$, $N = 109$, $SD = 0.087$). Grades were coded as A=5, B=4, C=3, D=2, F=1. Students who withdrew from the class received a W and their answers were removed from the data.

Table 2

Descriptive Statistics for Research Question 1

	<i>n</i>	<i>M</i>	<i>SD</i>	Std. Error
Low Achievers	79	1.87	.412	.046
High Achievers	30	2.02	.493	.090
Total	109			

Research Questions 2-5

The possible survey range was calculated for each of the four sub-scales. The range of answers for the sub-scales were: satisfaction = 1-5, engagement = 1-6, convenience = 1-6, overall perception = 1-6. The actual range of answers was satisfaction = 1-5 ($M = 1.62$, $N = 109$, $SD = .560$), engagement = 1-5 ($M = 1.90$, $N = 109$, $SD = .618$), convenience = 1-5 ($M = 3.46$, $N = 109$, $SD = 1.17$), overall perception = 1-5 ($M = 1.98$, $N = 109$, $SD = .494$), after removing all the 6 (or F) answers. The range of grades ($M = 87.03$, $N = 102$, $SD = 13.19$) for these research questions were measured by letter percent (0-100). Students who withdrew from the class received a W and their surveys were removed from the study.

Results**Null Hypothesis One**

H₀1: There is no significant difference in students' perceptions, as measured by the sub-scale of overall perception in the Blended Learning Survey, of a flipped classroom for an

introductory speech communication course between high (A or B) and low (C or below) achieving students, as measured by end-of-course grades.

T-test data screening. For this first hypothesis, a t-test was utilized because the independent variable was categorical, high and low achievers. The analysis was conducted on the sub-scale of overall positive perception for the dependent variable (BLS). The independent variable was separated into two categories: category 1 was high achievers (A or B) and category 0 was low achievers (C or below) based on the students' end-of-course grades. To determine if parametric tests could be used, a box and whisker plot was created and the data was shown to have one outlier that did not change the data (Figure 1). Next, a Kolmogorov-Smirnov test (Table 3) was conducted and the significance was greater than .05, indicating tenability of the assumption of normality. Furthermore, a Levene's test was executed ($p = .278$) and the assumption of homogeneity of variance was proved tenable. Results of the t -test were $t(107) = -1.60$, $p = .113$, $\alpha = .05$, and did not give significant evidence against the null that there was no difference in overall perception between high-achieving and low-achieving students. The 95% confident interval for the perception mean ranged from $-.334$ to $.036$. The null hypothesis was not rejected. The data was found to have a small effect size of $d = .3$. The post-hoc level of the statistical power was an observed power of $.67$. This means that the researcher can be 67% confident that failing to reject the null was the correct decision.

Figure 1

Outliers: Box and Whisker Plot

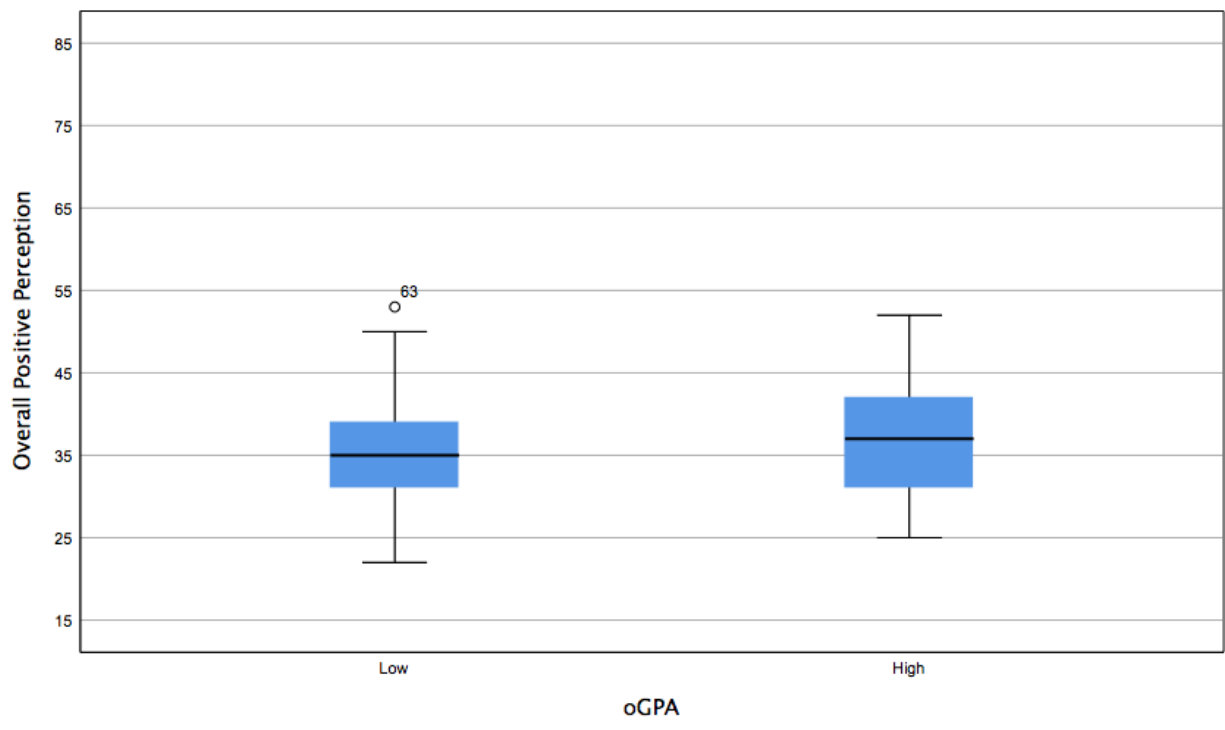


Table 3

Normality Tests: Kolmogorov-Smirnov for t-test

Test of Normality	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Low Achievers	.097	79	.062
High Achievers	.152	30	.076

Null Hypotheses Two-Five

H₀2: There is no significant predictive relationship between students’ perceptions of a flipped classroom, as measured by the sub-scale of satisfaction in the Blended Learning Survey

(BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

Data screening for bivariate regression. A histogram for the course grades (on a scale of 0-100) was performed and the grades were skewed to the right (Figure 2). To test normality, Kolmogorov-Smirnov tests were run on each of the sub-scales and the results were significant (Table 4). The significance level was less than .05 on each of the sub-scales, therefore the assumptions were not tenable and the non-parametric Spearman rank order correlation analyses were completed in place of Pearson's r.

