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ENHANCING ACADEMIC ACHIEVEMENT AND SATISFACTION  
BY FLIPPING THE TEACHER PREPARATION  
CLASSROOM

A Dissertation

by

Rene R. Zuniga

Submitted to the Graduate College of  
The University of Texas Rio Grande Valley  
In partial fulfillment of the requirements for the degree of

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Major Subject: Curriculum and Instruction in Educational Technology



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December 2015



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## ABSTRACT

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This study compared flipped classrooms versus online courses to study the effects of the two instructional methodologies on academic achievement and satisfaction in an undergraduate *Introduction to Education*, EDUC 1301 course. Students self-matriculated in either traditional EDUC 1301 courses which were flipped or in EDUC 1301 online courses. Students' final grades were used to assess academic achievement in both teaching methodologies. An end-of-course student evaluation of instructor performance was used to assess students' satisfaction in the courses.

A casual comparative research design was used to examine the effectiveness of both teaching methodologies by studying academic achievement and student satisfaction. The results of the study indicated that there was no differences between the two instructional methodologies in student satisfaction. Students were equally satisfied in both teaching methodologies. Statistical significant differences were found, however, in the students' academic achievement level. The percent of students in the flipped classroom who passed the courses was 92% compared with 75% academic achievement level in the students who passed the online courses.

The number of students who passed the EDUC 1301 flipped classroom courses as presented in Table 1, and Figure 2, was 83 out of 90, resulting in an academic achievement level



of 92%. On the contrary, 118 out of 157 students passed the EDUC 1301 online courses, as shown in Table 1, and Figure 2 representing an academic achievement level of 75%.

The Pearson chi-square test of association yielded a  $\chi^2$  of 10.99, a  $df = 1$ , and a  $p$  value of 0.0001 which was statistically significant at the 95% confidence level ( $p < .05$ ), Table 3.

Students who self-enrolled in the flipped classrooms did statistically significantly better than those students who self-enrolled in the online courses. Instructional methodology, however, was an insignificant predictor of student satisfaction between the students in the flipped classrooms and the online courses.

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## CHAPTER I

### INTRODUCTION

Educators in teacher preparation programs have the opportunity to increase the number of effective educators who are able to engage the learners in a changing technological environment. While many of the educators in teacher preparation programs have used different models of teaching, these models are not meeting the needs of pre-service teachers who are growing up with digital tools and mobile devices. There are many strategies that involve technology and pre-service teachers in the education process. Educators who train pre-service teachers may: provide online assignments; as well as use electronic discussion boards to create interactivity in social networks to stay in touch with their students, and mobile devices to provide instant communication. Research, nonetheless, indicates that many educators are not prompt to include technology or use it as part of their repertoire of educational techniques (Russell, Bebell, O'Dwyer, & O'Connor, 2003). In addition, there is some evidence that technology helps students with higher-order thinking skills and improves their problem solving ability (Goldberg, Russell, & Cook, 2003). Therefore, there is a compelling need for educators in teacher preparation programs to utilize emerging technology and mobile devices to cultivate the learner's higher-forms of thinking-and technology literacy.

Furthermore, the time devoted to instructional activities has been curtailed by different initiatives that promise to promote student engagement. More and more, teacher preparation educators are expected to emphasize concepts such as classroom management, societal problems,

teaching English language learners, lesson design, certification exam preparation, and a host of other required curriculum. Consequently, the time devoted to helping teacher education program students develop technological literacy is decreasing considerably. The flipped classroom is one instructional methodology that shows promise by taking the lecture out of the classroom to provide more class time to learning activities that engage the learners in the content. The flipped classroom allows instructors to spend more time in connecting content, while promoting self-directed learning and the utilization of digital tools.

The research on the effectiveness of the flipped classroom as an instructional methodology and its effect on student satisfaction and academic achievement, particularly in teacher preparation programs, is still in its infancy. Many instructors are already experimenting with variations of a flipped classroom and experiencing promising outcomes. In a recent study, Westermann (2014) found benefits for students enrolled in flipped classrooms. Students' responses to the end of course survey indicated agreement on the value of providing resources before class to reinforce the material presented in class and to free time for "Socratic discussion" (Westermann, 2014, p. 55).

However, there is still a gap in the research on a flipped classroom's effect on academic achievement and student satisfaction, especially in teacher preparation programs. This study aims to initiate the conversation on the effect of the flipped classroom instructional methodology on student satisfaction and academic achievement in teacher education preparation. Therefore, this study reviewed data from multiple flipped classrooms and online courses in a teacher preparation program, taught by the same instructor, to analyze the effect of the flipped classroom instructional methodology on student satisfaction and academic achievement.

## **Need for the Study**

A common criticism of using technology to engage learners is that money is being spent on initiatives and/or fads that have no impact on student success and student satisfaction. There is a misconception by some administrators that technology is the panacea for the deep-rooted problems in higher education (Hsu, Lin, Ching, & Dwyer, 2009). One of the reasons for these misconceptions is that concepts, such as the flipped classroom, are still in their infancy and have not been well researched. While considerable research has been done on the effectiveness of online learning, blended learning, and face-to-face learning (Manochehri & Young, 2006; Sanders & Morrison-Shetlar, 2001; Alghazo, 2006; Oliver, 2008), the effectiveness of the flipped classroom instructional methodology compared to a fully online instructional methodology has received far less attention (Wootton, 2012; Graham, 2013). Therefore, it is necessary to study the effects of these two methods of instructional delivery (online versus flipped classroom) on student academic achievement and satisfaction levels in undergraduate teacher preparation program courses. Similarly, learners' satisfaction and its' relationship to academic achievement in a flipped classroom is unknown and should be studied.

## **Statement of the Problem**

Proliferation of online resources and mobile technologies for classroom use is increasing rapidly. These resources are being utilized considerably to transform how students are taught and how instructors teach. Institutions of higher learning are aggressively modifying how instruction is delivered to improve success and increase student satisfaction. Nonetheless, strategies to use these resources in teacher preparation programs are minimal or non-existent.

There has been much interest in the flipped classroom, which incorporates online resources and mobile technologies to engage the learner and increase academic achievement and

satisfaction. The effectiveness of the flipped classroom in teacher education preparation, though, has not been established. This casual-comparative study examined two different modes of instructional delivery (online versus flipped methodology) to determine whether student achievement and student satisfaction are affected more by one mode of instructional delivery than the other.

A flipped classroom is a learning environment where students use resources (videos of lectures, podcasts of material, content readings) outside of the classroom to allow more class time for hands-on instructional activities (Enfield, 2013). Using the Internet to provide course materials in combination with face-to-face interaction that is common in traditional community college classrooms makes this research project different than studying fully online courses and/or fully face-to-face courses. Initial research on the effectiveness of the flipped classroom shows promising results (Baker, Kutz, & Wilkinson, 2013; Findlay-Thompson & Mombourquette, 2014; Wootton, 2012; Manochehri & Young, 2006). In addition, often, instructional methodologies are adopted without much scrutiny of their merits. There is very little research on the outcomes of online courses and the flipped classroom as methods to improve student success and satisfaction. This lack of evidence warrants this study.

### **Purpose of the Study**

The purpose of this study was to describe the effects of two different instructional methodologies (online versus flipped classroom) on student achievement and satisfaction in an undergraduate EDUC1301, *Introduction to Education* course. One group of students was self-enrolled in five traditional courses that used the flipped classroom instructional methodology. The other group of students was self-enrolled in seven online courses. Data on student achievement and student satisfaction in both instructional methodologies was collected and

compared. In this study, the independent variable was the instructional methodology (flipped classroom vs. online). The dependent variables were student achievement and satisfaction in the courses. End-of-course grades were used as a measure of student achievement. Selected end-of-course evaluation questions were used to measure student satisfaction in the course. End-of-course evaluations have been used effectively to measure student satisfaction (Marlin & Niss, 1980; Benton 2011; Hansen 2008). Student satisfaction has been used as a significant measure of the quality of a course and has been connected to student success (Hansen 2008).

### **Research Questions and Hypotheses**

Based on the literature reviews, there is an increasing interest in using the flipped classroom instructional methodology in the teaching-learning process. A comparative review of the flipped classroom instructional methodology versus online courses is important with respect to student achievement and student satisfaction. The following questions formed the foundation for this study:

(1) Is there a statistically significant difference in academic achievement, as measured by end-of-course grades, of students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301?

(2) Is there a difference in satisfaction, as measured by end-of-course evaluations, in students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301?

The following hypotheses were tested:

(1) There is a statistically significant difference in academic achievement level between students in undergraduate EDUC 1301 flipped classrooms and those in undergraduate EDUC 1301 online courses.



(2) There is a difference in student satisfaction between students in undergraduate EDUC 1301 flipped classrooms and those in undergraduate EDUC 1301 online courses.

### **Significance of the Study**

Using the Internet to provide course materials plus the face-to-face interaction that is common in traditional community college classrooms makes this research project different than just studying fully online courses and fully face-to-face courses. Another concept that will form the foundation for this research is the flipped classroom instructional methodology. A flipped classroom is a classroom where material is delivered wholly or partially via web-based instruction (Enfield, 2013). In spite of the attractiveness of a flipped classroom and using the Internet and Internet resources to increase academic achievement and engage students in various undergraduate courses, the effect of these methods have not been properly researched in education preparation courses. Any benefits or weaknesses attributable to a flipped classroom should be investigated to improve the training of future educators. Similarly, student satisfaction in a flipped classroom in a teacher education preparation course should be examined for any strengths, weakness, and opportunities. Despite the popularity of online courses, the use of a flipped classroom in an Introduction to Education course has not been well researched.

## **Definitions of Terms**

The key terms for this study are defined as follows:

### **Academic Achievement**

For this study, academic achievement was defined as the participant's grade in connection with each course. Academic achievement was measured with the participants' final grades in the courses. Letter grades of A, B, C, or D were considered passing and having met academic success in the courses.

### **Active Learning**

A major idea of active learning is the notion of learning while performing a task (Schiller, 2013). The definition of active learning involves doing while learning (Bonwell & Eison, 1991). When "doing" is incorporated in learning activity, enjoyment and learning outcomes improve significantly (Schiller, 2013). Schiller added that through active learning, students gain knowledge by manipulating and active exploration.

### **Andragogy**

In this study, andragogy refers to "the art and science of helping adults learn" (Knowles, 1980, p. 43). Knowles (1980) noted that adult learners are self-directed, independent and as such, the instructor's main role is that of a facilitator.

### **Asynchronous Instruction**

Asynchronous instruction occurs at different times and in different times, and is thereby not limited by the constraints of time and location (Fenton & Watkins, 2010).

### **Constructivism**

There are different constructivist perspectives, but a common theme is that learning is an active process (Brunner, 1966). Brunner (1966) also emphasized the idea that a constructivist

approach to teaching is based on the concept that students actively construct meaning to what they are learning.

### **Distance Education**

Distance education offers the flexibility of learning in any location and at any hour of the day, where there is a computer. In addition, the opportunities to participate in education have expanded for those individuals who are at a great distance from the physical location where the course is being offered. Also, distance learning brings together people with a varied diversity of “social, economic, cultural, and language backgrounds” (Fenton & Watkins, 2010, p. ix). At the college where this study was conducted, distance education is also referred to as online learning. Distance education courses are offered in several formats: online (being the most common), hybrid, web-enhanced (similar to the instructional methodology used in this study), telecourses, and videoconferencing (South Texas College Catalog, 2014-15).

### **Face-to-Face Course**

For this study, a face-to-face course is a traditional course that requires on campus attendance.

