

Comparing A Blended Learning Environment To A Distance Learning Environment
For Teaching A Learning And Motivation Strategies Course

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy
in the Graduate School of The Ohio State University

By

Tammy Gebara, M.E.T

Graduate Program in Education and Human Ecology

The Ohio State University

2010

Dissertation Committee:

Dr. Bruce W. Tuckman, Advisor

Dr. Anita Woolfolk-Hoy

Dr. Leonard Baird

Copyright by
Tammy Gebara
2010

ABSTRACT

This dissertation is a comparative study, using a criterion-group design, examining the effectiveness of a blended instructional model and a distance instructional model in the teaching of a learning and motivation strategies class. Course effectiveness was determined based upon changes in student grade point averages over time from prior to course enrollment to one term beyond course completion. In addition to grade point averages, other student characteristics and demographics were examined for commonalities and differences between and among students in the two different instructional methods. Characteristics and demographics considered include: procrastination scores, Preferred Learning Orientation, age, gender, ethnicity and academic ranking.

The course used in this study is a college-level, credit-bearing elective course. The data used in this study suggests there is no significant difference between the blended version and the distance version of the course in terms of student GPA. In addition, there appears to be no significant differences in demographics. While students in the distance course are older and further advanced academically (this being consistent with other findings in distance education), the male-female ratio, ethnicity distributions, and scores on self-administered procrastination and learning orientation surveys are all approximately the same in the blended version as in the distance version of the course.

Dedication

To my family and friends who thought this day would never come.

For my three daughters Leah (11), Rachel (11), and Isabel (4)

In memory of my father Marshall D. Clanin, (OSU, 1966)
(1938-1988)

Acknowledgements

There are many people to whom I am deeply indebted for helping me complete this project. First and foremost is my academic advisor Dr. Bruce Tuckman and fellow committee members Dr. Anita Woolfolk-Hoy and Dr. Leonard Baird. I owe thanks to D'Arcy Oaks and Gary Kennedy for their assistance in acquiring the data needed for this study. I appreciate the friendship and professional support provided early on by Dr. Rick Mosholder and Dr. Jeanette Jones. I owe many thanks to Dr. Laura Roberts of *Right Angle Research* for her assistance in the analysis phase. And finally I owe my heartfelt appreciation to my husband Sotero J. Gebara, mother Helen Clanin, and sisters Loretta Covert and Debbie Holmes for their constant support and prodding. Their insistence kept me going.

VITA

May 1989	BS Elementary Education Baylor University
December 1996	M.E.T, University of Texas Arlington
2008-2009	Visiting Professor Education, Wittenberg University
2007-2008	Visiting Professor Education, Capital University
2003-2006	Graduate Teaching Associate, College of Education and Human Ecology, The Ohio State University
2001-2002	Adjunct Instructor, Developmental Education, Columbus State Community College
1995-1998	Educational Marketing Specialist, Argus Communications
1994-1995	Reading Teacher, Cedar Hill ISD, Cedar Hill, TX
1989-1994	Title II Reading Teacher, Forth Worth ISD, Fort Worth, TX

Fields of Study

College of Education and Human Ecology
School of Educational Policy and Leadership
Psychological Perspectives in Education
Cognate in Language Literacy and Culture

Table of Contents

Abstract	ii
Dedication	iii
Acknowledgments.....	iv
Vita	v
List of Tables	viii
List of Figures	ix
Chapter 1: Introduction.....	1
Context of Problem.....	1
Statement of the Problem.....	2
Defining Distance Education.....	5
Chapter 2: Background of the Study.....	8
Hypotheses.....	11
Rational for Each Hypotheses.....	12
Summary of Rationales.....	16
Significance of the Study.....	16
Chapter 3: Methodology and Procedures.....	18
Methodology.....	18
Data.....	18
Participants.....	18