Figure 2

Histogram for Course Grades

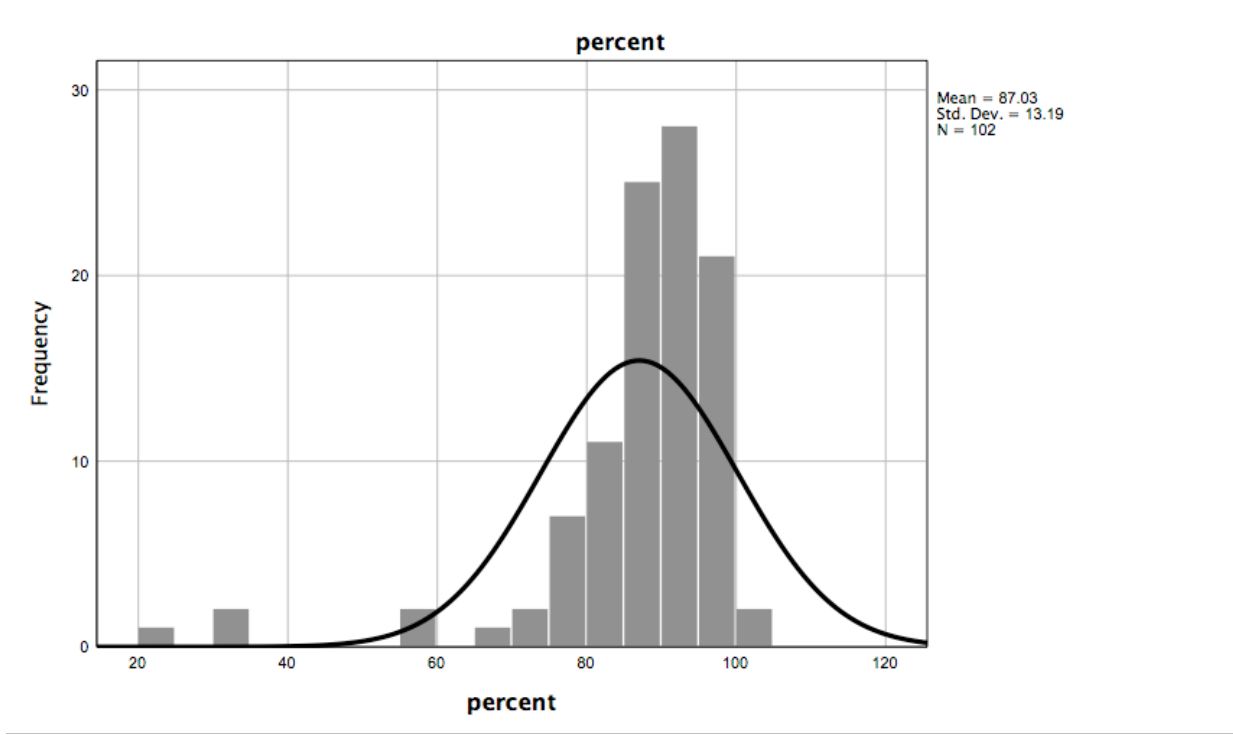


Table 4

Normality Tests: Kolmogorov-Smirnov for Bivariate Regression

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Overall Survey	.101	109	.008
Overall Positive	.095	109	.018
Engagement	.105	109	.005
Convenience	.139	109	.000
Satisfaction	.178	109	.000

The results of the Spearman rank order correlation for the sub-scale of satisfaction were $r_s = -.113$, $p = .257$, $\alpha = .05$. The p -value is greater than .05; the researcher failed to reject null that there is no significant difference in students' perceptions of a flipped classroom, as measured by the sub-scale of satisfaction. Follow up tests were not conducted.

H₀₃: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of engagement in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes as measured by end-of-course grades.

The results of the Spearman rank order correlation for the sub-scale of engagement were $r_s = -.122$, $p = .222$, $\alpha = .05$. The p -value was greater than .05, the researcher failed to reject the null that there is no significant difference in students' perceptions of a flipped classroom, as measured by the sub-scale of engagement. Follow up tests were not conducted.

H₀₄: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of convenience in the Blended Learning Survey

(BLS), for an introductory speech communication course based on course outcomes as measured by end-of-course grades.

The results of the Spearman rank order correlation for the sub-scale of convenience were $r_s = .067$, $p = .510$, $\alpha = .05$. The p -value was greater than .05; the researcher failed to reject the null that there is no significant difference in students' perceptions of a flipped classroom, as measured by the sub-scale of convenience. Follow up tests were not conducted.

H₀5: There is no significant predictive relationship between students' perceptions of a flipped classroom, as measured by the sub-scale of overall perception in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

The results of the Spearman rank order correlation for the sub-scale of overall perception were $r_s = -.105$, $p = .293$, $\alpha = .05$. The p -value was greater than .05; the researcher failed to reject the null that there is no significant difference in students' perceptions of a flipped classroom, as measured by the sub-scale of overall perception. Follow up tests were not conducted.

CHAPTER FIVE: CONCLUSIONS

Overview

This quantitative, non-experimental, causal-comparative and correlational study was designed to explore the effect of student perception of the flipped classroom, as measured by the Blended Learning Survey (BLS) in relation to academic performance, as measured by students' end-of-course grades. Students who were enrolled in the Fall 2017 semester of an introductory speech education course and who were over the age of 18 were asked to participate. Those who volunteered for the study signed a consent form, filling out a survey on their perception of the flipped classroom experience, and agreed to having their end-of-course grades statistically analyzed. An independent samples *t*-test was conducted to compare the means. A bivariate regression was conducted to determine if there was a significant predictive relationship. The following chapter provides a discussion of the statistical analysis results, implications of the study, limitations, and possible recommendations for future research.

Discussion

The purpose of this quantitative causal-comparative and correlational study was to investigate if there was a relationship between student perceptions of the flipped classroom and student achievement in a higher education environment. The study also examined if students were self-directed learners according to Knowles' (1973) adult learning theory, as students in the flipped classroom must take initiative of their learning. The adult learning theory states that adults are self-directed and internally motivated and that these characteristics are developed as the learner matures (Knowles, Holton, & Swanson, 2005), such characteristics of learning are vital for the success of the flipped classroom. The study tested this theory by examining if student achievement was related to student perception of the flipped classroom in a general

education course, for college students ($N = 109$) at Florida College (FC; a pseudonym). Overall, students had a positive perception of the course and had relatively above average end-of-course grades ($n = 102$, $M = 87.03$, $SD = 13.19$), which may suggest that the flipped classroom is influential despite its lack of connection to course outcomes. This could be because the flipped classroom provides an active learning environment that encourages self-directed learning, as Knowles suggested was important for adult learners. Supporters of the flipped classroom claim that this method of teaching engages learners through active learning techniques and thus increases student perception of the course and improves student achievement (Hamdan, McKnight, McKnight, & Arfstorm, 2014; Park & Choi, 2014; Sahin, Cavlazoglu, & Zeytuncu, 2015). Active learning appeals to adult students by creating an environment that is more self-directed and allows the learning to reflect on concepts learned (Murray, Kozinieć, & McGill, 2015; O'Flaherty & Phillips, 2015).

For this study, student perceptions of the flipped classroom were measured with the BLS and student achievement was determined by end-of-course grades. An independent samples t -test and bivariate regressions were utilized to determine if there was a significant relationship between student perceptions and student achievement. For the independent samples t -test, the independent variable of student achievement was defined as students' end-of-course grades and categorized as high (A or B) and low (C or below) achievers. The dependent variable was defined as the students' perception of the flipped course, as determined by the BLS. For the regression, the criterion variable was student achievement (end-of-course grades) and the predictor variables were the four sub-scales of the BLS: satisfaction, engagement, convenience, and overall perception.

Research Question One

Is there a significant difference in students' perceptions, as measured by the sub-scale of overall perception of the Blended Learning Survey, of a flipped classroom for an introductory speech education course between high (A or B) and low (C or below) achieving students, as measured by end-of-course grades?

Null Hypothesis One

There is no significant difference in students' perceptions, as measured by the sub-scale of overall perception in the Blended Learning Survey, of a flipped classroom for an introductory speech communication course between high (A or B) and low (C or below) achieving students, as measured by end-of-course grades.