### **Flipped Classroom**

A flipped classroom is a classroom where students use resources (videos of lectures, podcasts of material, content readings, documents) outside of the classroom, which allows class time for more hands-on instructional activities (Enfield, 2013). In this study, the online activities were used to supplement the instruction that was provided in class.

### **Mobile Learning**

Mobile learning emphasizes flexibility, availability, immediacy, and opportunity (Baran, 2014). Mobile learning also embraces the characteristics of mobility in various contexts such as

physical, conceptual, and social spaces. The “relationship between the context of learning and context of being” is unique to mobile learning, as learning may occur in independent, formal, or socialized contexts (Frohberg et al., 2009, p. 313).

### **Online Course**

For purposes of this study, online courses refer to courses in which materials are delivered entirely online, and students have access to the instructor only electronically (McLaren, 2004).

### **Student Satisfaction**

In this study, student satisfaction is defined as students’ attitudes towards an instructional methodology. Student satisfaction will be measured using the institution’s end-of-course evaluation where the study was conducted. The survey measures course design, student preparation, student participation, and instructional methods. One study (Marlin & Niss, 1980) concluded that end-of-course evaluations are effective in measuring student learning, student satisfaction, and instructor effectiveness. Another study (Benton, 2011), indicated that end-of-course evaluations may indicate student satisfaction. Student satisfaction has been used as a significant measure of the quality of a course and has been connected to student success (Hansen, 2008).

### **Synchronous Instruction**

Instruction that has been scheduled and occurs live and in real-time whereas instructor and student are able to communicate at the same time from locations that may be separated by distance (Fenton & Watkins, 2010).

## **Teacher Preparation Program**

For this study, a teacher preparation program is a program designed to help individuals into becoming effective educators. The Education Department website at South Texas College provides information about the Associate of Arts in Teaching (AAT) which is part of the teacher preparation program aimed to transfer to a university traditional teacher preparation program.

## **Web-Enhanced Course**

A web-enhanced course is a course that combines face-to-face instruction along with some type of online instruction. The course uses a learning management system to facilitate course contents. Some universities also referred to these courses as a hybrid course or as blended learning. A web-enhanced classroom is defined succinctly by Boettcher and Conrad (2010) as a “course that uses web-based technology to facilitate what is essentially a face-to-face course” (p. 9).

## **Summary**

In this study, the researcher examined the effects of flipping five Introduction to Education, EDUC 1301, courses versus seven online courses to analyze the effect of the flipped classroom instructional methodology on student satisfaction and academic achievement. Quantitative data on end-of-course evaluations and four questions that provided qualitative data, were used to examine student satisfaction in both instructional methodologies. Final grades in the courses were used to measure student academic achievement.

A comprehensive review of existing literature related to concepts that may affect satisfaction and success in the flipped classroom is presented in Chapter II of this study. The literature is subdivided into separate sections, including (a) teacher preparation; (b) active learning; (c) andragogy; (d) active learning; (e) constructivism; (f) uses and gratification theory;

(g) social presence; (h) the flipped classroom model; (i) distance education; and (j) theoretical framework.

## CHAPTER II

### REVIEW OF LITERATURE

#### **Introduction**

Literature reviewed for this study included concepts related to teacher preparation, active learning with technology, constructivism, andragogy, pedagogy, uses and gratification theory, social presence, and the strengths, limitations, and opportunities of the flipped classroom instructional methodology of instruction and of online courses. Issues related to student achievement and student satisfaction in the two instructional methodologies in different content areas are also reviewed. Uses of online resources in a flipped classroom was also reviewed as a process by which students in a flipped classroom can grow and become active learners.

#### **Teacher Preparation**

Teacher preparation education programs are designed to cultivate and transform individuals into becoming effective educators. The issue of how to better prepare these individuals on how to deal with the demands of today's technology-driven classroom has been part of discussions at the local, state, and federal level (Ottenbreit-Leftwich, Brush, Strycker, Gronseth, Roman, Abaci, & Plucker, 2012). Although teacher preparation programs must adhere to state requirements, dissimilarities among the different programs exist. Every program, though, must show progress in the form of number of certified educators and decreasing attrition in the teaching profession. Texas has already developed a system to track teacher preparation graduates and the programs that prepares them (Cochran-Smith & Power, 2010). In Texas,

teacher preparation programs must prepare students to become effective educators and to take at least two exams in pedagogy and content. The content exam includes a technology section.

At the federal level, there have been several initiatives to improve teacher preparation programs (Taking Action to Improve Teacher Preparation, 2015). To that end, the teaching profession and teacher preparation programs have witnessed an array of waves of reform (Feuer, Floden, Chudowsky, & Ahn, 2013). Concerns about the quality of educators in today's classrooms has prompted these reforms. The emphasis of federal regulations that impact teacher preparation programs are designed to provide effective educators in all classrooms in the United States (Taking Action to Improve Teacher Preparation, 2015).

### **A Nation at Risk**

Many of the reforms have required the integration of technology as part of their mandates. With the publication of *A Nation at Risk*, there was a shift to more accountability and a focus on standardization (National Commission on Excellence in Education, 1983). In addition, there was an emphasis on improvement of what schools and colleges were producing. One of the recommendations in this report was to reform the United States' educational system because "technological innovation is being overtaken by competitors throughout the world" (National Commission on Excellence in Education. 1983, p. 112). This report also concluded that life-long learning is an "indispensable investment required for success in the 'information age' we are entering" (National Commission on Excellence in Education, 1983, p. 114). Colleges, therefore, must prepare teachers who are technology savvy and who in turn will prepare better technology prepared students.



## **Goals 2000**

The Goals 2000 reform initiative further emphasized reform in technology education (Goals 2000: Educate America Act, 1994). This reform required that educators be accountable for student performance on standardized tests. Notwithstanding the debatable aspects of Goals 2000, there was an emphasis in leadership in educational technology that was more or less obscure and not discussed much. Among other issues, Goals 2000 mandated technology infusion in all education programs. The educational technology reform movement in Goals 2000 provided an impetus to encourage effective use of technology in schools and that “no school system will be excluded from the technological revolution” (Goals 2000: Educate America Act, 1994, sec 231, para (1) (C)). Other leadership in educational technology mandates included in this reform were designed to:

- promote awareness of the potential of technology for improving teaching and learning;
- support State and local efforts to increase the effective use of technology for education;
- demonstrate ways in which technology can be used to improve teaching and learning;
- promote high-quality professional development opportunities for teachers and administrators regarding the integration of technology into instruction and administration; (Goals 2000: Educate America Act, 1994, sec 231, para 2, 3, 4, 6).

## **No Child Left Behind**

One of the latest attempts to engage teacher education preparation programs in improving quality education was the No Child Left Behind (NCLB) Act of 2001. Besides holding local school districts accountable for student success, NCLB also requires that state educational agencies increase “the number of highly qualified teachers in the classroom.” (Sec 2101, para 2). Notably, the NCLB also places an emphasis on technology to improve student success.

Technology-driven objectives of the NCLB were designed to:

- provide assistance to States and localities for the implementation and support of a comprehensive system that effectively uses technology in elementary schools and secondary schools to improve student academic achievement.
- promote initiatives that provide school teachers ...with the capacity to integrate technology effectively into curricula and instruction that are aligned ...through such means as high-quality professional development programs.
- enhance the ongoing professional development of teachers ...by providing constant access to training and updated research in teaching and learning through electronic means to support the development and utilization of electronic networks and other innovative methods, such as distance learning, of delivering specialized or rigorous academic courses and curricula for students in areas that would not otherwise have access to such courses and curricula, particularly in geographically isolated regions.

- support local efforts using technology to promote parent and family involvement in education and communication among students, parents, teachers, principals, and administrators (Sec 2401, para 1, 4, 5, 6, 8).

Because of these initiatives, effective teacher preparation programs must incorporate digital technologies as part of their curriculum. The National Education Association (NEA) strongly believes that technology in education enhances student satisfaction and learning (NEA Policy Statement on Digital Learning, 2013). Furthermore, NEA believes that future educators must be adequately prepared to incorporate the latest and future technology.

### **Andragogy**

In order to facilitate the use of technology in the classroom for future educators, those teaching them must also be well versed in the use of technology and how adult learners learn. Malcolm Knowles first came up with the concept of andragogy (Knowles, 1968). Knowles research led him to differentiate between andragogy and pedagogy. He defined andragogy as “the art and science of helping adults learn” (Knowles, 1980, p. 43). Andragogy is helpful in helping future educators because of its underlying principles. Knowles (1980) described the adult learner as someone who is (1) an independent learner (2) experienced because of the maturity level, (3) needing to learn based on the changing social roles, (4) interested in applying knowledge immediately, and (5) internally motivated to learn. In addition, the theory of andragogy acknowledges the idea that the teacher acts more as a facilitator than a presenter of facts (Henschke, 2011). These principles will become part of the basis of the flipped classroom and online learning teaching strategies. Teacher preparation programs must, therefore, target those principles when planning and designing instructional activities for online and flipped courses.

Andragogy is part of the basis for developing technology-based activities (Henschke, 2011). In her book, Susan Isenberg (2007) presented a design to bring together the concept of andragogy and online learning. In order to enhance the learning needs of the adult learners, educators must move away from traditional methodologies and implement strategies for self-directed learners. Teacher preparation students, using different methodologies, may be “very self-directing in their learning outside of school” (Knowles, 1984, p. 13). Teacher education programs are capable of developing technology skills of future educators (Anderson, 2011).

### **Active Learning**

One of the premises of learning how to teach is based on the principle of active learning. A major idea of active learning is the notion of learning while performing a task (Schiller, 2013). The definition of active learning involves doing while learning (Bonwell & Eison, 1991). Many teacher preparation programs spend much of the instructional time in lecture-based theories and not enough time on active learning (Barone, Berliner, Blanchard, Casanova, & McGowan, 1996). There has been a concentrated effort, though, to include more active learning in teacher education preparation programs (Lawless & Pellegrino, 2007).

Active learning should also be paramount in the design and development of activities in the online and flipped classroom. The activities should feature interactive modules where the learner is actively engaged. These processes have been shown to elicit success (Pearlson & Saunders, 2012). Also, when active learning is incorporated in a learning activity, learning has improved dramatically (Schiller, 2013). Using the concept of active learning, Schiller (2013) developed an instructional strategy that may be applicable to teacher education programs.

## **Constructivism**

Closely related to active learning is the constructivist learning theory (Piaget, 1977).

There are different constructivist perspectives but a common theme is that learning is an active process (Brunner, 1966). Using Bruner's work, effective instruction should (a) personalize learning to facilitate learner's interest, (b) be structured, (c) be sequenced, and (d) be reinforced (1960). Bruner (1966) also maintained that "Practice in discovering for oneself teaches one to acquire information in a way that makes that information more readily viable in problem solving" (p. 26).

When considering the online and flipped classrooms, the social constructivist method to learning enables teacher and student socially interactive exchanges (Vygotsky, 1962). Online tools and methods have the potential to facilitate a social constructivist approach to preparing future educators in an online and flipped classroom (Bryant & Bates, 2015). In addition, this approach allows learners to "make sense of the world around them, as well as new information, by working to construct knowledge through interaction with others, texts, (and) social media" (Bryant & Bates, 2015, p. 17).