Instruments and Measures.....	20
Independent Variables.....	21
Dependent Variable.....	21
Moderating Variable.....	22
Confounding Variable.....	22
Procedures.....	23
Chapter 4: Data Analysis.....	24
Hypothesis 1.....	24
Hypothesis 2.....	30
Hypothesis 3.....	33
Hypothesis 4.....	36
Hypothesis 5.....	40
Chapter 5: Summary and Discussion.....	47
Summary.....	47
Discussion.....	49
Recommendations for Further Research.....	58
Conclusion.....	61
Appendix A: <i>That's Me -That's Not Me</i> Procrastination Survey	63
Appendix B: Preferred Learning Orientation Survey	67
Appendix C: Electronic Research Permission Form.....	70
Appendix D: Email Permission Request Form.....	72
References.....	74

List of Tables

Table 1. Descriptive Data for Treatment Group.....	24
Table 2. Number of students in each group for hypothesis 1, ANCOVA 1.....	26
Table 3. Results of the test of hypothesis 1 with ANCOVA 1.....	27
Table 4. Results for the test of hypothesis 1 with ANCOVA 2.....	28
Table 5. Mean GPAs at each time of measurement.....	30
Table 6. Descriptive data for the “That’s Me, That’s Not Me” procrastination scale.....	31
Table 7. Group Statistics for TMTNM procrastination scale.....	32
Table 8. Independent Sample Test for TMTNM procrastination scale.....	32
Table 9. Final Course Grades – Distance.....	33
Table 10. Final course grades – Distance.....	34
Table 11. Independent Samples Test for Final course grades – Distance.....	34
Table 12. Final course grades – ADAPT.....	35
Table 13. Means for males and females.....	36
Table 14. t-Test of means for males and females.....	36
Table 15. Percent of students for each learning orientation.....	37
Table 16. Chi-Square test of learning orientations.....	38
Table 17. Chi-square test of equal measures – Distance.....	38
Table 18. Chi-square test of equal measures – ADAPT.....	39
Table 19. Mean Age for Students in Each Group.....	40

Table 20. T Test of Mean Differences on Age.....	41
Table 21. Descriptive data for males and females in each group.....	41
Table 22. Chi-Square test of proportions for males and females.....	42
Table 23. Chi-square with race by treatment.....	43
Table 24. Chi-Square test for racial make-up.....	44
Table 25. Statistics for academic rank.....	44
Table 26. Descriptive Data for academic rank.....	45
Table 27. Group statistics for academic rank for each group.....	46
Table 28. Independent samples test.....	46

List of Figures

Figure 1. Frequency distribution of GPA prior to treatment.....	25
Figure 2. Frequency distribution of GPA immediately after the end of the treatment.....	25
Figure 3. Frequency distribution one academic term after treatment.....	26
Figure 4. Residuals for hypothesis 1 ANCOVA 1.....	29
Figure 5. Residuals for hypothesis 1 ANCOVA 2.....	29
Figure 6. Frequency Distribution for TMTNM scores.....	31
Figure 7. Frequency distribution for final grades – Distance.....	33
Figure 8. Frequency distribution of final grades – ADAPT.....	35
Figure 9. Frequency distribution of age.....	40
Figure 10. Frequency distribution of academic rank.....	45

Chapter 1: Introduction

CONTEXT OF THE PROBLEM

Research in distance education has grown dramatically over the past two decades. Some studies have focused on the curriculum (Feasly, 2003) while others have focused on the instructor/learner relationship (Saba, 2003). Other researchers have focused on comparing instructional methods, for example Maki and Maki (2002) summarize several studies that compare traditional instruction to web-based instruction. The findings in these studies have shown mixed results with some studies favoring traditional lecture courses, some favoring web-based courses, and some showing no significant difference in student performance in either type of course. Russell (1999) conducted a comparative review of the literature exploring 355 studies from as far back as 1928 on technology for distance education. What these studies showed, according to Russell (1999), was that when course materials and teaching methodology were held constant, there were no significant differences between student outcomes in distance courses as compared to traditional face-to-face courses.

There is a new growing instructional methodology known as blended instruction. Blended instruction combines important elements of traditional education with important features of distance education creating a new approach to instruction that seemingly makes it the best of both worlds. Most of the research (Maki & Maki, 2002; Russell,

2000; Hilz, 1993) seems to compare traditional instruction to distance instruction. There is little research comparing traditional instruction to blended instruction, or comparing Distance instruction to blended instruction. Could this new blended instructional model be more effective than either traditional or distance instruction for increasing student academic performance?