For the first research question, an independent samples *t*-test was performed to determine the relationship between students' overall perception of the flipped classroom and students' end-of-course grades, categorized by high (A or B) and low (C or below) achievers. These results indicate that there was no difference in overall perception of the flipped classroom between high and low achieving students. As a result, the null was not rejected. Previous studies have found unpredictable outcomes between high and low achieving students regarding the flipped classroom. In a recent study, Nouri (2016) compared low and high achieving students' perceptions to the flipped classroom and discovered that low achieving students respond more positively. Conversely, Owston, York, and Murtha (2013) found that high achievers had a higher positive perception of the flipped classroom. Beatty and Albert (2016) found results that agreed with Owston and colleagues. Students in their study who were high achievers responded more positively to the flipped methodology. These mixed results may be why the current study found no relationship between high and low achievers. Furthermore, in each of these studies

mentioned, the sample size was much larger than the current study. Possibly, increasing the sample size may result in significant results between high and low achievers. The researcher calls for future research to be completed on larger samples.

Grouping students by high and low achievement has provided mixed results in previous studies and the present study yielded a failure to reject the null hypothesis. These results could suggest that perhaps achievement level is not an indicator of whether students will or will not like a flipped classroom. Success in the flipped classroom could be affected by the professor. In this study, the researcher observed that the students were generally happy (smiling) with the class and were actively participating and taking notes. Several of the students wrote comments about how much they enjoyed the course and the professor. Some of the classroom dynamic could be attributed to the lightheartedness of Professor Zed, who would make a joke or laugh herself. A meta-analysis could be conducted on previous achievement studies to determine if the results are skewed based on the students' preference for the professor.

Research Question Two

Is there a significant predictive relationship between students' perceptions, as measured by the sub-scales of the Blended Learning Survey, of a flipped classroom for an introductory speech education course based on end-of-course grades?

Null Hypothesis Two

There is no significant predictive difference in students' perceptions of a flipped classroom, as measured by the sub-scale of satisfaction in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

For the second research question, bivariate regressions were completed to analyze the relationship between students' end-of-course grades and their perception of the flipped classroom based on sub-scales of the BLS. The first sub-scale was that of student satisfaction with the flipped classroom. There was not a significant relationship between the variables and the researcher failed to reject the null hypothesis. These results suggest that students' satisfaction with the flipped classroom does not have an impact on end-of-course grades. These results were surprising because many studies have shown a relationship between satisfaction and grades. Chen, Wang, Kinshuk, and Chen (2014) found positive results with student satisfaction of the flipped classroom in relation to course outcomes. In a similar study, McLaughlin et al. (2014) used the flipped classroom and discovered there was an increase in class attendance and student learning, as well as an increase in how students perceived the flipped model of learning. Bishop and Verleger, (2013) and Gross, Marinari, Hoffman, DeSimone, and Burke (2015) all agreed that the flipped classroom improves student satisfaction while improving grades. The results of this study may have contradictory results because this study was a partially flipped general education course. The researcher calls for future research on fully flipped general education courses.

Null Hypothesis Three

There is no significant predictive difference in students' perceptions of a flipped classroom, as measured by the sub-scale of engagement in the Blended Learning Survey (BLS), for an introductory communication education course based on course outcomes, as measured by end-of-course grades.

For this null hypothesis, a bivariate regression was performed to determine if there was a relationship between end-of-course grades and students' perception of the flipped classroom

based on the sub-scale of engagement. There was not a significant relationship between the variables and the researcher failed to reject the null hypothesis. These results suggest that students' engagement with the flipped classroom does not have an impact on end-of-course grades. Perceptions and course outcomes tend to increase when students are actively engaged in the lesson (Awang et al., 2013; Chen et al., 2014; Westermann, 2014). Many researchers believe the flipped classroom could increase student engagement in the lesson while improving course outcomes (Bishop & Verleger, 2013; Gross, Marinari, Hoffman, DeSimone, & Burke, 2015). For this study, students' engagement in the course did not improve their course outcomes. This could possibly be since the course studied has frequently high success rates, suggesting that other variables could possibly have a different effect on outcomes. Nwosis, Ferreira, Rosenberg, and Walsh (2016) uncovered that the number of failing grades and withdrawals decreased when they partially flipped their class. Similarly, Shattuck (2016) compared a partially flipped class to a traditional lecture-based classroom and found a drastic reduction in withdrawals and failing grades. Future research should be done on determining if the amount of withdrawals or failing grades decreased with the introduction of the flipped method.

Null Hypothesis Four

There is no significant predictive difference in students' perceptions of a flipped classroom, as measured by the sub-scale of convenience in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

A bivariate regression was completed to analyze the relationship between students' end-of-course grades and their perception of the flipped classroom based on the sub-scale of convenience. There was not a significant relationship between the variables and the researcher

failed to reject the null hypothesis. These results suggest that the convenience of the flipped classroom does not have an impact on end-of-course grades. These results were not surprising, as the survey questions did not directly apply to the college studied. The questions involved decreasing the number of face-to-face classes and replacing them with online components. These questions were asked to determine if the students would benefit from less face-to-face class time. Students attending college today are more technological savvy and traditional teaching methods cannot compete with the learning students are receiving daily through the internet (Means, Toyama, Murphy, & Baki, 2013). Creating a more flexible learning environment may better meet the needs of future students. The flipped classroom is a way to meet these changing needs by incorporating technology into the lesson to help explain core concepts, which might benefit from the use of digital media (Della Ratta, 2015).

Null Hypothesis Five

There is no significant predictive difference in students' perceptions of a flipped classroom, as measured by the sub-scale of overall perception in the Blended Learning Survey (BLS), for an introductory speech communication course based on course outcomes, as measured by end-of-course grades.

A bivariate regression was completed to analyze the relationship between students' end-of-course grades and their perception of the flipped classroom based on sub-scales of overall perception of the flipped classroom. There was not a significant relationship between the variables and the researcher failed to reject the null hypothesis. These results suggest that students' overall perception of the flipped classroom does not have an impact on end-of-course grades. These results agree with studies such as Hamdan, McKnight, McKnight, and Arfstorm, (2014), O'Flaherty and Phillips (2015), and Strayer (2012) who believed that this type of

teaching method is best saved for core courses and not general education courses. They believe that students in general education courses may not have the skills needed to succeed in the flipped classroom, as it requires extra effort from the student. Customarily, students in general education courses are looking to fulfill a requirement to graduate and may have no desire to take the course, so their level of interest in the subject is minimal. Due to this lack of interest, students may become frustrated and dissatisfied with the flipped method (Strayer, 2012). Likewise, students enrolled in general education courses may not be motivated enough to put forth the extra time needed to complete the flipped homework because of the lack of connection to the material (Missildine, Fountain, Summers, & Gosselin, 2013). Other researchers suggested that students who are enrolled in general education courses may not have developed the self-directed learning strategies that are needed to be successful in the flipped classroom (Blissitt, 2016). Future research should be considered for courses that are not general education requirements.

Implications

Although the results were not significant, the present study adds valuable research about the flipped classroom in higher education. Firstly, previous research had shown mixed results regarding high and low achievers' perception of the flipped classroom. Nouri (2016) discovered that low-achieving students had higher perceptions of the flipped classroom than high achievers, while Owston et al. (2013) uncovered the opposite to be true, high achievers had more positive perceptions than low achievers. To the contrary, Missildine, Fountain, Summers, and Gosselin (2013) and Van Sickle (2016) revealed that students had an overall low perception of the course but still had improved grades when compared to a traditional class. Even with these mixed results, students can nonetheless benefit from the flipped classroom (McNally et al., 2017). In

the present study, students had an overall positive view of the flipped classroom. These findings complement a study done by Camiel et al. (2016) in which researchers suggested that a positive perception of the flipped classroom improves students' overall performance in the class, however those with a negative perception do not perform any worse than those that preferred the method. This suggests that the flipped method has a positive influence on the class even if some students prefer the traditional method.