According to researchers, teacher preparation programs should incorporate training on the effective use of technology (Ottenbreit-Leftwich, Brush, Strycker, Gronseth, Roman, Abaci, & Plucker, 2012). Today's technologies and growing availability of Internet resources makes it possible for instruction to be interactive even if it is in an online environment. Most of today's students in today's classrooms are digital natives who are increasingly exposed to technological advances (Ottenbreit-Leftwich et al., 2012). This is an opportunity for future educators to use technology and the Internet to expand the teaching and learning progression. Research by Katz (1959), Vygotsky (1962), Piaget (1970), Short, Williams, and Christie (1976), Bandura (1977),

Daft and Engel (1984), and Tinto (2014) demonstrated the benefits of technology as a constructivist approach to engaging and learning.

### **Uses and Gratification Theory**

There seems to be a common assumption that using technology leads to task fulfillment and enjoyment (Yang, 2013). In addition, research on using media as a tool for learning has been shown to lead to more enjoyment in the learning experience (Mondi, Woods, & Rafi, 2008). Katz's Uses and Gratification Theory (Katz, 1959) instigated the move of learning *with* media as opposed to learning *from* media. His theory highlighted the use of technology as an active participant drawing on the constructivist approach. The Uses and Gratification Theory perspective is important in the online and flipped classroom because the learner is not passive, but rather actively involved (Rubin 1993). Students are not just using the Internet as a communication tool, but rather as a medium to fulfill an educational need or purpose. The Internet, at its current stage, may be used as a tool for interpersonal communication and interactivity (Hicks, Comp, Horovitz, Hovarter, Miki, & Bevan, 2012). Leung (2009) also found that the Internet is used by many people for cognitive needs. With the advent of mobile technologies, those cognitive needs may be met anywhere and anytime. Therein, when flipping a classroom, students, who never leave home without their cell phones, have access to course material on the go.

### **Mobile Devices**

As mobile technologies become more prevalent, access to information for cognitive purposes becomes a primary function of interaction for college students (Correa, Hinsley, & Gil de Zúñiga, 2010). Students are not just using mobile devices for social purposes. Another need for mobile devices has been identified, cognitive needs. Katz theory accentuated this need as a

motivation to use technology (Katz, Haas, & Gurevitch, 1973). This increases the likelihood that college students use mobile devices to provide content, understanding, and increase knowledge. Research on mobile technologies identified that Internet users also spend time for cognition purposes not only for social needs (Leung, 2009).

On that note, the research indicates that more and more people are using the Internet and mobile devices. For example, research by Madden & Kickuhr (2011) found that 65% of adults engage in some form of Internet use. The number of adults who are engaging in Internet usage does not seem to be slowing down (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015). Katz' Uses and Gratification Theory (1959) illustrates that people use media to satisfy cognitive needs. The Internet, as a media, therefore, may satisfy the need of college students for cognitive purposes. Kat'z theory is particularly suitable for this study, which includes the Internet learning environment and the flipped classroom. Mobile devices are not only useful for social media but may also be used to satisfy cognition needs (Katz et al., 1973).

### **Social Presence**

As the availability of mobile devices and Internet resources continues to grow, there is greater potential of using those tools to meet the cognitive needs of future educators and their future students. Mobile devices, in the online environment, show promise of integrating a constructivist approach to the online learning environment and to the sense of being present. In cyberspace, with the inclusion of graphics, sound, and video, the distance between teacher and student is diminishing. These various media are making interaction between individuals who meet online more realistic. The act of being present without being present in real time was first introduced by Short, Williams, and Christie (1976). They referred to this state as "social presence." Their "social presence" theory concentrated on recognizing technologies that evoked

“social presence.” Short et al., (1976) developed a scale that attempted to measure social presence. In this scale, the greater the presence of cues in a technology (voice, video), the greater the social presence and the more effective the message. Kiliç Çakmak, Çebi, & Kan, (2014) also developed a social presence scale that reinforced Short et al.’s reliability. Their study discovered that the scale was effective and trustworthy in determining social presence. Particularly, in an online environment, their research concluded that social presence levels “can be measured using this scale” (Kiliç et al., 2014, p. 767).

Nonetheless, Short, Williams, and Christie (1976) emphasized a social constructivist viewpoint in their research that certain technologies have the potential of evoking intensified awareness of social interaction. In fact, their definition of social presence indicates that some technologies do convey the actual being of a person through verbal and nonverbal communication (Short et al., 1976). Their theory also suggested that intricate tasks require a greater level of social presence. This aspect is important when creating resources for the online environment and the flipped classroom since student and teacher may be separated by distance and time. In both, online and flipped classrooms, the sense of *being there* is recommended in a cognitive constructivist setting. Similarly, the sense of *being with* is recommended in a social constructivist situation (Short et al., 1976). As the availability of mobile devices, Internet resources, and increase in Internet speed expands, the possibility for using these media, resources, and speediness in the online environment and flipped classroom is becoming more sophisticated. At the same time, these new technologies are transforming social presence in the virtual classroom. The ability to present content more vividly, interactively, and constructively, is becoming more feasible and effective.



## **The Flipped Classroom Model**

One instructional methodology that is drawing much attention is called the flipped classroom. A flipped classroom is a classroom where students use resources (videos of lectures, podcasts of material, content readings) outside of the classroom, which allows class time for more hands-on instructional activities (Enfield, 2013). EDUCASE (2012) also defined a flipped classroom as a “pedagogical model in which the typical lecture and homework elements of a course are reversed” (p. 1). In essence, in a flipped classroom, the coursework that was completed in class will be completed individually by students on their own time. Students may have access to online engaging activities such as recorded lectures, podcasts, discussions, and videos. This strategy will allow for classroom time to be used for more cognitive and social constructivist activities using Bloom’s higher-order skills. In this study, an Introduction to Teaching course will be flipped.

Related to a flipped classroom is the concept of a web-enhanced course. Courses that combine face-to-face instruction along with some type of online instruction may be classified as a web-enhanced course. Some universities also referred to these courses as a hybrid course or as blended learning. A web-enhanced classroom is defined by Boettcher and Conrad (2010) as a “course that uses web-based technology to facilitate what is essentially a face-to-face course” (p. 9). In this learning environment students are still expected to meet in class. However, the instructor uses a course management system to post some documents such as the online syllabus (Boettcher & Conrad, 2010). These researchers considered web-enhanced course materials as any material that is used as part of the class to accomplish the class objectives. These materials are available to any student enrolled in the course and can be easily accessed via a Learning Management System (LMS) such as Blackboard.

Whether labeled as a flipped classroom or a web-enhanced course, these educational strategies combine elements of face-to-face instruction with online instruction. Although there have been many articles related to the flipped classroom pedagogical model (Butt, 2014; LaFee, 2013; Scott, 2014; Westerman, 2014; Baker, Kutz, Simmons; & Wilkinson, 2013; Wootton Colborn, 2012; Findlay-Thompson & Mombourquette, 2014; Sams, & Bergmann, 2013; Hawks, 2014; Sang-Hong, Nam-Hun, & Kil-Hong, 2014; Heng Ngee, 2014; Enfield, 2014; Davies, Dean, & Ball, 2013; Fawley, 2014; Boucher, Robertson, Wainner, & Sanders, 2013; Snyder 2014; Lage, Platt, & Treglia, 2000; Sankoff, 2014; & Goodwin, & Miller, 2013), there is a gap in using this strategy in an introduction to teaching course designed to introduce pre-service educators to this instructional technique. There is, also research that indicated that a hybrid course enhanced student engagement and learning (Park, 2011; Lee, 2011). The flipped classroom course uses literature pertinent to teacher preparation, andragogy, active learning, constructivism, use and gratification theory, and social presence, to address teaching and learning issues related to student success and satisfaction in an introduction to education course.

Success of the flipped classroom in various courses has been documented. The following review of the literature will present several studies to that effect. Baker, Kutz, Simmons, and Wilkinson (2013) found that flipping the classroom in academic library instruction provided more time for active learning and classroom discussion. Also, in the same study, the flipped classroom generated student success. As a result of the Wilkinson (2013) study, the University of Tennessee at Chattanooga has expanded the number of courses offered using the flipped classroom model.

Other studies reported similar results. In an Introduction to Information Literacy course that was flipped, Wootton Colborn (2012), reported that this pedagogy allowed her to focus on

“finding the best ways to improve student learning” (p. 10) by devoting more in-class time to provide individual assistance. In her study of the evaluation of a flipped classroom in an introductory business course, Findlay-Thompson (2014) found that students “felt they did better in the flipped classroom” (p 69). This study used the flipped classroom model in one section of Business 1112 and the traditional lecture-based model in the other two sections of the same course.

California State University Northridge also used the flipped classroom model in a Cinema and Television course (ctva361). Enfield (2013) used the flipped classroom model in order to address several challenges related to “providing consistent learning outcomes for the class regardless of the instructor, engaging students with diverse technical expertise during guided instruction, and providing time for students to apply what they learn to various situations (p. 15). This one semester study found that the majority of the students were engaged with the learning material and were successful in the course. In addition, the students reported that they had also learned to use various technologies and that their self-efficacy improved.

The flipped classroom instructional methodology was also found to have a positive effect on a course that is traditionally lecture based (Gaughan, 2014). Her study showed evidence that this type of a classroom was able to provide engaging learning activities for a History class in an efficient and structured manner. In this course, students were provided with resources such as online videos and additional reading material to be discussed in class. Gaughan (2014) reported that the flipped learning environment had a positive effect on students’ social interaction, classroom participation, positive attitudes towards course material, technical skills, and overall learning experience.

Most of the research related to the flipped classroom has been in higher education. However, several PK-12 schools have used this instructional methodology to increase student success and to engage students. Sang-Hong, Nam-Hun, & Kil-Hong (2014) reported that in a study of 112 6<sup>th</sup>-grade students in South Korea, the flipped classroom had a positive effect on self-directed learning, collaborative learning, and information use ability. An at-risk high school in Missouri also reported enhanced learning as a result of the flipped classroom (Flumerfelt & Green, 2013). This high school used a control group to evaluate the effects of the flipped classroom on student success. Their research found support for using the flipped classroom instructional methodology in additional courses. Flumerfelt & Green (2013) defined success as classroom engagement, homework completion rate, and a reduction in discipline problems.

### **Student Satisfaction**

Measuring student success, satisfaction, and engagement is a challenging endeavor. Community college student engagement has been studied extensively by Saenz, Hatch, Bukoski, Kim, Lee, & Valdes (2011). These researchers found that student engagement is definitely related to academic achievement. Furthermore, according to Hughes & Kwok (2006) student engagement is related to working diligently, involvement in class activities, and listening to the instructions of the teacher. Saenz et al. (2011) defined student engagement in academic terms: “involvement in literacy activities such as reading and writing for class, classroom participation, and answering questions in class” (p. 251).

Student evaluations have been used effectively to measure student satisfaction (Xu, 2012). It has been postulated that these evaluations are valid because there is a positive correlation between students’ ratings and teaching efficacy (Xu, 2012). In addition, this method

of measuring student satisfaction in a course is suitable, flexible, economical, and has a degree of objectivity (Xu, 2012).

Specific questions of the end-of-course student evaluation have been used to measure student satisfaction. End-of-course evaluations contain multidimensional items to measure different aspects of the course. Some of the aspects of the course that have been measured in a similar survey were student interactions with the professor, course delivery, and student satisfaction (Johnson, Cascio, & Massiah, 2014). This research will consider specific questions of the end-of-course traditional course evaluations (see Appendices A and B) to measure student satisfaction. In one study (Marlin & Niss, 1980), it was concluded that end-of-course evaluations are effective in measuring student learning, student satisfaction, and instructor effectiveness. Another study (Benton, 2011), provided information to indicate that end-of-course evaluations may indicate student satisfaction. Satisfied students rated their professor higher. Marlin (1987) also concluded that student evaluations are an appropriate method for students to indicate satisfaction in their classes. Student satisfaction has been used as a significant measure of the quality of a course and has been connected to student success (Hansen 2008).