As recent as 2009, The Department of Education conducted a meta-analysis of research between 1996 and July of 2008. Their findings suggest that students who took all or part of their class online performed better, on average, than those taking the same course through traditional face-to-face instruction. Again, the studies examined in the meta-analysis were predominately studies that compared online/distance to traditional face-to-face. Even with the limited number of available studies involving blended instruction for their meta-analysis, the 2009 publication suggests instruction that combined online and face-to-face elements had a larger advantage relative to purely face-to-face instruction than did purely online instruction.

STATEMENT OF THE PROBLEM

The purpose of this study is to compare the effectiveness of a blended instructional model, called ADAPT (Active Discovery And Participation thru Technology; Tuckman 2002) with distance instruction of the same curriculum for teaching a learning and motivation strategies course. Both the ADAPT model and distance instruction are currently used to teach a 10 week for-credit study skills course at a major mid-western university. The objective of the course is to improve students' academic performance as measured by grade point averages.

Several questions guide this study including:

- 1) Which methodology, ADAPT or distance, is more effective at improving student academic achievement as measured by grade point average (GPA)?
- 2) Which group of students, ADAPT or distance, is more likely to have a higher percentage of students with a high procrastination score, based upon the “That’s Me, That’s Not Me” procrastination scale taken during the third week of the course (Tuckman, 1991) (Appendix 1)
- 3) Is there a difference in academic performance between males and females in each of the two instructional methods?
- 4) Do significant relationships exist between a student’s Preferred Learning Orientation (Tuckman, Abry, & Smith, 2002) and the student’s chosen version of the course? (Appendix 2). The Preferred Learning Orientation is taken during the first week of the course.
- 5) How do the two groups differ demographically on the following characteristics: age, gender, ethnicity, academic rank, and prior cumulative grade point average?

ADAPT: A Blended¹ Instructional Model

According to Dr. Bruce Tuckman in his article, *Evaluating ADAPT: A Hybrid Instructional Model Combining Web-Based and Classroom Components*, the ADAPT (Active Discovery And Participation thru Technology) instructional model is a blend of objectivist and constructivist approaches to instruction and “is an attempt to combine

¹ Formerly called “hybrid.”

both approaches by providing well-designed direct instruction about the content of the course with problem-based, manipulative or active learning in the form of computer-mediated performances” (Tuckman, 2002). Tuckman highlights that the ADAPT instructional model combines important elements of traditional classroom instruction with important elements of computer-mediated instruction. He explains that “regular class attendance under the watchful eye of an instructor increases the likelihood that work will be done in a timely manner” and that using a “printed textbook is predicated upon findings that show that printed information is more easily remembered than information conveyed by computer (Murphy 1999 in Tuckman, 2002).

The ADAPT model nicely demonstrates the characteristics of an effective integrated learning environment as outlined by Skill and Young (2002, p. 25):

1. The integrated hybrid course is carefully redesigned so as to best leverage powerful in-class, face-to-face teaching and learning opportunities with the content richness and interactivity of electronic learning experiences.
2. The e-learning component of the integrated hybrid class emphasizes facilitated “time on task” activities such as virtual teamwork, synchronous communication and threaded discussions.
3. The re-designed integrated hybrid course moves away from traditional notions of “seat time” by carefully integrating “online” time investment into the “clock hour” contact calculations. Learning outcomes and “time on task” are the new metrics for assessing the integrated hybrid course.
4. The integrated hybrid course emphasizes learner empowerment and

responsibility as a key value in the course design. Students are encouraged to take control of their learning through both team-based and independent learning activities. Opportunities for the creation of meaningful, student-controlled learning communities (both in person and virtual) are an essential component in most hybrid courses.

Notice the use of the phrase “integrated hybrid” in Skill and Young’s definition. The terms *blended* and *hybrid* are often used interchangeably to describe a course that has both an online/web-based component and a face-to-face/classroom component, however there is an important distinction to be made between the two methodologies. In the hybrid course, online instruction and classroom instruction occur separately at different times and in different locations. In the blended course online instruction and classroom instruction occur at the same time in the same location. Thus, Skill and Young’s definition of “integrated hybrid” instruction is in actuality a definition of blended instruction.