Secondly, the present study added to the current body of research about using the flipped method in a general education course, as the prior research had shown mixed reviews. Some scholars believed that students enrolled in general education courses may not have the self-discipline and interest in the subject to be able to put forth the effort required to participate in a flipped classroom (Hamdan et al., 2014; Strayer, 2012). However, other studies have shown success with such courses (Davies, Dean, & Ball, 2013; Jenkin, 2016). The current results do not show any negative effect of the flipped classroom on a general education course. The results do indicate that the students in this general education course enjoyed the method, which is reason enough to continue teaching the flipped method. Students in these types of classes tend to lack motivation to complete the course because it is not a subject they are necessarily interested in (Missildine et al., 2013) so the positive perceptions revealed in this study could encourage students to persist in this course.

Thirdly, previous experience with the flipped classroom may have an impact on course outcomes. The flipped method has become popular in recent years in high school education (Bergmann & Sams, 2012). Students who have become accustomed to such learning may have a different experience than those students who have never been exposed. Sinouvassane and Nalini (2016) found that first-year students easily adapted to the flipped method while third-year

students found it more difficult. The third-year students were reluctant to change their familiar learning techniques. This could suggest that students who have more exposure to the method could possibly better adapt to this teaching method. Further research should be completed on those students who have had previous experience with the flipped method.

Finally, improving student perception of a course has been shown to improve student outcomes (Beatty & Albert, 2016; Camiel et al., 2016; Struyven, Dochy, & Janssens, 2005). Although the current study did not find such a correlation, the students in the study enjoyed a general education course where many tend to have a low perception of such courses (Hamdan et al., 2014). The overall positive perception of the course could have improved internal motivation of the students and encouraged them to succeed in the course, supporting Knowles' (1973) adult learning theory. Some of the students mentioned in their survey comments that this was one of their favorite courses. It is possible that the flipped method improved their opinion of the course and encouraged them to participate where they may not have otherwise. The students in the course did well in the course overall; there were very few withdrawals and failing grades.

Limitations

The current study had limitations that could have affected the data. The first limitation was with the BLS. During the survey, students were in a room with other students and may have felt that others could see their answers. In addition, when answering survey questions, participants may feel the need to put what they think is the "correct" answer as opposed to writing their true feelings (Gall, Gall, & Borg, 2007). Students took the survey in their classroom at the beginning of class so the classroom environment may have also skewed their answers. Some students felt rushed when others in the class finished early. Although students

were told the teacher would not have access to the survey or know who participated, some students may have been cautious when answering for fear of not being anonymous.

A final limitation is the inability to generalize the findings. The sample was taken out of convenience, limiting the generalizability of the data (Warner, 2013). Because the current research only studied five sections of one general education course taught by a single professor, generalizability can only be made to populations that are similar in demographic and only for general education speech courses. The sample size was considerably small. It is possible that a larger sample could have received statistically significant results.

Recommendations for Future Research

Future research is needed to determine if the flipped method should be applied to general education courses. The researcher suggests the following considerations:

1. Collect data from fully flipped general education courses.
2. Collect a larger sample size from various general education courses.
3. Examine the impact of technology on education through the flipped classroom, as there is potential to easily incorporate technology into classrooms through this method.
4. To better generalize the findings, study control groups using the traditional classroom.
5. Collect data from more than one type of general education course.
6. Collect data from students who were previously exposed to the flipped method.
7. Collect data from a variety of professors teaching the flipped method in general education speech courses.

REFERENCES

- Aburahma, M. H. (2015). Do not lose your students in large lectures: A five-step paper-based model to foster students' participation. *Pharmacy*, 3, 89–100.
<https://doi.org/10.3390/pharmacy3030089>
- Albert, M., & Beatty, B. J. (2014). Flipping the classroom applications to curriculum redesign for an introduction to management course: Impact on grades. *Journal of Education for Business*, 89(8), 419–424. <https://doi.org/10.1080/08832323.2014.929559>
- Awang, M. M., Ahmad, A. R., Bakar, N. A., Ghani, S. A., Yunus, A. N. M., Ibrahim, M. A. H., ... Rahman, M. J. A. (2013). Students' attitudes and their academic performance in nationhood education. *International Education Studies*, 6(11), 21-28.
[doi:10.5539/ies.v6n11p21](https://doi.org/10.5539/ies.v6n11p21)
- Baepler, P., Walker, J. D., & Driessen, M. (2014). It's not about seat time: Blending, flipping, and efficiency in active learning classrooms. *Computers and Education*, 78, 227–236.
<https://doi.org/10.1016/j.compedu.2014.06.006>
- Baum, S., Kurose, C., & McPherson, M. (2013). An overview of American higher education. *The Future of Children*, 23(1), 17-39. Retrieved from <http://www.futureofchildren.org>
- Beatty, B. J., & Albert, M. (2016). Student perceptions of a flipped classroom management course. *Journal of Applied Research in Higher Education*, 8(3), 316–328.
<https://doi.org/10.1108/JARHE-09-2015-0069>
- Beaudoin, M. F. (2015). Distance education leadership in the context of digital change. *Quarterly Review of Distance Education*, 16(2), 33-44. Retrieved from <http://www.infoagepub.com/quarterly-review-of-distance-education.html>

- Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. Washington, D.C.: Internal Society for Technology in Education.
- Berrett, D. (2012). How “flipping” the classroom can improve the traditional lecture. *The Chronicle of Higher Education*, 31, 1–15.
<https://doi.org/http://dx.doi.org/10.1108/17506200710779521>
- Betihavas, V., Bridgman, H., Kornhaber, R., & Cross, M. (2016). The evidence for “flipping out”: A systematic review of the flipped classroom in nursing education. *Nurse Education Today*, 38, 15–21. <https://doi.org/10.1016/j.nedt.2015.12.010>
- Bishop, J. L., & Verleger, M. A. (2013). The flipped classroom: A survey of the research. *Proceedings of the Annual Conference of the American Society for Engineering Education, USA*. <https://doi.org/10.1109/FIE.2013.6684807>
- Blair, E., Maharaj, C., & Primus, S. (2016). Performance and perception in the flipped classroom. *Education and Information Technologies*, 21(6), 1465–1482.
<https://doi.org/10.1007/s10639-015-9393-5>
- Blissitt, A. M. (2016). Blended learning versus traditional lecture in introductory nursing pathophysiology courses. *Journal of Nursing Education*, 55(4), 227–230.
<https://doi.org/10.3928/01484834-20160316-09>
- Buchanan, S., Harlan, M. A., Bruce, C., & Edwards, S. (2016). Inquiry based learning models, information literacy, and student engagement: A literature review. *School Libraries Worldwide*, 22(2), 23-39. <https://doi.org/10.14265.22.2.03>
- Butt, A. (2014). Student views on the use of a flipped classroom approach: Evidence from Australia. *Business Education & Accreditation*, 6(1), 33–44. Retrieved from <http://www.theibfr.com/bea.htm>