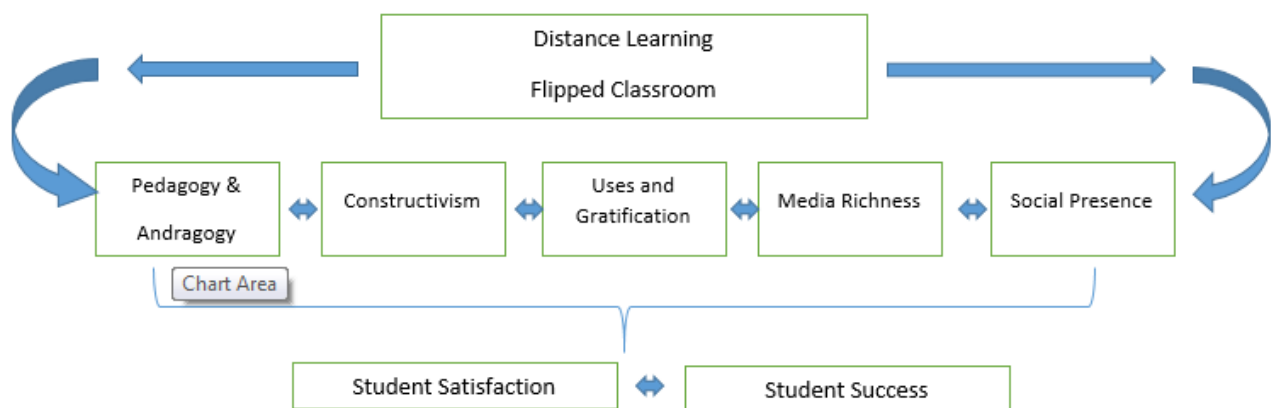
### **Theoretical Framework**

Amid this literature review, there is a conceptual framework that supports using the Internet to promote academic achievement and student satisfaction. The flipped classroom model of instruction might have the potential to positively affect academic achievement and student satisfaction. The literature draws from the andragogy theory (Knowles, 1968), social constructivist approach (Brunner, 1960; Vygotsky, 1962; Piaget, 1970, Bandura, 1977), active learning (Bonwell & Eison, 1991), Katz's Uses and Gratification Theory (Katz, 1959), media richness theory (Daft & Engel, 1984), and the social presence theory (Short, Williams, and Christie, 1976).

The theoretical framework for this study will focus on instructional methodologies in an introductory teacher preparation program course that can become a catalyst for student engagement, student satisfaction, and academic achievement. These instructional methodologies include the flipped classroom and online/distance learning. Presentation of course material in a flipped classroom and in an online/distance learning environment necessitates a review of strengths, weaknesses, limitations, and opportunities of both instructional methodologies.

When working with adults who are being trained to become Pk-12 educators, it becomes more critical that the course material be developed so that content and pedagogy becomes an integral part of the course material. Furthermore, in an online environment, it is critical to consider opportunities for teacher and learner interactions. Development of course materials and activities used in both of these instructional methodologies are based on the Constructive learning theory, andragogy, and social presence theory. Future educators need to be well-versed on active learning strategies. Just as important is the consideration that course materials and activities enhance student satisfaction and academic achievement. Based on the literature review, a visual representation of the theoretical framework is shown below.

Figure 1: Theoretical Framework



## **Summary**

This literature review indicated that there are several theories that enhance the teaching and learning experience in distance learning courses and flipped classrooms. The theoretical framework considered theories related to pedagogy and andragogy, constructivism, uses and gratification, media richness, and social presence. Considering the literature in this study, there appears to be limited research assessing the effectiveness and satisfaction of a flipped classroom in teacher preparation programs. Chapter III presents the methodology used to conduct the study.

## CHAPTER III

### METHODOLOGY

#### **Introduction**

This research study was conducted at South Texas College between June 2, 2014 (beginning of summer session 1, 2014) and June 30, 2015 (end of summer session 1, 2015). The proposal for this study was reviewed by South Texas College's Institutional Review Board (IRB), and approval to proceed with the study was granted (see Appendix C).

#### **Participants**

Twelve sections of the course EDUC 1301, Introduction to the Teaching Profession, were selected for this study. Five sections of EDUC 1301 were taught using the flipped classroom instructional methodology. The other seven sections were online courses. All twelve sections were taught by the researcher, an Assistant Professor at the college where the study was conducted. The research was conducted in the researcher's own institution, program, and courses. This causal-comparative study included two comparison groups of participants. Students in both teaching methodologies self-enrolled in all courses. The sample represented two already existing populations. Each group in the study represented comparable populations. A total of 247 students were included in this study. The students in the flipped classroom instructional methodology consisted of 90 undergraduate students enrolled in five sections of Introduction to Education (EDUC 1301), which is a program requirement in an Associate of Arts degree at South Texas college. The other group of students represented 157 participants who



self-enrolled in seven separate online EDUC 1031 sections. The traditional face-to-face courses were taught using the flipped classroom instructional methodology. Groups were comparable on most everything except the independent variable. The instructional methodology was the independent variable. It is important to emphasize that the students were self-matriculated for each course. Those students who self-selected the online delivery system may have been more comfortable and adept in using technology and with online courses. Because of the increasing interest in online courses and the flipped classrooms, student success and satisfaction in these two instructional methodologies needs to be researched.

### **Instrumentation**

This study examined two instructional methodologies, seven online courses and five flipped classrooms. The study used the end-of-course evaluations (see Appendices A and B) to measure student satisfaction in the courses. End-of-course grades were used to measure academic achievement in all courses. The data were collected in the researcher's own institution, program, and courses.

A comparison of the quantitative results of the final numerical grade was analyzed to compare the academic success between the two instructional methodologies. The final grades in the course for each student in both instructional methodologies were used as a measure of academic achievement. Grades of 60 and above were considered passing in the course. A comparison of students' numerical grades was analyzed to determine if there was a statistically significant difference in academic achievement between fully online and flipped courses. Final course grades have been used as an appropriate measurement of academic achievement in a college-level course (Johnson, 2003).

Specific questions of the end-of-course student evaluation (see Appendices A and B) were used to gather quantitative information on student satisfaction on both instructional methodologies. End-of-course evaluations contain multidimensional items to measure different aspects of the course. Some of the aspects of the course that have been measured in a similar survey were student interactions with the professor, course delivery, and student satisfaction (Johnson, Cascio, & Massiah, 2014). This research will consider specific questions of the distance education course evaluation (see Appendix A) to measure student satisfaction. In one study (Marlin & Niss, 1980) it was concluded that end-of-course evaluations are effective in measuring student learning, student satisfaction, and instructor effectiveness. Another study (Benton, 2011) provided information to indicate that satisfied students rated their professors higher. Marlin (1987) also concluded that student evaluations are an appropriate method for students to indicate satisfaction in their classes.

Student evaluations have been used effectively to measure student satisfaction (Xu, 2012). It has been postulated that these evaluations are valid because there is a positive correlation between students' ratings and teaching efficacy (Xu, 2012). In addition, this method of measuring student satisfaction in a course is suitable, flexible, economical, and has a degree of objectivity (Xu, 2012). In this study, the same web-based resources will be used in both the flipped classrooms and the online courses. Therefore, specific questions of the Student Evaluation of Instruction Performance, Traditional Course (Appendix B) and Online Course (Appendix A) were used to acquire quantitative and qualitative data regarding student satisfaction in both instructional methodologies (distance learning online course and the flipped classroom). The percentage of students who rated each course a 4, the highest rating, were

compared to determine student satisfaction. These numerical evaluations provided an objective comparison of student satisfaction in both instructional methodologies.

## **Instructional Delivery Methods**

Fenton & Watkins (2010) discussed the different methods for delivering Distance Learning (DL) courses. One method is the online delivery method. In this method the course material is presented online with very little or no face-to-face interaction. Consequently, distance Learning (DL) has been part of education for a long time. Different formats of distance education (correspondence, radio, television, the Internet – to name a few) have made education more accessible to more students. Distance Learning has been described as cyber classroom, virtual classroom, web learning, elearning, online learning, and einstruction (Fenton & Watkins, 2010). Furthermore, the United States Distance Learning Association (USDLA) defines DL as “The acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance” Fenton & Watkins, 2010, p. vii).

The research on the advantages or disadvantages of any type of distance education is still in its infancy. Yet, in 2010 nearly 18 million students were enrolled in some form of distance learning, with the most prominent being online courses (Armstrong, 2011). With the increase in enrollment comes the question of the quality of these courses.

A flipped classroom is a classroom where material is delivered wholly or partially via web-based instruction (Enfield, 2013). Students are still required to meet face-to-face as in a traditional course but the time used for lecture is used for cognitive and social constructivist activities. There have been other definitions of the flipped classroom instructional methodology (LaFee, 2013). There is, however, an emerging idea: technology, when properly used, can be an impetus for taking much of the learning outside the confinements of the traditional classroom

and allowing class time for more constructivist activities (LaFee, 2013). One of the most compelling statement that captures the idea behind flipping the classroom is by Sams (2013):

Education is for everyone, but the way we deliver education—and the way students receive it—is not the same for everyone. A flipped classroom gives teachers the flexibility to meet the learning needs of all their students, and it gives students the flexibility to have their needs met in multiple ways. By doing so, it creates a classroom that is truly student-centered (p. 20).

This study was conducted in the college where the researcher is a full-time Associate Professor of Education. Based on information from the college's most current catalog (South Texas College, 2014), the college offers entire degrees in various formats: online, traditional, hybrid, and web-enhanced. The Associate of Arts in Teaching (AAT) degree requires the course for this study: EDUC1301. This course is offered in all formats. Online courses are offered every semester and at least 50%, usually 100%, of the course must be delivered electronically or off-campus. These courses are listed in the catalog as a distance learning course and are coded with a V01 – V29 suffix. For example, an Introduction to Teaching distance learning course may be listed as EDUC1301.V01.

Hybrid courses combine face-to-face on campus instruction with an online component. At South Texas College, to be considered a hybrid course, the course must be facilitated between 51% and 85% online. The rest of the course is facilitated on campus. All hybrid courses are designated with a "Y". For example a hybrid EDUC1301 course offered at the Pecan campus may be coded as EDUC1301.PY1.

A web-enhanced course is similar to a traditional course that meets on campus. The main difference between a traditional course and a web-enhanced course is that the web-enhanced

course has a Learning Management System (LMS), Blackboard in this case, component that is required by the instructor. Boettcher and Conrad (2010) define a course that is web-enhanced as a “course that uses web-based technology to facilitate what is essentially a face-to-face course” (p. 9). In this learning environment students are still expected to meet in class. However, the instructor uses a course management system such as Blackboard to post documents, notes, quizzes, readings, discussions and other resources (Boettcher and Conrad, 2010). Web-enhanced courses are not coded any differently than the traditional face-to-face course. It is up to an instructor’s discretion to web-enhance a course. A flipped classroom is a structured web-enhanced course with research-based activities as described in the literature review.