The ADAPT instructional model is solidly based in educational theory and design theory. The integrated hybrid design takes the strongest elements of classroom and computer-mediated instruction creating a model of blended instruction that works to maximize the overall learning experience of students.

DEFINING DISTANCE EDUCATION

What exactly is distance education? With terms such as online learning, e-learning, distance education, web-based instruction, and blended instruction it can be

confusing to know exactly what is meant when using the term distance education. To alleviate confusion, this section highlights a few of the specific terms and definitions important for understanding the background and context of this research study.

Historically, distance education was a generic term used to refer to the physical separation of instructors and students with correspondence courses being one of the oldest and most well known examples of distance education (Keegan, 1993, Saba, 2003, Simonson, 2006). Yet according to Simonson, “Traditional approaches to distance education based on the delivery of print and broadcast media technologies are no longer relevant to the field as it is practiced in the United States as they once were” (Simonson, 2006, P. 7). In fact, Simonson goes on to state that a redefinition of distance education has occurred and that distance education is now defined as, “institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors” (Simonson, 2006, p. 7). It is this updated meaning of distance education used throughout this paper. Additional important terms such as e-learning, hybrid instruction, blended instruction, and computer based instruction are outlined below. Definitions are taken and/or paraphrased from Schlosser and Simonson’s comprehensive summary of definitions in *Distance Education: Definition and Glossary of terms* published by The Association for Educational Communications and Technology (2002).

Term	Definition
Asynchronous communication	A term that refers to communication in which interaction between the sender and the receiver does not take place simultaneously; it is the predominate mode of communication used in e-mail, Usenet group, and on bulletin boards and websites.
Blended Learning	A term used to describe learning or training events or activities where e-learning, in its various forms, is combined with more traditional forms of training such as "class room" training. E-learning instruction and classroom based instruction occur at the same time and in the same location.
Computer Based Instruction	Instruction delivered via the computer. Computer based instruction takes advantage of the interactive nature of the computer. It is inherently an active mode of learning.
Distance Education	Institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors.
Distance Learning	While used interchangeable with distance education, distance learning puts the emphasis on the learner.
Distributed learning	An instructional model that allows instructor, students, and content to be located in different, non-centralized locations so that instruction and learning can occur independent of time and place. The distributed learning model can be used in combination with traditional classroom-based courses, with traditional distance courses, or it can be used to create wholly virtual classrooms
e-learning	The delivery of a learning, training or education program by electronic means. E-learning involves the use of a computer or electronic device (e.g. a mobile phone) in some way to provide training, educational or learning material.
Hybrid learning	A term used to describe learning or training events or activities where e-learning, in its various forms, is combined with more traditional forms of training such as "classroom" training. E-learning instruction and classroom based instruction occur at different times and in different location.
Synchronous Communication	Communication that is real time and not time delayed.
Web Based Application	Software (or online instructional and assessment activities) designed specifically to be used with the Internet. Frequently this term is used to describe software (or online instructional and assessment activities) through which courses might be delivered, wherein the student interacts only with the computer and not with other participants.

Chapter 2: Background of the Study

Distance education has become commonplace in today's higher education scene. One has only to look in course-listing books published by colleges and universities of all sizes to see that one or more technology-mediated courses are part of the curriculum offerings. Technology-mediated instruction includes a wide variety of instructional delivery methods including, but not limited to, teleconferencing, video teleconferencing, web-based courses, and distance courses. Teleconferencing and video teleconferencing are generally synchronous (occurring in real-time with instant communication) while web-based and distance courses can be synchronous, asynchronous (communication is delayed for example by email, blogs, or chat boards), or a combination of synchronous and asynchronous communication.

At one extreme are those institutions of higher education that are totally virtual offering programs and degrees exclusively via the Internet (i.e. American InterContinental University). At the other extreme are those institutions that remain totally traditional in their educational approach. Most colleges and universities, however, fall on a continuum somewhere between the two extremes maintaining a traditional view of education while incorporating online/distance courses into their existing programs.