- Camiel, L. D., Mistry, A., Schnee, D., Tataronis, G., Taglieri, C., Zaiken, K., ... Goldman, J. (2016). Students' attitudes, academic performance and preferences for content delivery in a very large self-care course redesign. *American Journal of Pharmaceutical Education*, 80(4). <https://doi.org/10.5688/ajpe80467>
- Carpenter-Aeby, T., & Aeby, V. (2013). Application of andragogy to instruction in an MSW practice class. *Journal of Instructional Psychology*, 40(1), 3–13. Retrieved from <http://www.projectinnovation.biz/jip>
- Castillo, M. (2013). Online education and the new community college student. *Community College Enterprise*, 19(2), 35. Retrieved from <http://www.schoolcraft.edu/a-z-index/community-college-enterprise>
- Cavanagh, T. B. (2011). The blended learning toolkit: Improving student performance and retention. *Educause Review*, 34(4). Retrieved from <http://er.educause.edu/>
- Chen, S. C., Yang, S. J. H., & Hsiao, C. C. (2016). Exploring student perceptions, learning outcome and gender differences in a flipped mathematics course. *British Journal of Educational Technology*, 47(6), 1096–1112. <https://doi.org/10.1111/bjet.12278>
- Chen, Y., Wang, Y., Kinshuk, & Chen, N. S. (2014). Is FLIP enough? Or should we use the FLIPPED model instead? *Computers and Education*, 79, 16–27. <https://doi.org/10.1016/j.compedu.2014.07.004>
- Christensen, C. M., Horn, M. B., & Johnson, C. W. (2011). *Disrupting class: How disruptive innovation will change the way the world learns* (2nd ed.). New York City, NY: McGraw Hill.
- Chiu, P. H. P., & Cheng, S. H. (2017). Effects of active learning classrooms on student learning: A two-year empirical investigation on student perceptions and academic performance.

- Higher Education Research & Development*, 36(2), 269–279.
<https://doi.org/10.1080/07294360.2016.1196475>
- Clark, K. (2015). The effects of the flipped model of instruction on student engagement and performance in the secondary mathematics classroom. *The Journal of Educators Online*, 12(1), 91-115. doi:10.9743/JEO.2015.1.5
- CLASSE (n.d.). Classroom survey of student engagement. Retrieved from http://nsse.indiana.edu/html/classroom_survey_of_student_engagement.cfm
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York, NY: Routledge Academic.
- Cook, K., Owston, R. D., & Garrison, D. R. (2004). *Blended learning practices at COHERE universities*. Toronto, ON: Institute for Research on Learning Technologies. Retrieved from <http://irdl.info.yorku.ca/files/2014/01/BLtechnicalreportfinal.pdf>
- Coorey, J. (2016). Active learning methods and technology: Strategies for design education. *International Journal of Art & Design Education*, 35(3), 337–347.
<https://doi.org/10.1111/jade.12112>
- Correa, M. (2015). Flipping the foreign language classroom and critical pedagogies: A (new) old trend. *Higher Education for the Future*, 2(2), 114–125.
<https://doi.org/10.1177/23476311155584122>
- Crews, T., & Butterfield, J. B. (2014). Data for flipped classroom design: Using student feedback to identify the best components from online and face-to-face classes. *Higher Education Studies*, 4(3), 38-47. <https://doi.org/10.5539/hes.v4n3p38>
- Davies, R. S., Dean, D. L., & Ball, N. (2013). Flipping the classroom and instructional technology integration in a college-level information systems spreadsheet course.

Educational Technology Research and Development, 61, 563-580. doi:10.1007/s11423-013-9305-6

Della Ratta, C. B. (2015). Flipping the classroom with team-based learning in undergraduate nursing education. *Nurse Educator*, 40(2), 71–74.

<https://doi.org/10.1097/NNE.0000000000000112>

Dewey, J. (1938). *Experience and education*. New York, NY: Macmillan.

Doman, E., & Webb, M. (2017). The flipped experience for Chinese university students studying English as a foreign language. *TESOL Journal*, 8(1), 102–141.

<https://doi.org/10.1002/tesj.264>

Eagan, M. K., Stolzenberg, E. B., Berdan Lozano, J., Aragon, M. C., Suchard, M. R., & Hurtado, S. (2014). Undergraduate teaching faculty: The 2013-2014 HERI faculty survey. *The Higher Education Research Institute*. <https://doi.org/10.4000/gc.862>

Eichler, J. F., & Peeples, J. (2016). Flipped classroom modules for large enrollment general chemistry courses: A low barrier approach to increase active learning and improve student grades. *Chemistry Education Research and Practice*, 17(1), 197–208.

<https://doi.org/10.1039/C5RP00159E>

Enfield, J. (2013). Looking at the impact of the flipped classroom model of instruction on undergraduate multimedia students at CSUN. *TechTrends: Linking Research & Practice to Improve Learning*, 57(6), 1–14. <https://doi.org/10.1007/s11528-013-0698-1>

Ferreira, A., & Santoso, A. (2008). Do student perceptions matter? A study of the effect of student's perceptions on academic performance. *Accounting and Finance*, 48, 209–231.

<https://doi.org/10.1111/j.1467-629X.2007.00239.x>

- Findlay-Thompson, S. & Mombourquette, P. (2014). Evaluation of a flipped classroom in an undergraduate business course. *Business Education & Accreditation*, 6(1), 63-71.
Retrieved from <http://www.theibfr.com/bea.htm>
- Fornaciari, C. J., & Lund Dean, K. (2014). The 21st-century syllabus: From pedagogy to andragogy. *Journal of Management Education*, 38(5), 701–723.
<https://doi.org/10.1177/1052562913504763>
- Forsey, M., Low, M., & Glance, D. (2013). Flipping the sociology classroom: Towards a practice of online pedagogy. *Journal of Sociology*, 49(4), 471–485.
<https://doi.org/10.1177/1440783313504059>
- Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences*, 111(23), 8410–8415. <https://doi.org/10.1073/pnas.1319030111>
- Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8th ed.). Boston, MA: Pearson.
- Garrison, D. R., & Vaughan, N. D. (2008). *Blended learning in higher education: Framework, principles, and guidelines*. San Francisco: Jossey-Bass.
- Garwood, J. K. (2015). Millennial students' preferred methods for learning concepts in psychiatric nursing. *Journal of Psychosocial Nursing and Mental Health Services*, 53(9), 38-43. doi:10.3928/02793695-20150728-06
- Geist, M. J., Larimore, D., Rawiszer, H., & Al Sager, A. W. (2015). Flipped versus traditional instruction and achievement in a baccalaureate nursing pharmacology course. *Nursing*

- Education Perspectives*, 36(2), 114. <http://dx.doi.org.ezproxy.liberty.edu/10.5480/13-1292>
- Gilboy, M. B., Heinerichs, S., & Pazzaglia, G. (2014). Enhancing student engagement using the flipped classroom. *Journal of Nutrition Education and Behavior*, 47(1), 109–114.
<https://doi.org/10.1016/j.jneb.2014.08.008>
- Ghilay, Y., & Ghilay, R. (2015). TBAL: Technology-based active learning in higher education. *Journal of Education and Learning*, 4(4), 10. doi:10.5539/jel.v4n4p10
- Goffe, W. L., & Kauper, D. (2014). A survey of principles instructors: Why lecture prevails. *The Journal of Economic Education*, 45(4), 360–375.
<https://doi.org/10.1080/00220485.2014.946547>
- Gravestock, P., & Gregor-Greenleaf, E. (2008). Student course evaluations: Research, models and trends. *Higher Education Quality Council of Ontario*. Retrieved from <http://www.heqco.ca/SiteCollectionDocuments/Student Course Evaluations.pdf>
- Green, S. B. & Salkind, N. J. (2013). *Using SPSS for windows and Macintosh: Analyzing and understanding data*. Boston, MA: Pearson.
- Gross, B., Marinari, M., Hoffman, M., DeSimone, K., & Burke, P. (2015). Flipped @ SBU: student satisfaction and the college classroom. *Educational Research Quarterly*, 39(2), 36–52. Retrieved from <http://erquarterly.org>
- Grover, K. S., Miller, M. T., Swearingen, B., & Wood, N. (2014). An examination of the self-directed learning practices of ESL adult language learners. *Journal of Adult Education*, 43(2), 12-19. Retrieved from <https://www.questia.com/library/p436763/journal-of-adult-education>