At the core of the online, hybrid, and web-enhanced courses at the college where the study was conducted is the support provided by the distance learning department. Before an instructor can teach an online, hybrid, or web-enhanced course, he or she must successfully complete one or more training courses in online instruction. For example, to web-enhance a course, an instructor must at least successfully complete the Blackboard Basics course. In order to teach a hybrid course, an instructor must complete the Blackboard Basics course and eTeach I. The course eTeach I is a prerequisite for eTeach II. No instructors may teach a fully online course unless they complete all of the above courses including eTeach II. In addition to the Blackboard Basics, eTeach I, and eTeach II, there are other courses available. The researcher just completed a course in Blackboard Collaborate. The college fully supports any instructor who wishes to take these courses. There are several classrooms available for these courses. In addition, the courses are offered fully online. There is also a help desk and an online live support.

## **Casual-Comparative Research**

A causal-comparative research was utilized to answer the research questions in this study. Casual-comparative studies attempt to identify the cause-effect relationships (Gay, Mills, & Airasian 2006). This research design was selected because the researcher attempted to discover the effects of a flipped classroom instructional methodology on student success and satisfaction in an introductory education course, EDUC 1301. One of the most important reasons for conducting a casual-comparative study is to identify variables worthy of experiment (Gay at al., 2006). The possible causes of the effect were studied by comparing students who are enrolled in one of five courses where the researcher flipped the classroom with similar students enrolled in one of seven fully online courses. Using a causal-comparative research was preferred in this study because an experimental research design was problematic and students were self-enroll in either instructional methodology. Participants were not randomly assigned to either the online courses or the flipped classrooms (traditional face-to-face course). Nonetheless, this design allowed the study of cause and effect relationships. Participants in both courses were using the same textbook, similar assignments, and similar activities. Furthermore, the participants in the study were already part of a group, education majors that cannot be randomly selected. Causal-comparative research is a common design in that has been shown to be valid and reliable in educational research studies (Gay at al., 2006).

Descriptive statistics such as means, ranges, percentages, frequency distributions, and standard deviations were utilized to analyze the participants' academic achievement and to test the hypotheses. The Pearson chi-square test of association was utilized to determine whether there was a significant difference in academic achievement between the online courses and the

courses where the flipped classroom instructional methodology was used. The study used Excel and the SPSS software to analyze quantitative data collected.

### **Procedures**

The flipped classroom instructional methodology was implemented in five sections of EDUC 1301 with a total of 90 students. Ten lessons were created to provide students with lecture notes, information, and resources outside of class. The lessons were created by the researcher. The software iSpring from iSpringSolutions was used to convert PowerPoint narrated notes into instructional videos. The videos were approximately ten minutes. Students were expected to watch the appropriate lesson before class. A short quiz was given at the end of each video to motivate students to watch the videos. Several attempts of the quiz were allowed to allow students to make a perfect score on the quizzes. Students who failed the quiz attempts were warned via email. The major part of the classroom time was then utilized for constructivist activities, collaborative learning, answering questions about the lesson, and using mobile technologies to further engage the learner in the content.

Participants in the online class had the usual procedures as in any other online EDUC 1301 course. A virtual Blackboard, the Learning Management System, tutorial was provided during the first week of class. This tutorial assisted students in working in the online environment using Blackboard Learn 9.1. The tutorial also helped students with basic functions such as adding events to the calendar, taking a test online, using the discussion board, submitting assignments, and other eSupport tasks. In addition, the instructor offered three face-to-face optional trainings on using Blackboard Learn 9.1.



### **Data Collection Procedures**

Data collection began after the IRB of the University of Texas – Brownsville (now the University of Texas-Rio Grande Valley [UTRGV]) and the IRB of South Texas College granted permission to conduct the study. Final grades of all students were collected to analyze academic achievement in the courses. Grades for all students who completed the course were collected. Data were collected in aggregate form and no student was ever identified.

The collection of the end-of-course evaluations data, followed South Texas College's protocol. All students were reminded and encouraged to submit their course evaluations. The traditional courses students were reminded during class, via email by the instructor and the institution, and via announcements in Blackboard. Online students were reminded via email, by the instructor and the institution, and via announcements in Blackboard. The survey was available towards the end of the semester. Even though participation in this study was on a voluntary basis, all students were consistently reminded and encouraged to complete the survey. In the end, 70 out of 90 students, or 78% of the students in the flipped classrooms, completed the survey. In the online courses, 108 out of 157, or 69% of the students, completed the survey.

### **Data Analysis Procedures**

The data collected using the procedures described in the previous section were analyzed using Excel and the Statistical Package for Social Sciences (SPSS). Descriptive statistics were used to summarize the academic achievement level of the students in each instructional methodology. Bivariate statistics (chi square) were conducted to explore academic achievement level statistical significances between online courses and the flipped classrooms instructional methodologies. End of course evaluations were completed by the students at the end of the semester. The percentage of students who rated the course a 4 (Almost Always) on a scale of 1

to 4, was analyzed. Descriptive summary data based on surveys and students' final grades were used to describe the effect of the flipped classroom methodology.

### **Limitations of the Study**

The researcher of the study made every effort to ensure that the research and the findings were free of researcher bias and errors. Nonetheless, there are some inherent limitations with a casual-comparative research. One of the problems with this study was that the number of participants (247) was small. Also, the participants were not randomly assigned; they self-matriculated in their respective courses. There may have been several extraneous variables that may explain that academic achievement and student satisfaction were a result of uncontrolled variables such as self-efficacy, technology-efficacy, motivation, researcher biases, persistence in course, and life events. This study only determined possible cause-effect relationships and not actual cause effects.

Another limitation of this study was that the students self-selected the courses (online or flipped classroom) they enrolled in. Self-selection in a course adds the possibility that other important variables such as lack of advising, familiarity with a course, name of the instructor, academic achievement in online courses, or experience with technology, may contribute to success/failure and/or selection of the course. Therefore, the results of the study may be misinterpreted when applied to a similar population.

Another salient limitation of this study was the questionnaire used to measure student satisfaction. Measuring student satisfaction with a quantitative tool may be problematic (Dziuban & Moskal, 2011). Research has also indicated that student satisfaction, especially in an online environment, is multi-faceted (Ke & Kwak, 2013). Furthermore, this research might

have been biased because the researcher was aware of the study and may have been treated each instructional methodology different.

### **Summary**

Chapter III of this study describes the procedures that were used to achieve the purpose of the study. Results of the present study are presented in Chapter IV.

## CHAPTER IV

### RESULTS

#### **Introduction**

The purpose of this study was to describe the effects of two different methods of instructional delivery, online courses versus flipped classrooms, on academic achievement and satisfaction in an undergraduate *Introduction to the Teaching Profession* (EDUC 1301) course. All courses in this study were taught by the researcher. This study addressed the following research questions: (1) Is there a statistically significant difference in academic achievement, as measured by end-of-course grades, of students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301? (2) Is there a difference in satisfaction, as measured by end-of-course evaluations, in students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301? This chapter discusses the results that were obtained when the hypotheses were tested using the causal comparative research design. The results are reported in tabular, graphic, and narrative form.

#### **Results Obtained for the Research Hypotheses**

In order to address the research questions, this study tested the following research hypotheses:

(1) There is a statistically significant difference between the academic achievement of students enrolled in undergraduate EDUC 1301 flipped classrooms and those enrolled in undergraduate EDUC 1301 online courses.

(2) There is a significant difference between the satisfaction of students enrolled in undergraduate EDUC 1301 flipped classrooms and those enrolled in undergraduate EDUC 1301 online courses.

The academic achievement and satisfaction levels of 247 students, who were self-enrolled in 12 (five in the flipped classrooms and seven in the online courses) undergraduate sections of EDUC 1301, were analyzed for comparison. The number of students who self-enrolled in the flipped classrooms was 90 or 36% of the total number of students in the study. The number of students who self-enrolled in the online courses was 157 or 64% of the total number of students in the study. The data were analyzed using descriptive and inferential statistics for which Excel and the Statistical Package for Social Sciences (SPSS) were used.

### **Academic Achievement Level Results**

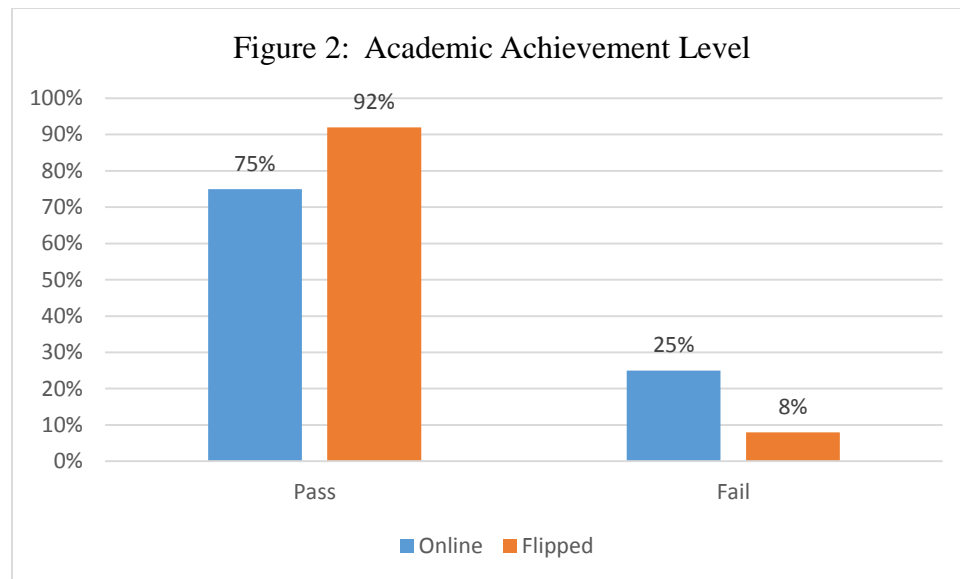
The number of students who passed the EDUC 1301 flipped classroom courses as presented in Table 1 on page 44, was 83 out of 90, resulting in an academic achievement level of 92%. In Contrast, 118 out of 157 students passed the EDUC 1301 online courses, as shown in Table 1, representing an achievement level of 75%. Based on these data, the difference between the two teaching methodologies is significant, 17% more students were successful in the flipped classrooms than in the online courses.

Table 1: Number of Students Who Passed/Failed by Method of Instructional Delivery

	Total <i>N</i>	Flipped Classroom		Online Course	
		Number	Percent	Number	Percent
Passing	201	83	92%	118	75%
Failing	46	7	8%	39	25%

*Grades of A to D were considered passing. A grade of F was considered Failing*

The overall academic achievement of students in the flipped classrooms and online courses is presented as a chart in Figure 2. As shown on Figure 2, 75% of the students passed the online courses versus 92% of the students in the flipped classrooms. While 25% of students in the online courses failed, only 8% of the students in the flipped classrooms failed.



The grades for the participants (N=247) ranged from 0 to 99. Table 2, page 45, shows the mean of the grades of the participants. The mean grade for the online courses was 72.85 (standard deviation 28.891). The mean grade for the flipped classrooms was much higher, 86.08 (standard deviation 16.832).