Research in distance education has evolved over the past quarter century from an initial focus on the technical aspects of distance education (hardware, platforms, connectivity, etc...) to include more humanistic issues related to learners, teachers,

epistemologies and pedagogies (Saba, 2003). Debate exists on the best way to incorporate distance education into existing programs. Simonson (2002) and Keegan (1993), two of the leading experts in the field of distance education, both acknowledge that much of the teaching and learning pedagogy in distance education is well grounded in current traditional educational theory; other researchers (Holmberg, 1995, Wedemeyer 1981) believe that distance education is not simply an extension of traditional teaching but is distinctly different from traditional teaching and requires a distinctly different pedagogical approach. This debate has led to the emergence of a variety of theories like transactional theory, which focuses on the geographical distance between instructor and students (Moore, 1983) and equivalency theory which focuses on learner outcomes (Simonson, 2002).

Another instructional methodology that is gaining attention in distance education is blended instruction. The ADAPT model of blended instruction (Tuckman, 2002) combines important elements of traditional education with important features of distance education. The ADAPT model of instruction is similar to traditional instruction in that it maintains the use of a structured textbook, an assigned instructor, and an on-campus classroom/lab meeting time where attendance is noted if not required (Tuckman 2002). Blended instruction is different than traditional instruction in that it employs a web-based curriculum and shifts the emphasis from a teacher-centered to a learner-centered philosophy (Harker & Koutsantoni, 2005, Schober, 2006).

Blended instruction is different than distance instruction in that learners are required to meet as a group in a centralized location such as a classroom/lab with an instructor for a specified period of time. To help clarify the nuances among the various type of online courses, Allen and Seaman (2008) provide us the following definitions:

Proportion of Content Delivered online	Type of Course	Typical Description
0%	Traditional	Course with no online technology used – Content is delivered in writing or orally
1%-29%	Web-Facilitated	Course that uses web-based technology to facilitate what is essentially face-to-face course. Uses a course management system (CMS) or web pages to post the syllabus or assignments for example (i.e. CARMEN)
30%-79%	Blended/Hybrid	Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has some face-to-face meetings.
80% +	Online	A course where most or all of the content is delivered online. Typically have no face-to-face meetings.

While there are a number of studies comparing traditional education to distance education, (Zhao et al, 2005; Russell, 2000; R Cavanaugh, 2001) there is little research comparing blended instruction to either distance or traditional education. The few studies that have been conducted suggest that blended instruction is more effective than either traditional or distance education in at least one facet of the studied program. For example, in Tuckman’s study (2002) the ADAPT model of blended instruction proved more successful than traditional instruction in increasing student academic performance in a

credit-bearing learning and motivation strategies course. Schober's (2006) study suggested that the blended instructional model is more effective than traditional instruction at generating or increasing student interest of and motivation toward course content for a credit-bearing research methods course for graduate students (2006). And finally Harker and Koutsantoni's (2005) study pointed out that the biggest benefit of blended instruction over distance instruction in a non-credit bearing English for Academic Purposes course was the increased rate of student retention.

Despite findings in current literature supporting the notion that blended instruction is more effective than either traditional or distance education, there are, in actuality, very few studies available to confirm or refute such conclusions. Plus, the existing studies focus on different variables (GPA, student retention, student interest/motivation). The research proposed here will contribute to the overall literature in distance education and alternative forms of instructional delivery of curriculum; and more specifically it will add to the academic literature focused on comparing blended instruction to distance education. More studies are needed assessing the effectiveness of blended instruction in general, and more specifically assessing the effectiveness of blended instruction in credit-bearing courses. This study contributes to that needed body of literature.

HYPOTHESES

The specific hypotheses being investigated are:

H₁: Students in the ADAPT course will have greater cumulative gains in grade point average both the term the course was taken and the term immediately following course completion than will students in the distance version of the course.

H₂: The ADAPT course will yield a higher average score on the “That’s Me, That’s Not Me” procrastination scale than will the distance course (Tuckman, 1991). This scale was taken during the third week of the course.

H₃: Female students will have a higher final course grade than will male students in the distance course whilst there will be no difference in grades between males and females in the ADAPT course.

H₄: The learning orientation SPONTANEOUS will be prevalent among students in the ADAPT course while the learning orientation ORGANIZED will be predominate among students in the distance course (Tuckman, Abry, & Smith, 2002). The preferred Learning Orientation survey is taken during the first week of the course.