- Gutek, G. L. (2011). *Historical and philosophical foundations of education: A biographical introduction* (5th ed.). Upper Saddle River, NJ: Pearson.
- Hagen, M., & Park, S. (2016). We knew it all along! Using cognitive science to explain how andragogy works. *European Journal of Training and Development*, 40(3), 171 – 190.
<http://dx.doi.org/10.1108/EJTD-10-2015-0081>
- Hamdan, N., McKnight, P., McKnight, K., & Arfstrom, K. (2014). A review of flipped learning. *Flipped Learning Network*. Retrieved from:
http://www.flippedlearning.org/cms/lib07/VA01923112/Centricity/Domain/41/LitReview_FlippedLearning.pdf
- Hanson, J. (2016). Surveying the experiences and perceptions of undergraduate nursing students of a flipped classroom approach to increase understanding of drug science and its application to clinical practice. *Nurse Education in Practice*, 16(1), 79–85.
<https://doi.org/10.1016/j.nepr.2015.09.001>
- Herreid, C. F. & Schiller, N. A. (2013). Case study of the flipped classroom. *Journal of College Science Teaching*, 42(5), 62–66. Retrieved from <http://www.nsta.org/college/>
- Hoffman, E. S. (2014). Beyond the flipped classroom: Redesigning a research methods course for e³ instruction. *Contemporary Issues in Education Research*, 7(1), 51–62.
doi:10.19030/cier.v7i1.8312
- Istifci, I. (2017). Perceptions of Turkish EFL students on online learning language platforms and blended language learning. *Journal of Education and Learning*, 6(1), 113-121. doi:10.5539/jel.v6n1p113

- Jenkins, S. (2015). Flipping the introductory American politics class: Student perceptions of the flipped classroom. *PS, Political Science & Politics*, 48(4), 607-611.
doi:10.1017/S1049096515000840
- Kang, N. (2015). The comparison between regular and flipped classrooms for EFL Korean adult learners. *Multimedia-Assisted Language Learning*, 18(3), 41-72.
doi:10.15702/mall.2015.18.3.41
- Khanova, J., McLaughlin, J. E., Rhoney, D. H., Roth, M. T., & Harris, S. (2015). Student perceptions of a flipped pharmacotherapy course. *American Journal of Pharmaceutical Education*, 79(9). <https://doi.org/10.1108/JARHE-09-2015-0069>
- Kim, M. K., Kim, S. M., Khera, O., & Getman, J. (2014). The experience of three flipped classrooms in an urban university: An exploration of design principles. *Internet and Higher Education*, 22, 37–50. <https://doi.org/10.1016/j.iheduc.2014.04.003>
- King, A. (1993) From sage on the stage to guide on the side. *College Teaching*, 41(1), 30-35.
doi:10.1080/87567555.1993.9926781
- Knowles, M. S. (1973). *The adult learner - A neglected species*. Houston, TX: Gulf Publishing Co.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2005). *The adult learner: The definitive classic in adult education and human resource development* (6th ed.). Amsterdam: Elsevier.
- Koo, C. L., Demps, E. L., Farris, C., Bowman, J. D., Panahi, L., & Boyle, P. (2016). Impact of flipped classroom design on student performance and perceptions in a pharmacotherapy course. *American Journal of Pharmaceutical Education*, 80(2), 1-9.
<https://doi.org/10.5688/ajpe80233>

- Kuh, G.D. (2009). The National Survey of Student Engagement (NSSE): Conceptual and empirical foundations. *New Directions for Institutional Research*, 141(7), 1–11.
<https://doi.org/10.1002/ir.283>
- Kuhn, K. L., & Rundle-Thiele, S. R. (2009). Curriculum alignment: Exploring student perception of learning achievement measures. *International Journal of Teaching and Learning in Higher Education*, 21(3), 351–361. Retrieved from <http://www.isetl.org/ijtlhe/>
- Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *The Journal of Economic Education*, 31(1), 30–43.
<https://doi.org/10.1080/00220480009596759>
- Leigh, K., Whitted, K., & Hamilton, B. (2015). Integration of andragogy into preceptorship. *Journal of Adult Education*, 44(1), 9-17. Retrieved from
<https://www.questia.com/library/p436763/journal-of-adult-education>
- LoPresto, M. C., & Slater, T. F. (2016). A new comparison of active learning strategies to traditional lectures for teaching college astronomy. *Educational Leadership*, 3(1), 59–76.
<http://dx.doi.org/10.19030/jaese.v3i1.9685>
- Love, B., Hodge, A., Grandgenett, N., & Swift, A. W. (2014). Student learning and perceptions in a flipped linear algebra course. *International Journal of Mathematical Education in Science and Technology*, 45(3), 317–324. <https://doi.org/10.1080/0020739X.2013.822582>
- Margulieux, L. E., McCracken, W. M., & Catrambone, R. (2016). A taxonomy to define courses that mix face-to-face and online learning. *Educational Research Review*, 19, 104–118.
<https://doi.org/10.1016/j.edurev.2016.07.001>
- Mason, G. S., Shuman, T. R., Cook, K. A. (2013). Comparing the effectiveness of an inverted classroom to a traditional classroom in an upper-division engineering course. *IEEE*

- Transactions on Education*, 56(4), 430–435. <https://doi.org/10.1109/TE.2013.2249066>.
- Mazur, E. (2009). Farewell, lecture? *Science*, 323(5910), 50–51. doi:10.1126/science.1168927
- McLaughlin, J. E., Roth, M. T., Glatt, D. M., Gharkholonarehe, N., Davidson, C. A., Griffin, L. M., ... Mumper, R. J. (2014). The flipped classroom. *Academic Medicine*, 89(2), 236–243. <https://doi.org/10.1097/ACM.0000000000000086>
- McNally, B., Chipperfield, J., Dorsett, P., Del Fabbro, L., Frommolt, V., Goetz, S., ... Rung, A. (2017). Flipped classroom experiences: Student preferences and flip strategy in a higher education context. *Higher Education*, 73(2), 281–298. <https://doi.org/10.1007/s10734-016-0014-z>
- Means, B., Toyama, Y., Murphy, R., & Baki, M. (2013). The effectiveness of online and blended learning: A meta-analysis of the empirical literature. *Teachers College Record*, 115(3), 1–47. Retrieved from <http://www.tcrecord.org/>
- Mehta, N. B., Hull, A. L., Young, J. B., & Stoller, J. K. (2013). Just imagine. *Academic Medicine*, 88(10), 1418–1423. <https://doi.org/10.1097/ACM.0b013e3182a36a07>
- Michael, J. (2006). Where's the evidence that active learning works? *Advances in Physiology Education*. 30(4), 159–167. <https://doi.org/10.1152/advan.00053.2006>
- Missildine, K., Fountain, R., Summers, L. & Gosselin, K. (2013). Flipping the classroom to improve student performance and satisfaction. *Journal of Nursing Education*, 52(10), 597–599. doi:10.3928/01484834-20130919-03
- Moffett, J. (2015). Twelve tips for “flipping” the classroom. *Medical Teacher*, 37(4), 331–336. <https://doi.org/10.3109/0142159X.2014.943710>
- Murray, D., Koziniec, T., & McGill, T. (2015). Student perceptions of flipped learning. *Paper presented at the Australasian Computer Educational Conference, Sydney, Australia.*