Table 2: Numerical Grades Means by Teaching Methodology

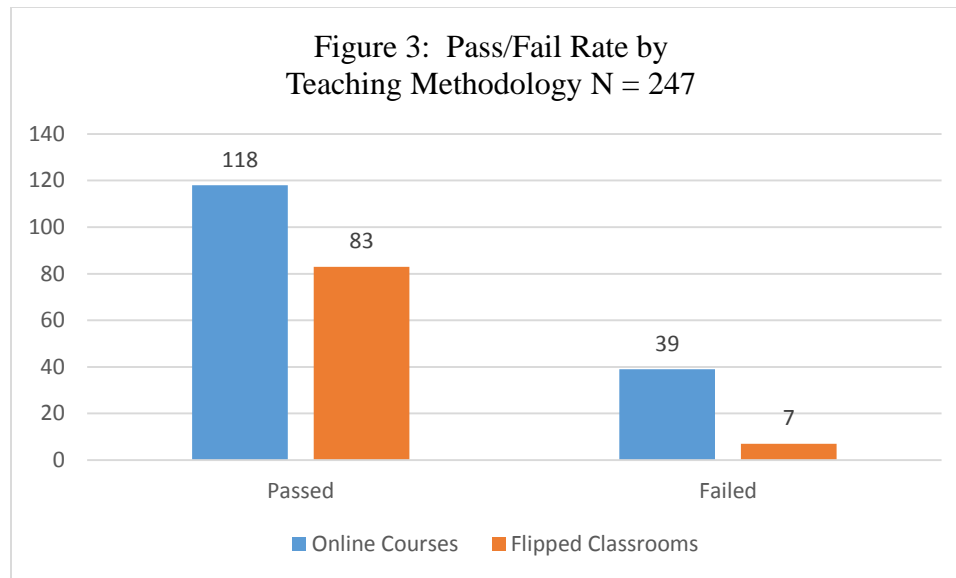
Method	N	Mean	Std. Deviation
Online Course	157	72.85	28.891
Flipped Classroom	90	86.08	16.832
Total	247	77.67	25.933

To determine whether the difference in passing and failing rates was statistically significant, the Pearson chi-square statistical technique was utilized. To test the hypothesis, a two (online courses, flipped classrooms) by two (passed, failed) chi-square design was used. As shown in Table 3, the Pearson chi-square test of association yielded a  $\chi^2$  of 10.99, a  $df = 1$ , and a  $p$  value of 0.0001 which was statistically significant at the 95% confidence level ( $p < .05$ ).

Table 3: Chi-square Analysis of Participants who Passed or Failed by Methodology

	N	Online Courses	Flipped Classrooms
Passed	201	118 (75%)	83 (92%)
Failed	46	39 (25%)	7 (8%)
Total	247	157 (100%)	90 (100%)
$\chi^2 = 10.99, df = 1, p = 0.001$			

Figure 3 below shows the results in graphic form.



### Student Satisfaction

The end-of-course evaluations for each teaching methodology were examined (See Appendixes A and B for end-of-course evaluations). The end-of-course evaluations are used to gain insight into multiple aspects of the courses, including satisfaction in the course (Dae Shik, Lee, & Skellenger, 2012). Four questions from the end-of-course evaluations were selected for use in the data analysis. The questions presented in Table 4 were used as indicators of student satisfaction in both teaching methodologies (Dae Shik et al., 2012).

Table 4: End-of-Course Questions used for Data Analysis

Flipped Classroom		Online Course	
Q #	Question	Q #	Question
Q12	The faculty member treats students with respect	Q15	The instructor treats students with respect
Q13	The faculty member inspires interest in the subject matter	Q3	Course material is presented in such a way that it stimulates interest in the subject
Q15	The faculty member shows interest in the course	Q6	The instructor shows interest in student learning
Q21	The faculty member explains subject matter well	Q2	The instructor summarizes the main point of the lesson

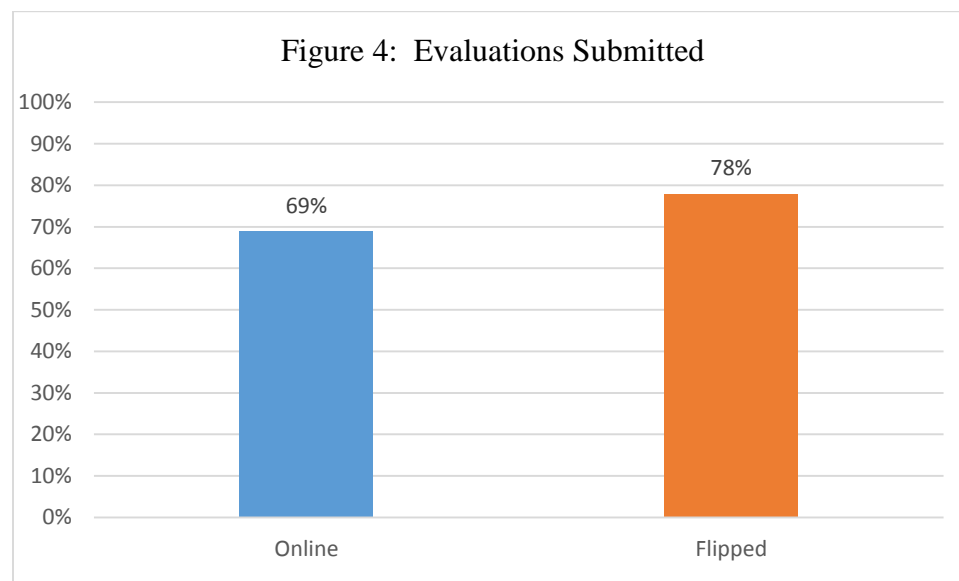


Table 5 presents a summary of the data collected. As shown on Table 5, of the 90 students in the flipped classrooms, a total of 70 students (78%) submitted a response to the evaluation. In the online courses, a total of 108 students (69%) submitted a response to the evaluation. Research by Benton (2011) has indicated that students who are more satisfied with a course have a higher participation rate in submission of course evaluations. Although there are many possible explanations for Benton's findings, the higher response rate on the course evaluations for the flipped classroom provide support the hypothesis that students in the flipped courses were more satisfied with their course than those enrolled in the fully online courses.

Table 5: Number of Evaluations Submitted by Method of Instructional Delivery

Flipped Classroom			Online Course		
N	n	Percent	N	n	Percent
90	70	78%	157	108	69%

Figure 4 shows a visual representation of number of evaluations submitted.



Students answered all questions in the end-of-course evaluations for each teaching methodology. Each question used a 1-4 Likert type response in which a score of 4 indicated Almost Always (high agreement), a 3 indicated Usually, a 2 indicated Seldom, and a 1 indicated Almost Never (low agreement). The researcher, who also chairs the department, had access to all end-of-course evaluations. For each of the end-of-course evaluations, four questions, as shown on Table 4, page 46, were examined. A score of a 4 (Almost Always), indicated the highest score and likely more satisfaction with the course. A study by Cummings, Chaffin & Cockerham (2015) indicated that higher ratings in end-of-course evaluations translated into higher satisfaction in a social work traditional and online course. The percentage of students who indicated a score of 4 (Almost Always) for the questions in each section of the flipped classroom teaching methodology is shown in Table 6. With the exception of one course (EDUC 1301P08), all flipped classrooms were rated a 4, which may indicate a high satisfaction with the flipped classrooms. Overall, the students rated the flipped classroom sections a 4 (Almost Always) in every question examined. The overall ratings for the flipped classrooms may indicate that the students' perceived satisfaction with the flipped classroom was positive. These findings are consistent with a study that measured student satisfaction in an online course versus an on-campus program (Dae Shik et al., 2012).

Table 6: Percentage of Students Answering a 4 in the Flipped Classrooms

Course	N	Q12	Q13	Q15	Q21
EDUC1301P08 (2014)	17	88% (n=15)	94% (n=16)	94% (n=16)	82% (n=14)
EDUC1301P01(2014)	13	100% (n=13)	100% (n=13)	100% (n=13)	100% (n=13)
EDUC1301P02(2014)	19	100% (n=19)	100% (n=19)	100% (n=19)	100% (n=19)
EDUC1301P01(2015)	06	100% (n=6)	100% (n=6)	100% (n=6)	100% (n=6)
EDUC1301P02(2015)	15	100% (n=15)	100% (n=15)	100% (n=15)	100% (n=15)

Section P08 was taught during the fall 2014 semester. The next two EDUC 1301 flipped classroom sections shown in Table 6 (P01, P02) were taught during the summer of 2014. The rest of the EDUC 1301 Sections P01 (15) and P02 (15) were taught during the summer 2015 session. The difference between section P08 and the rest of the section could have been as a result of section P08 being the first course that was fully flipped by the researcher. Students and instructor were new to this instructional methodology. Some students perceived that they were being asked to do extra duties such as watch the recorded notes.

The percentage of students who indicated a score of 4 (Almost Always) for the questions in each section of the online course teaching methodology is shown in Table 7. As in the flipped classrooms, the perceived satisfaction level in the online course was also positive across all courses. The first four EDUC 1301 online sections shown in Table 7 (V01, V02, V03, and V04) were taught during the fall 2014 semester. Sections V01 (2015), V02 (2015), and V03 (2015) were taught during the spring 2015 semester.

Overall, the students rated the online courses positively (4 –Almost Always) in each of the questions selected for each course. There are some disparities worth mentioning. Courses in the Fall 2014 semester were rated slightly higher than the courses in the Spring 2015 semesters. However, a majority of the students rated the online courses a 4 in all courses in this study.

Table 7: Percentage of Students Answering a 4 in the Online Courses

Course	N	Q15	Q3	Q6	Q2
EDUC1301V01 (2014)	14	100% (n=14)	100% (n=14)	100% (n=14)	100% (n=14)
EDUC1301 V02 (2014)	12	100% (n=12)	92% (n=11)	100% (n=12)	100% (n=12)
EDUC1301V03 (2014)	17	100% (n=17)	94% (n=16)	94% (n=16)	94% (n=16)
EDUC1301V04 (2014)	11	100% (n=11)	100% (n=11)	100% (n=11)	100% (n=11)
EDUC1301V01 (2015)	21	95% (n=20)	95% (n=20)	100% (n=21)	100% (n=21)
EDUC1301 V02 (2015)	17	94% (n=16)	94% (n=16)	94% (n=16)	94% (n=16)
EDUC1301V03 (2015)	16	100% (n=16)	100% (n=16)	100% (n=16)	100% (n=16)

The results of perceived student satisfaction in this study are similar to the results of another study (Dae Shik et al., 2012). There was no difference in perceived student satisfaction in the two teaching methodologies.

Additionally, three major themes were salient from the students' responses to the open-ended questions, which could indicate a link to increased student satisfaction for the flipped classroom: Enjoyed the class; easy to learn from activities, and faculty cares about students. Many students commented that they really liked the opportunity to interact in class and to review the notes outside of class. Students also felt that the format of the class allowed them to learn "a lot from this class." Finally, students felt that the faculty was very caring about his students.

Also, three major themes were salient from the students' responses to the open-ended questions, which could indicate a link to increased student satisfaction for the online courses: Design of the courses; convenience of online courses, and pacing of the courses. Many students commented that they were very satisfied with the navigation of the courses. Students also felt that online courses allowed them to do the work on their own time; however "one has to be very

disciplined with oneself in order to fulfill their responsibility with a distance education course.” Lastly, students felt that the faculty did an “excellent job pacing this course” and that there was enough time to complete the assignments.

As shown in Tables 6 and 7, pages 48 and 49 respectively, students rated a 4 (Almost Always) to the majority of the questions examined in the online courses and the flipped classrooms. These results parallel a study that indicated that satisfaction in the flipped classroom is higher than in online courses (Dae Shik et al., 2012). In this study, based on the student ratings of the courses, there was no difference in perceived student satisfaction between the online courses and the flipped classrooms.

### **Summary**

This chapter presented the results obtained from the analyses used to test the hypotheses set forth in this study. The following research questions were addressed: (1) Is there a statistically significant difference in academic achievement, as measured by end-of-course grades, of students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301? (2) Is there a significant difference in satisfaction, as measured by end-of-course evaluations, in students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301? Analysis of the final grades indicated that there was a statistically significance difference in academic achievement between the two teaching methodologies (Table 3, page 45). Students in the flipped classroom outperformed the students in the online courses. The end-of-course evaluations, as shown on Tables 6 and 7 below, indicated that there was no significant difference in student satisfaction between the online and flipped classrooms. There was a consistent pattern of positive student

satisfaction in both teaching methodologies. The next chapter, Chapter V, presents the conclusions, interpretations, and implications suggested by the above mentioned results.