H₅: Students in the distance course will be older and further advanced than students who enroll in the ADAPT course. The distance course will also have fewer minorities and more women than the ADAPT course.

RATIONALE FOR EACH HYPOTHESIS

H₁: Students in the ADAPT course will have greater cumulative gains in grade point average both the term the course was taken and the term immediately following course completion than will students in the distance of the course.

R₁: Multiple studies in distance education have shown that individuals who are successful in distance courses tend to be self-regulated learners with high levels of self-discipline (Kramarae, 2001; Dillion & Green, 2003; Simonson et al, 2006). These students already have mastery of effective study strategies and time management skills. Thus these students will not greatly benefit, in terms of a grade point average gain, from the learning and motivation strategy course. This is not to say these students will not benefit at all from the course, only that the overall gain in grade point average will be smaller when compared to students in the ADAPT course. It is surmised that students enrolled in the distance course will begin the term with higher GPA's leaving less room for noticeable gains as compared to those students in the ADAPT course.

H₂: The ADAPT course will yield a higher average score on the "That's Me, That's Not Me" procrastination scale than will the distance course (Tuckman, 1991). This scale was taken during the third week of the course.

R₂: As stated for the first hypothesis, students who enroll in distance courses tend to be self-regulated, work well independently, and possess effective time management skills (Kramarae, 2001; Dillion & Green, 2003; Simonson et al, 2006). The "That's Me, That's Not Me" student survey measures self-reported procrastination behaviors. Given the above stated traits common in distance students, it is hypothesized that procrastination scores will be lower among distance students than among ADAPT students. Students complete this scale only one time during third week of the ten-week course

H₃: Female students will have a higher final course grade than will male students in the distance course whilst there will be no difference in grades between males and females in the ADAPT course.

R₃: Previous studies in distance education have reported an interesting phenomenon between the sexes (Cavanaugh, 2001; Kramarae, 2001). It seems that female students tend to out-perform male students academically in an online {distance} environment. One study in particular (Pollock, Hamn, & Wilson, 2003) suggests that the online {distance} environment reduces gender bias on the part of the instructor since the instructor may not necessarily know the gender of the student. This same study also suggests that the online {distance} environment allows women to feel more confident in speaking out and participating in online discussions. The implication here is that with reduced instructor bias and increased participation, women tend to do better in an online {distance} environment than in the traditional classroom environment. Males, however, seem to perform at similar levels in either environment. (Cavanaugh, 2001; Kramarae, 2001).

H₄: The learning orientation SPONTANEOUS will be predominate among students in the ADAPT course while the learning orientation ORGANIZED will be predominate among students in the distance course. The Preferred Learning Orientation survey scale is taken in the first week of the course.

R₄: The Preferred Learning Orientation survey (Tuckman, Abry, & Smith, 2002) assesses a student's preferred orientation to learning. According to Tuckman, Abry, and Smith in their text, *Learning and Motivation Strategies: Your Guide to Success* (2002)

there are four categories: spontaneous (learning from the experience of actually doing something), organized (requires structure, sequence, and advance notice), interactive (interaction and communication with other people), and conceptual (seeking to understand, explain and predict what is encountered through posing questions, seeking answers, and analyzing data while working independently) (p. 8).

Tuckman, Abry, and Smith point out students may use all four orientations in the course of their studies but often one orientation seems more comfortable and is preferred over the others (p. 9). The literature supports the suggestion that distance students prefer courses that are highly structured, well organized, and explicit in course expectations (Kramarae, 2001; Dillion & Green, 2003; Simonson et al, 2006). Thus the researcher surmised that the ORGANIZED learning orientation should appear more often among distance students in this study. If Kramarae's (2001) findings hold consistent in this study, (women online prefer independent learning over collaborative learning) then the learning orientation CONCEPTUAL would also appear more often among distance students. The literature does not address learning preferences or styles for students in blended environments. Based upon Tuckman, Abry, and Smith's definition of the SPONTANEOUS orientation and the interactive nature of the ADAPT course, the researcher surmised the SPONTANEOUS orientation would be more prevalent than the other three learning orientations among students taking the ADAPT version of the course.