Retrieved from http://profiles.murdoch.edu.au/myprofile/david-murray/files/2012/06/Flipped_Learning.pdf

- Murray, L., McCallum, C., & Petrosino, C. (2014). Flipping the classroom experience: A comparison of online learning to traditional lecture. *Journal of Physical Therapy Education*, 28(3), 35–42. Retrieved from <https://aptaeducation.org/members/jopte/>
- Nederveld, A., & Berge, Z. L. (2015). Flipped learning in the workplace. *Journal of Workplace Learning*, 27(2), 162–172. <https://doi.org/10.1108/JWL-06-2014-0044>
- Nguyen, M., Miranda, J., Lapum, J., & Donald, F. (2016). Arts-based learning: A new approach to nursing education using andragogy. *Journal of Nursing Education*, 55(7), 407-410. <https://doi.org/10.3928/01484834-20160615-10>
- Nouri, J. (2016). The flipped classroom: For active, effective and increased learning - especially for low achievers. *International Journal of Educational Technology in Higher Education*, 13(1), 1–10. <https://doi.org/10.1186/s41239-016-0032-z>
- Nwosisi, C., Ferreira, A., Rosenberg, W., & Walsh, K. (2016). A study of the flipped classroom and its effectiveness in flipping thirty percent of the course content. *International Journal of Information and Education Technology*, 6(5), 348-351. [doi:10.7763/IJNET.2016.V6.712](https://doi.org/10.7763/IJNET.2016.V6.712)
- O’Flaherty, J., & Phillips, C. (2015). The use of flipped classrooms in higher education: A scoping review. *Internet and Higher Education*, 25, 85–95. <https://doi.org/10.1016/j.iheduc.2015.02.002>
- Owston, R., York, D. & Murtha, S. (2013). Student perceptions and achievement in a university blended learning strategic initiative. *Internet and Higher Education*, 18, 38-46. <https://doi.org/10.1016/j.iheduc.2012.12.003>

- Park, E. L., & Choi, B. K. (2014). Transformation of classroom spaces: Traditional versus active learning classroom in colleges. *Higher Education*, 68(5), 749–771.
<https://doi.org/10.1007/s10734-014-9742-0>
- Peterson, C. M., & Ray, C. M. (2013). Andragogy and metagogy: The evolution of neologisms. *Journal of Adult Education*, 42(2), 80–85. Retrieved from
<https://www.questia.com/library/p436763/journal-of-adult-education>
- Phillips, C. R., & Trainor, J. E. (2014). Millennial students and the flipped classroom. *Journal of Business Education and Leadership*, 5(1), 102–112. Retrieved from
<http://asbbs.org/journals/>
- Prince, M. (2004). Does active learning work? A review of the research. *Excellence in College Teaching*, 93(3), 223–231. <https://doi.org/10.1002/j.2168-9830.2004.tb00809.x>
- Ranvar, S. (2015). The relationship between self-directed learning and the parameters affecting adult education. *European Online Journal of Natural and Social Sciences*, 4(3), 489–499. Retrieved from <http://european-science.com/eojnss>
- Roach, T. (2014). Student perceptions toward flipped learning: New methods to increase interaction and active learning in economics. *International Review of Economics Education*, 17, 74–84. <https://doi.org/10.1016/j.iree.2014.08.003>
- Robb, M. (2013). Effective classroom teaching methods: A critical incident technique from millennial nursing students' perspective. *International Journal of Nursing Education Scholarship*, 10, 301-306. doi:10.1515/ ijnes-2013-0024
- Roehl, A., Reddy, S. L., & Shannon, G. J. (2013). The flipped classroom: An opportunity to engage millennial students through active learning. *Journal of Family and Consumer Sciences*, 105(2), 44-49. <https://doi.org/doi.org.proxy2.lib.umanitoba.ca/10.1>

- Ryan, A., & Tilbury, D. (2013). Flexible pedagogies: New pedagogical ideas. *The Higher Education Academy*, (November), 41. Retrieved from https://www.heacademy.ac.uk/system/files/resources/npi_report.pdf
- Sahin, A., Cavlazoglu, B., & Zeytuncu, Y. E. (2015). Flipping a college calculus course: A case study. *Journal of Educational Technology & Society*, 18(3), 142-152. Retrieved from <http://www.ifets.info/>
- Samaroo, S., Cooper, E., & Green, T. (2013). Pedandragogy: A way forward to self-engaged learning. *New Horizons in Adult Education & Human Resource Development*, 25(3), 76–90. <https://doi.org/10.1002/nha3.20032>
- Shattuck, J. (2016). A parallel controlled study of the effectiveness of a partially flipped organic chemistry course on student performance, perceptions, and course completion. *Journal of Chemical Education*, 93(12), 1984-1992. doi:10.1021/acs.jchemed.6b00393
- Simpson, V., & Richards, E. (2015). Flipping the classroom to teach population health: Increasing the relevance. *Nurse Education in Practice*, 15(3), 162–167. <https://doi.org/10.1016/j.nepr.2014.12.001>
- Sinouvasane, D., & Nalini, A. (2016). Perception of flipped classroom model among year one and year three health science students. *International Journal of Information and Education Technology*, 6(3), 215–218. <https://doi.org/10.7763/IJET.2016.V6.687>
- Springer, S. E., Wilson, T. J., & Dole, J. A. (2014). Ready or not: Recognizing and preparing college-ready students. *Journal of Adolescent & Adult Literacy*, 58(4), 299-307. doi:10.1002/jaal.363

- Strayer, J. F. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning Environments Research*, 15(2), 171-193.
doi:10.1007/s10984-012-9108-4
- Struyven, K., Dochy, F., & Janssens, S. (2005). Students' perceptions about evaluation and assessment in higher education: A review. *Assessment & Evaluation in Higher Education*, 30(4), 331–347. <https://doi.org/10.1080/0260293042000318091>
- Swart, W., & Wuensch, K. L. (2016). Flipping quantitative classes: A triple win: Flipping quantitative classes. *Decision Sciences Journal of Innovative Education*, 14(1), 67-89.
doi:10.1111/dsji.12088
- Tainsh, R. (2016). Thoughtfully designed online courses as effective adult learning tools. *Journal of Adult Education*, 45(1), 7-9. Retrieved from
<https://www.questia.com/library/p436763/journal-of-adult-education>
- Talley, C. P., & Scherer S. (2013). The enhanced flipped classroom: Increasing academic performance with student-recorded lectures and practice testing in a “flipped” STEM course. *The Journal of Negro Education*, 82(3), 339-347.
doi:10.7709/jnegroeducation.82.3.0339
- Tsang, A., & Harris, D. M. (2016). Faculty and second-year medical student perceptions of active learning in an integrated curriculum. *Advances in Physiology Education*, 40(4), 446–453. <https://doi.org/10.1152/advan.00079.2016>
- Tucker, B. (2012). The flipped classroom. *Education Next*, 12(1),
<https://doi.org/http://dx.doi.org/10.1108/17506200710779521>
- United States Department of Education. (2010). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies. *Washington, D.C.: U.S.*

Department of Education, Office of Planning, Evaluation, and Policy Development.