## CHAPTER V

### CONCLUSIONS, INTERPRETATIONS, AND IMPLICATIONS

#### **Introduction**

The purpose of the study was to describe the effects of two different instructional methodologies (online versus flipped classroom) on academic achievement and satisfaction in an undergraduate EDUC1301, *Introduction to Education*, course at South Texas College. The EDUC 1301 course is a requirement for the Associate of Arts in Teaching at the college. Students are encouraged to take this course the first semester of the program. The research questions investigated were the following:

(1) Is there a statistically significant difference in academic achievement, as measured by end-of-course grades, of students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301?

(2) Is there a significant difference in satisfaction, as measured by end-of-course evaluations, in students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301?

The following hypotheses were tested:

(1) There is a statistically significant difference in academic achievement level between students in undergraduate EDUC 1301 flipped classrooms and those in undergraduate EDUC 1301 online courses.

(2) There is a significant difference in student satisfaction between students in undergraduate EDUC 1301 flipped classrooms and those in undergraduate EDUC 1301 online courses.

The previous chapter described the findings that were obtained. This chapter presents the researcher's conclusions, interpretations, and implications of the findings to the field of teacher preparation programs. Finally, limitations of this study are summarized with recommendations for further research.

### **Conclusions and Interpretations of Findings**

According to the findings, 92% of students enrolled in the flipped version of EDUC 1301 passed as compared to the 75% pass rate for students enrolled in the online version of EDUC 1301. These findings indicated that the students in the flipped classroom instructional methodology had a statistically significant ( $\chi^2 = 10.99$ ,  $df = 1$ ,  $p = 0.001$ ) higher academic achievement level than the students enrolled in the online course instructional methodology.

Selected questions from the end-of-course evaluations were examined for both instructional methodologies. An analysis of the percentages of the highest rating (4) given to each course for each selected question indicated that there was no difference in student satisfaction in both instructional methodologies. According to the data, students were equally satisfied in both instructional methodologies. Comments by students on the end-of-course evaluations in both teaching methodologies provided additional conformation of positive student satisfaction in all courses whether the course was taught as a flipped classroom or as an online course.



## Discussion to Answer Research Question 1

Table 1 and Figure 2 presented the results obtained to answer Research Question 1, is there a statistically significant difference in academic achievement, as measured by end-of-course grades, of students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301? The participants' grades indicated that a flipped classroom instructional technology had a higher academic achievement level (92%) than the participants' grades in the online courses 75%. As indicated in Table 2, page 44, the participants' mean numerical grades for the flipped classroom instructional methodology was 86.08 compared to 72.85 for the online courses instructional methodology. These difference in the means between the flipped and online methodologies were found to be statistically significant ( $\chi^2 = 10.99$ ,  $df = 1$ ,  $p = 0.001$ ).

Table 3 on page 45 presented the results when the Pearson chi-square test of association statistical technique was used to answer question 1. Those results indicated that there was a statistically significant difference ( $p = .001$ ) between the numerical grades of both instructional methodologies. Therefore, the first research question is accepted. There is a statistically significant difference in academic achievement when comparing EDUC 1301 online courses and the EDUC 1301 flipped classroom instructional methodology.

The results obtained through this research study were validated by the results of other studies. Davies et al. (2013) provided evidence that flipping an introductory level course in Excel spreadsheets was effective in terms of academic achievement. Another study (Baker et al., 2013) found that flipping the classroom in academic library instruction generated student success. In an Introduction to Information Literacy course that was flipped, Wootton Colborn (2012), reported that the students did better in the flipped course than in the other two sections of

the same course. California State University Northridge also used the flipped classroom model in a Cinema and Television course (ctva361). Enfield's (2013) study found that the majority of the students were successful in the flipped course.

The above mentioned studies were conducted in higher education. However, several PK-12 schools have used this instructional methodology to increase student success. Sang-Hong et al, (2014) reported that in a study of 112 6<sup>th</sup>-grade students in South Korea, the flipped classroom had a positive effect on student success. An at-risk high school in Missouri also reported enhanced learning as a result of the flipped classroom (Flumerfelt et al., 2013). This high school used a control group to evaluate the effects of the flipped classroom on student success. Their research found support for using the flipped classroom instructional methodology in additional courses.

## **Discussion to Answer Research Question 2**

To answer the second research question, end-of-course evaluations were analyzed to measure course satisfaction. Data from the *SmartEvals* website used by South Texas College to gather end-of-course data, indicated that, overall, 46% of the EDUC courses submitted an end-of-course evaluation (South Texas College, 2015). Submission of the end-of-course evaluations for EDUC 1301 was higher than for other EDUC courses at South Texas College over the same period. In this study, of the 247 total participants, 178 (72%) submitted an evaluation. Seventy-eight percent of the participants in the flipped classrooms submitted the end-of-course evaluation. In comparison, 69% of the participants in the online courses submitted the end-of-course evaluation. Research by Benton (2011) has indicated that students who are more satisfied with a course tend to have a higher participation rate in submission of course evaluations. A selected number of questions from the end-of-course evaluations, as shown on table 4, page 46,

were examined to analyze student satisfaction and to answer Research Question 2, is there a significant difference in satisfaction, as measured by end-of-course evaluations, in students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301?

In this study, the percentage of students who rated the questions in each instructional methodology a 4 on a 4-point Likert scale (1= Almost never to 4 = Almost always) was analyzed. The results were presented in Table 6 on page 48 and Table 7 on page 49. The questions selected were designed to measure student satisfaction with each instructional methodology. Previous studies have indicated that end-of-course evaluations have been used effectively to measure student satisfaction (Xu, 2012). Tables 6 and 7 indicated that most students rated the courses with a 4 which may indicate a positive satisfaction with the courses.

The findings of this study suggest that student satisfaction is positively related to both instructional methodologies equally. Findings in this study supported a recent study that found no difference in student satisfaction based on instructional methodology (Cummings et al., 2015). The findings of this study are also consistent with another recent study (Kim et al., 2014) that concluded that students are satisfied with flipped classrooms as well as with online courses. Yet, another study (Abdous et al., 2010) found no significant difference in student satisfaction from a face-to-face course and from an online course. Therefore, the second research hypothesis is not accepted. There was no significant difference in satisfaction, as measured by end-of-course evaluations, in students enrolled in the online version of EDUC 1301 versus students enrolled in the flipped classroom version of EDUC 1301.

This study looked at the effects of two different instructional methodologies (online versus flipped classroom) on academic achievement and satisfaction in an undergraduate

EDUC1301, *Introduction to Education*, course at South Texas College. The descriptive statistics presented in Table 2, page 45, revealed that the means of the numerical grades between the two instructional methodologies is a significant predictor of academic achievement in the Introduction to the Teacher Profession, EDUC 1301, courses. The numerical grades means of the participants in the flipped classrooms were much higher (17%) than the numerical grades means of the participants in the online courses. The academic achievement findings lend support to educators concerned about improving academic achievement in teacher preparation programs. Based on these findings, flipping an *Introduction to Teaching* course can positively impact academic achievement. Yet, while the pass rates for flipped courses versus online courses were statistically significant, there was no significant difference in student satisfaction between the two delivery modalities.

### **Implications for Practice**

Both instructional methodologies, the flipped classrooms and the online courses, in an Introduction to Teaching, EDUC 1301, course, showed significant academic achievement over the course of this study. Yet, when comparing the level of improvement for both groups, the participants in the flipped classrooms showed a higher academic achievement level. This study also affirmed student's satisfaction with flipped classrooms and with online courses in the EDUC 1301 courses. The findings in this study affirm that an introductory course for pre-service educators is a starting point to include technology in such a course which may indicate higher student satisfaction.

Teacher preparation programs are being challenged to increase the number of effective educators who are able to engage the learners in a changing technological environment. Research, nonetheless, indicated that many educators are not prompt to include technology to

engage students or to use it as part of their repertoire of educational techniques (Russell, Bebell, O'Dwyer, & O'Connor, 2003). Furthermore, there is some evidence to suggest that technology helps students with higher-order thinking skills and improves their problem solving ability (Goldberg, Russell, & Cook, 2003). If today's students prefer to use technology as part of the curriculum, then studies like this one affirm that there is a need for teacher preparation programs to begin considering instructional methodologies such as the flipped classroom. If teacher preparation programs stakeholders want their students to be fluent in technology, then they need to consider using these technologies to engage those students. Most educators of future teachers have recognized that technology is not a luxury but rather a necessity (NEA Policy Statement on Digital Learning, 2013). To engage today's learners, future teachers must be exposed to different teaching methodologies that incorporate technology. The best way for future educators to harness technology is to actually use it. Therefore, there is a compelling need for teacher preparation programs to utilize emerging technologies and mobile devices to cultivate the learner's higher-forms of thinking, increase technology literacy, and employ digital tools. Flipped and fully online courses provide the optimal environments for future teachers to experiment with and master the skills for successfully integrating technology into their teaching.

The results of this study have demonstrated that using a flipped classroom instructional technology strategies combined with face-to-face instruction in an introductory education course is preferred by students and significantly improves academic achievement. The traditional classroom and the online classroom where learners are passive recipients of information and facts may not be the best option for future educators. Converting the traditional classroom to a flipped classroom, as shown in this study, can provide more opportunity for active learning, student engagement, student success, and student satisfaction. Encouraging students to become

familiar with the course content before class and with innovative technological tools, may lead to more meaningful learning experiences. This study should be considered as a preliminary analysis for further investigations in flipping the classroom in teacher preparation programs.

In summary, if the goal of teacher preparation programs is to prepare students to work with digital natives, then the current passive, one-way teaching format must be redesigned. The flipped classroom is a viable option. Based on the researcher's personal experience, the researcher believes that the flipped classroom teaching methodology can provide new educational opportunities for teacher preparation programs. Moving lectures outside the confinement of the traditional classroom must be recognized as an option for future educators.

Furthermore, in order to facilitate this initiative, educators in teacher preparation programs must be willing to shift their ideas about teaching. Educators must be willing to gradually integrate technology in their courses. Also, they must be willing to acquaint themselves with available resources to begin to think about what aspects of a lecture can effectively be flipped. Educators must also research the strengths and weaknesses of the flipped classroom. Accordingly, they should begin to flip some activities. Gradually, educators and students must also be encouraged to use the learning management system offered in their institution.

### **Limitations and Future Research**

While this study provided evidence that the flipped classroom instructional methodology improved academic achievement over a fully online course, caution should be used in generalizing the results. This study used a very small sample of students. Although the participant in this study bear the characteristics of students in similar programs, there may be some factors that limit the generalization of the findings. Also, the researcher was the sole

professor for both teaching methodologies. Implementation of the teaching methodologies may be very different by other professors. Furthermore, students in the different learning environment may react differently to other professors. How the course was presented in the flipped classrooms and in the online courses may also affect the learning experiences and outcomes.

The focus of this study may also limit the issues that this study addressed. The only teaching methodologies in this study were the flipped classroom and online course. There are many other methodologies used in teacher preparation programs. Also, there may have been extraneous variables that may have had an impact on the results. Student motivation, level of technology, gender (mostly females), ethnicity (mostly Hispanics), the course itself (students in more advanced courses may not be amenable as students in an introductory course), and the length of the study could have played an important role in academic achievement and student satisfaction. Also, the flipped classrooms were courses taught mainly during the summer sessions. Whereas the online courses were taught in the regular Fall and Spring sessions. These variables may have impacted the results of the two teaching methodologies.