H₅: Students in the distance course will be older and further advanced than students who enroll in the ADAPT version. The distance course will also have fewer minorities and more women than the ADAPT version

R₅: The current literature suggests and supports that the majority of distance students tend to be older (non-traditional) students; are more likely to be female; and are generally further advanced than their non-distance counterparts (Simonson, 2006; Dillion & Greene, 2003; Kramarae, 2000). It was expected that findings in this study would be consistent with the findings in the current literature.

Summary of Rationales

It is suggested that students who enroll in and complete the ADAPT model of the course will gain the most benefit from the course in terms of increased grade point average, and that students in the distance version of the course will not experience as much of the beneficial gains in grade point average as do the ADAPT students. Again, it is suggested that the distance students enter the course with higher grade point averages, and higher levels of self-regulatory skills reducing the amount of procrastination that affects the student's academic performance. It is not suggested or implied that the course is not effective with distance learners, nor that distance learners will not benefit at all from the content of the course. What is suggested is that those students who take the ADAPT course will see greater benefits in the way of higher increases in grade point averages than those taking the distance course.

SIGNIFICANCE OF THE STUDY

This study adds to the overall literature in distance education in that it contributes to the currently limited available knowledge on the effectiveness of blended instruction.

There are many studies comparing traditional instruction to distance instruction (Zhao et al, 2005; Russell, 2000; R Cavanaugh, 2001). One study compares blended instruction to traditional instruction in a credit-bearing course (Tuckman, 2002), and one study compares blended instruction to distance instruction in a non credit bearing course (Harker & Koutsantoni, 2005), to date no studies exist comparing blended instruction to distance instruction in a college-level credit-bearing course. This research is the first to focus on such a comparison.

In addition to contributing to the overall literature in distance education, and specifically blended instruction, this study provides another assessment tool in evaluating the overall effectiveness of the learning and motivation course in the study. With course content in both versions of the course (ADAPT and distance) being held constant, this study examines the instructional methodology and learning environment. This study also opens the door to future study further examining instructional methods, learning environment, and instructor influence on learning outcomes.

Chapter 3: Methodology and Procedures

METHODOLOGY

Research Design

This study used a criterion-group design with the instructional methodology, or version of the course (ADAPT or distance), serving as the criterion. According to Tuckman (1999), this research design facilitates research in three ways: “it helps researchers to identify characteristics associated with a criterion group that have presumably caused the criterion behavior; analyzes a differential treatment; and helps researchers to explore the behavioral implications of classification into different criterion groups (Tuckman, 1999, p. 184).

Data

This study utilized existing data previously collected during normal enrollment and execution of the targeted course during the academic year 2006-2007.

Participants

A total of 103 undergraduate students were involved in this study. The population of the study is all students enrolled in a credit-bearing learning and motivation course offered at a major mid-western university. Samples were drawn from this target

population. One sample group of 43 participants was drawn from students who were enrolled in the distance version of the course. The second sample group of 60 participants was drawn from students who enrolled in the ADAPT version of the course.

One instructor taught the distance version of the course for the three terms it was offered during the 2006-2007 academic year. The ADAPT version of the course had ten instructors per term. In an effort to reduce the effects of instructor bias, one instructor from the ADAPT version who taught the course each term was selected based on matching demographic make-up compared to the distance instructor including age, teaching experience, gender, and ethnicity.

Both instructional versions of the course are still currently in use and available to university students who wish to enroll. Participants of this study self-selected themselves into a sample group by enrolling in their choice of either the distance or the ADAPT version of the course without interference or influence from the researcher or instructors. Students enrolled in the course were given the opportunity to electronically sign an informed consent research release form at the beginning of the course granting permission for their information to be collected and used for future research purposes. Participants completed the course knowing their data would be collected and analyzed but unaware of their status in any particular sample group or of their participation in this specific study. (Appendix 3).

In addition to the electronically signed permission form, the researcher contacted all individuals via email to secure additional permission to access grade point averages and demographic information from the university registrar. (Appendix 4).

Instruments and Measures

Grade Point Average: Entering cumulative and ending GPA for the term the course was taken and for the term immediately following course completion were used

“That’s Me, That’s Not Me” Procrastination Scale: This scale was administered as a regular part of the learning and motivation course during the third week of the course. Previous tests of reliability and validity indicate the procrastination scale is an accurate representation of the relationship between a student’s self-reported procrastination tendencies and their actual self-regulated performance (Tuckman, 2002).