Retrieved from <http://www2.ed.gov/rschstat/eval/tech/evidencebased-practices/finalreport.pdf>

Van Sickle, J. (2016). Discrepancies between student perception and achievement of learning outcomes in a flipped classroom. *Journal of the Scholarship of Teaching & Learning*, 16(2), 29-38. doi:10.14434/josotl.v16i2.19216

Vaughan, M. (2014). Flipping the learning: An investigation into the use of the flipped classroom model in an introductory teaching course. *Education Research and Perspectives*, 41, 25-41. Retrieved from <http://www.erpjournals.net/>

Wang, M. C., Haertel, G. D., & Walberg, H. J. (1997). What helps students learn? Spotlight on student success. *Educational Leadership*. Retrieved from <http://www.ascd.org/publications/educational-leadership.aspx>

Warner, R. (2013). *Applied statistics: From bivariate through multivariate techniques* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Westermann, E. B. (2014). A half-flipped classroom or an alternative approach?: Primary sources and blended learning. *Educational Research Quarterly*, 38(2), 43. Retrieved from <http://erquarterly.org>

Wilson, S. G. (2013). The flipped class: A method to address the challenges of an undergraduate statistics course. *Teaching of Psychology*, 40(3), 193–199. <https://doi.org/10.1177/0098628313487461>

Ziegelmeier, L. B., & Topaz, C. M. (2015). Flipped calculus: A study of student performance and perceptions. *Problems, Resources, and Issues in Mathematics Undergraduate Studies*, 25(9–10), 847–860. <https://doi.org/10.1080/10511970.2015.103130>

Zilinskiene, I., Malinauskiene, E., & Smith, R. (2016). Effectiveness and efficiency of blended learning model for developing leadership skills. *Proceedings of the European Conference on E-Learning, ECEL, January*, 718–727.

APPENDIX A

From: Ron Owston <ROwston@edu.yorku.ca>
Sent: Thursday, February 16, 2017 11:30 AM
To: Katrina Atkins
Subject: RE: instrumentation

Hello Katrina,
Yes you have my permission. I'd be interested to know your results once you complete your study.
With best wishes, Ron

Ron Owston, PhD | University Professor
Faculty of Education | York University | Winters 242 | 4700 Keele St. | Toronto, Ontario | M3J 1P3
(416) 736 5667 | rowston@edu.yorku.ca | <http://ronowston.ca> | @RonOwston



From: Katrina Atkins [<mailto:katrina.atkins@hotmail.com>]
Sent: Thursday, February 16, 2017 7:53 AM
To: Ron Owston <ROwston@edu.yorku.ca>
Subject: instrumentation

Hello Dr. Owston,

I am a doctoral candidate at Liberty University in Virginia, USA. I am currently conducting research on student perceptions of the flipped classroom. The Blended learning Survey for Students that you created in "Student perceptions and achievement in a university blended learning strategic initiative" will work well in my study. I would like to gain permission to use this survey.

Thank you so much for your time.

APPENDIX B

The Liberty University Institutional
Review Board has approved
this document for use from
10/6/2017 to 10/5/2018
Protocol # 2970.100617

CONSENT FORM
STUDENT PERCEPTIONS AND COURSE OUTCOMES
IN A HIGHER EDUCATION PARTIALLY FLIPPED CLASSROOM
Katrina Atkins
Liberty University
School of Education

You are invited to be in a research study of relationship between the flipped classroom and grades. You were selected as a possible participant because you are enrolled in the general education course requirement SPC 1017: Fundamentals of Speech Communication at Palm Beach State College with Mrs. Pachter for the fall 2017 school year, and you are at least 18 years old. Please read this form and ask any questions you may have before agreeing to be in the study.

Katrina Atkins, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

Background Information: The purpose of this study is to determine if there is a relationship between the flipped classroom and end of course grades and overall college grade point average.

Procedures: If you agree to be in this study, I would ask you to do the following things:

1. Complete the Blended Learning survey, which should take about 20 minutes.
2. Allow researcher to collect final course grades

Risks and Benefits of Participation: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life. Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include determining if the flipped classroom is beneficial to students in higher education classrooms.

Compensation: Participants will be compensated for participating in this study. Ten students who participate in the survey will have an opportunity to receive a \$5 gift card to Starbucks. Every 13th or 15th participant, depending on the number of total students who participate, will be selected to receive a gift card.

Confidentiality: The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. I may share the data I collect from you for use in future research studies or with other researchers; if I share the data that I collect about you, I will remove any information that could identify you, if applicable, before I share the data.

- Survey responses will be linked to course grades and self-reported college GPA. Participants student identification numbers will be used in place of names. Students will not be identified directly in the researcher's dissertation, and the data will be reported in

The Liberty University Institutional
Review Board has approved
this document for use from
10/6/2017 to 10/5/2018
Protocol # 2970.100617

aggregate, which means group data will be reported, not individual student data. The surveys will only be viewed by the researchers; the professor will not have access.

- Data will be stored on a password locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University, Palm Beach State College, or your current course grades. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships. Your grades will not be affected by participation in the survey. Your instructor will not have access to the individual surveys but will see the reported group data at the conclusion of the course. The instructor will not know who participated until after the course grades are finalized, as she will only provide grades of participants to the researcher.

How to Withdraw from the Study: If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you will be destroyed immediately and will not be included in this study.

Contacts and Questions: The researcher conducting this study is Katrina Atkins. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at katkins4@liberty.edu. You may also contact the researcher's faculty advisor, Dr. Barthlow, at mjbarthlow@liberty.edu.

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. 1887, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT.)

Signature of Participant

Date

Signature of Investigator

Date

APPENDIX C

Date: 10/04/17

PI Name: Katrina Atkins

Application type (Initial, Modification, Continuing): Modified

Review Level (Exempt, Expedited, Full Board): Expedited

Approval Expiration: 10/03/18

Study Title:

Student Perceptions and Course Outcomes in a Higher Education Partially Flipped Classroom

Dear Ms. Atkins:

The purpose of this letter is to inform you that your IRB application has been approved by an expedited review. Your responsibilities include the following:

1. Please provide a copy of this approval to your College sponsor (if applicable)
2. Follow the protocol submitted with your modified application. If you need to make changes, please submit a new application noting any changes before you make them.
3. If there is a consent process in your research, you must use the consent form approved with your application. Please make sure that all participants receive a copy of the consent form. Regardless of consent form use, be sure that participants understand their participation in the research is voluntary.
4. If there are any injuries, problem or complaints from participants, you must notify the IRB at [REDACTED] within 24 hours.
5. Close your file with IRB when your research has concluded.

Please note your research is approved as "expedited" based on the Office of Human Research Protection (OHRP) Expedited Review Category 7: *Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.*

APPENDIX D

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

October 6, 2017

Katrina Atkins

IRB Approval 2970.100617: Student Perceptions and Course Outcomes in a Higher Education Partially Flipped Classroom

Dear Katrina Atkins,

We are pleased to inform you that your study has been approved by the Liberty University IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

APPENDIX E

Dear Mrs. Atkins,

In regards to collecting data during class time in relation to your flipped classroom research, you have my permission. I also agree to provide final student course grades once posted to the college.

Sincerely,

Professor Zed