Further research including more instructional methodologies, an extended group of participants, different institutions, different assessment, and other teacher preparation courses may considerably expand understanding of the effect of an instructional methodology on the academic achievement level and satisfaction of teacher preparation students. - Finally, it may be more informative to use a survey designed specifically to measure student satisfaction in the two instructional methodologies. This study used the school's end-of-course evaluations. While numerous studies (Benton, 2011; Cummings et al., 2015; Dae Shik et al., 2012; Kim et al., 2014)

have found links between positive end-of-course evaluations and student satisfaction, it cannot be assumed that an end-of-course evaluation is an adequate measurement of student satisfaction.

### **Summary**

The success of educators of the 21<sup>st</sup> century may be partially promoted by evolving technology. Teaching and learning must become more socially interactive to reach today's learners who are growing in a technology-driven world. Access to technology in schools is increasing. However, there is a persistent "digital divide" and "technological capital" among educators. Thus, there are educators who quickly embrace change and are willing to explore the effective use of new technology in the classroom. Similarly, there are many educators who are hesitant to recognize that technology may provide cognitive and affective engaging opportunities. Technology has created educational experiences that are sensorially, spatially, and socially interactive. Drawing on the work of Katz (1959), Brunner (1960), Bandura (1977), Daft & Engel (1984), Short, Williams, & Christie (1976), Piaget (1977), and Vygotsky (1962) the classroom is evolving from a passive instructivist paradigm to an interactive constructivist framework. Tomorrow's classroom may be more promising if it is influenced by technology to balance educators, learners, and content.

Educators and education preparation programs must continually explore and examine methods to include technology in the learning process. Research on online learning and the flipped classrooms is important and evolving. Instructional methodologies that influence academic achievement and satisfaction must be embedded in every teacher preparation program curricula. Education preparation students enrolled in education preparation online courses and flipped classrooms may provide feedback on the integration of technologies in future classrooms.



This study found evidence that a flipped education courses should influence ongoing research on this instructional methodology.

Significant statistical difference in academic achievement as measured by the students' final grades in flipped classrooms versus an online courses was demonstrated in this study.

Overall, results indicated that students in the flipped classroom, when examining overall final grades, did pass the courses in a significantly higher percentage compared to the students who took the online courses. The road has been paved by numerous studies to promote a balance of technology, teaching, learning, and content.

Lastly, while there was little difference in student satisfaction between online courses and flipped classrooms as measured by the end-of-course evaluations, both evoked a high level of student satisfaction. Students' qualitative responses drew particular attention to the practical and theoretical changes needed to increase student satisfaction with evolving technological resources and instructional methodologies, especially in the flipped classroom. Results from this study suggested that instructional methodologies that include technology may bring positive outcomes to teacher preparation programs.

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## APPENDIX A

## APPENDIX A

### STUDENT EVALUATION OF INSTRUCTION PERFORMANCE (TRADITIONAL)

	Almost Always	Usually	Seldom	Almost Never
12. The faculty member treats students with respect.	12. 0	0	0	0
13. The faculty member inspires interest in the subject matter.	13. 0	0	0	0
14. The faculty member shows concern for student learning.	14. 0	0	0	0
15. The faculty member shows interest in this course.	15. 0	0	0	0
16. The faculty member challenged me to work hard.	16. 0	0	0	0

Provide additional comments in the Comment Box below: Please Print!

	Almost Always	Usually	Seldom	Almost Never
17. The faculty member responds when I try to contact him/her (phone calls, email, etc.).	17. 0	0	0	0
18. The faculty member communicates when tests/assignments will be returned.	18. 0	0	0	0
19. The faculty member returns assignments within the timeframe communicated.	19. 0	0	0	0
20. The faculty member provides enough time for questions and answers.	20. 0	0	0	0
21. The faculty member explains subject matter well.	21. 0	0	0	0
22. The faculty member provides support to succeed in class.	22. 0	0	0	0

Provide additional comments in the Comment Box below: Please Print!

## APPENDIX B

## APPENDIX B

### STUDENT EVALUATION OF INSTRUCTION PERFORMANCE (ONLINE)

Please review the distance education course you took this semester. Information cannot be traced to you. Please be candid in your responses. Complete the following form and return to South Texas Community College by clicking the Submit Form button. The information will be stored in a database for use by the instructor and department in planning future distance education courses.


*Thank you for your cooperation!*

<b>INSTRUCTIONAL METHODS:</b>	<b>Almost Always</b>	<b>Usually</b>	<b>Seldom</b>	<b>Almost Never</b>	
1. The instructor makes information about upcoming material available.	1. 0	0	0	0	
2. The instructor summarizes the main point of the lessons.	2. 0	0	0	0	
3. Course material is presented in such a way that it stimulates interest in the subject.	3. 0	0	0	0	
4. The instructor's assignments or lab exercises are related to the course.	4. 0	0	0	0	
5. The instructor encourages students to ask questions, express opinions, and share ideas.	5. 0	0	0	0	
6. The instructor shows interest in student learning.	6. 0	0	0	0	
7. The instructor provides clear directions for assignments.	7. 0	0	0	0	
8. The instructor provides a reasonable amount of time for assignment/exam completion.	8. 0	0	0	0	
9. The instructor responds to questions in a timely manner.	9. 0	0	0	0	
10. The instructor answers questions well.	10. 0	0	0	0	
11. The instructor grades assignments and tests in a reasonable period of time.	11. 0	0	0	0	
12. The instructor is available for student conferences and additional help.	12. 0	0	0	0	
13. The instructor's tests cover the information I was asked to study.	13. 0	0	0	0	
14. The instructor treats students fairly.	14. 0	0	0	0	
15. The instructor treats students with respect.	15. 0	0	0	0	
<b>Comments about instructional methods:</b>					

## APPENDIX C

## APPENDIX C

### SOUTH TEXAS COLLEGE IRB APPROVAL

  
**South Texas College**

*Research & Analytical Services*

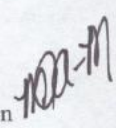
P. O. Box 9701  
McAllen, Texas 78502-9701

(956) 872-5592  
Fax: (956) 872-5594

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## Memo

**To:** Rene R. Zuniga

**From:** Mónica Jean Alaniz-McGinnis, PhD – IRB Liaison 

**RE:** ENHANCING STUDENT SUCCESS AND SATISFACTION BY FLIPPING THE  
TEACHER EDUCATION PREPARATION


**Date:** July 31, 2015

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After reviewing all pertinent information regarding your research proposal entitled *Enhancing Student Success and Satisfaction by Flipping the Teacher Education Preparation Classroom*, South Texas College's Institutional Review Board has determined that this project is exempt from review as per stipulations set forth under federal regulation 45 CFR 46.101(b)(2).

The approval of this project is granted for a one year time frame. Should the project need to be extended or changes are found to be necessary, an STC-IRB Continuation/Change Form must be filled out, filed, and approved before you may continue. This document is available online at the STC Research & Analytical Services (RAS) website which can be found at <http://isp.southtexascollege.edu/ras/>. It is also available in hardcopy upon request. Please keep us posted on any developments and let us know how we can be of help to you.

If you should have any questions, comments or concerns regarding this letter or your proposal please feel free to contact me, Mónica Jean Alaniz-McGinnis, PhD, STC-IRB Liaison, via e-mail at [mjalaniz@southtexascollege.edu](mailto:mjalaniz@southtexascollege.edu) or by phone at (956) 872-5569. You can also contact Research & Analytical Services Director Serkan Celtek at (956) 872-5548 or [sbceltek@southtexascollege.edu](mailto:sbceltek@southtexascollege.edu). Best of luck in your current academic endeavors, and we look forward to hearing from you in the future.



## APPENDIX D

## APPENDIX D

### THE UNIVERSITY OF TEXAS AT BROWNSVILLE IRB APPROVAL



Research Integrity and Compliance  
The University of Texas at Brownsville

Zhidong Zhang, Ph.D.  
Interim IRB Chair

August 10, 2015

Rene R. Zuniga  
The University of Texas at Brownsville  
One West University Blvd.  
Brownsville, Texas 78520  
RE: IRB-HS Approval

Study Title: "Enhancing Student Success and Satisfaction by  
Flipping the Teacher Preparation Classroom"

Protocol #: 2015-037-IRB

Dear Mr. Zuniga,

In accordance with Federal Regulations for review of research  
protocols the Institutional Review Board – Human Subjects of The  
University of Texas at Brownsville has reviewed your study as requested.

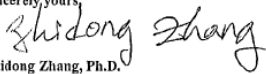
The IRB-HS grants its approval for this project contingent on compliance with the following items. You may make as many  
copies of the stamped consent form as are necessary for your activity. All consent forms MUST bear the UTB IRB stamp  
indicating approval.

Responsibilities of the Principal Investigator also include:

- Inform the IRB-HS in writing immediately of any emergent problems or proposed changes.
- Do not proceed with the research until any problems have been resolved and the IRB-HS have reviewed and approved any changes.
- Report any significant findings that become known in the course of the research that might affect the willingness of the subjects to take part.
- Protect the confidentiality of all personally identifiable information collected.
- Submit for review and approval by the IRB-HS all modifications to the protocol or consent form(s) prior to implementation of any change(s).
- Submit an activity/progress report regarding research activities to the IRB-HS on no less than an annual basis or as directed by the IRB-HS through the Continuing Review Form.
- Notify the IRB-HS when study has been completed through submission of a Project Completion Report.

Should you have any questions or need any further information concerning this document please feel free to contact me at  
(956) 882-5723 or via email at [zhidong.zhang@utb.edu](mailto:zhidong.zhang@utb.edu).

Sincerely, yours,

  
Zhidong Zhang, Ph.D.  
IRB – Interim Chair

**Approval Type:**

- ☐ Full Board Review
- ☒ Designated Member Review
- ☐ Continuing Review
- ☐ Change request/Modification/Amendment
- ☒ Exempt Category 1
- ☐ Expedited Category

**Approval Period:**

**Start Date:** August 10, 2015

**End Date:** August 9, 2016



## BIOGRAPHICAL SKETCH

Rene R. Zuniga is currently an Associate Professor and Chair in the Education/College Success Department at South Texas College. While at South Texas College, Rene has been involved in the curriculum committee, President's faculty council, faculty senate, advisor for the education club, facilitator for the Teaching and Learning Academy, and various other committees. Rene earned his Doctorate in Education with emphasis in Educational Technology from the University of Texas-Rio Grande Valley in December 2015. He also earned a Master of Education from the University of Texas-Pan American in 1997 and a Bachelor of Business Administration from Pan American University in 1983. His permanent mailing address is 6805 N. 36<sup>th</sup> Street, McAllen, TX 78504.

Rene R. Zuniga consistently uses technology to engage the learner in multisensory, multidimensional, and multi interactive learning experiences. He believes that technology can bring collectively the subject matter, the learner, and the instructor in a way that improves the teaching and educational experience. He taught 17 years in public schools and is currently in his 13<sup>th</sup> year at South Texas College. Throughout his professional career, Rene has embraced technology as a tool that promotes success and satisfaction in the subject matter. In 2014, Rene was selected as Faculty of the Year by his peers.

Rene R. Zuniga is very active in various professional organizations. He has held different leadership positions at the local, regional, and state level in these organizations. He has also presented at various local, regional, state, and national conferences.