Preferred Learning Orientation Survey: This scale was administered as a regular part of the learning and motivation course during the first week of the course. Scores were used to determine the student’s preferred learning orientation – Spontaneous, Conceptual, Organized, or Interactive. Factor analysis was used to establish the factor structure of the learning styles measure. Four distinct factors were identified, corresponding to each of the four learning styles.

Demographic data: permission granting students also provided access to their demographic information including gender, ethnicity, academic rank, and age.

Materials

Participants completed a ten-week long learning and motivation course. Students who did not complete the course were excluded from analysis. Course content is identical for both sample groups. Both groups have the same course syllabus, same

required textbooks and same assigned readings. Both groups have the same required completion sequence and completion calendar for assigned readings, web-based learning activities and required written papers. All instructional and assessment learning activities for both versions of the course are entirely online.

The following description of the course comes from the Walter E. Dennis Learning Center (WEDLC) website: “The course teaches study skills, which are abilities to use specific techniques and approaches to enable better learning, better understanding and better retention of what is taught. {It} also addresses time and life management issues that are pertinent in a college environment. ...the course introduces four key strategies for achievement: **Take Reasonable Risk, Take Responsibility for your Outcomes, Search the Environment, and Use Feedback.** These strategies are applied to enhancing skills and processes such as learning from lecture and text, preparing for exams, researching and writing papers, managing tasks, making career decisions, and managing oneself and one’s life at college.”

Independent Variable

The instructional method served as the independent variable with two levels: (a) participants who selected to take the ADAPT version of the course, and (b) participants who selected to take the distance version of the course.

Dependent Variables

The dependent variables are student grade point averages for the term the course

was taken and for the following term, adjusted for prior cumulative grade point average. Prior cumulative grade point average was used as a baseline measure as a covariate against which to assess performance. The grading system consists of letter grades A, A-, B+, B, B-, C+, C, C-, D+, D, D-, and F. These grades were converted to numeric equivalents and averaged across all courses being taken the same term.

Moderating Variables

There are number of moderating variables of interest to the researcher. These include: demographic variables such as age, gender, race (minority vs. non-minority), and academic rank which was collected from course enrollment data; scores on the “That’s Me, That’s Not Me” procrastination scale (Tuckman, 1991), Students completed the procrastination questionnaire and the preferred learning orientation questionnaire as a normal part of the course curriculum.

Confounding Variable

One important potential confounding variable in this study is instructor characteristics. Instructor influence on performance, however, is not the focus of this study. The effects of instructor characteristics will be accounted for in the residual error of statistical analysis.

PROCEDURES

Existing data were gathered from university and course records (gender, cumulative grade point average) and course enrollment records (final course grade, procrastination score, preferred learning orientation). Existing data was analyzed from permission-granting students enrolled in the ADAPT version of the course and the distance version of the course for autumn 2006, winter 2007, and spring 2007. Analysis of covariance of grade point average for the term the course was taken and the quarter that follows was done with prior cumulative grade point average as the covariate. Statistical analysis was conducted using SPSS software.

Chapter 4: Data Analysis

This section looks at the data results for each hypothesis individually. Each hypothesis is provided along with a brief statement of the result of the analysis followed by supporting tables and figures. Further discussion of the results is provided later in the next section of the study.

Hypothesis 1: Students in the ADAPT course will have greater cumulative gains in grade point average both the term the course was taken and the term immediately following course completion than will students in the distance of the course.

Result for hypothesis 1: There was no statistically significant difference in grade point average between the ADAPT group and the distance group during either the term the course was taken or the term immediately following course completion. Table 1 shows the descriptive data for treatment group.

Table 1. Descriptive Data for Treatment Group

<i>Treatment</i>		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Distance	43	41.7	41.7	41.7
	ADAPT	60	58.3	58.3	100.0
	Total	103	100.0	100.0	

Figures 1, 2, and 3 show the frequency distributions of GPA prior to the treatment, immediately after the end of the treatment, and one academic term after the treatment.

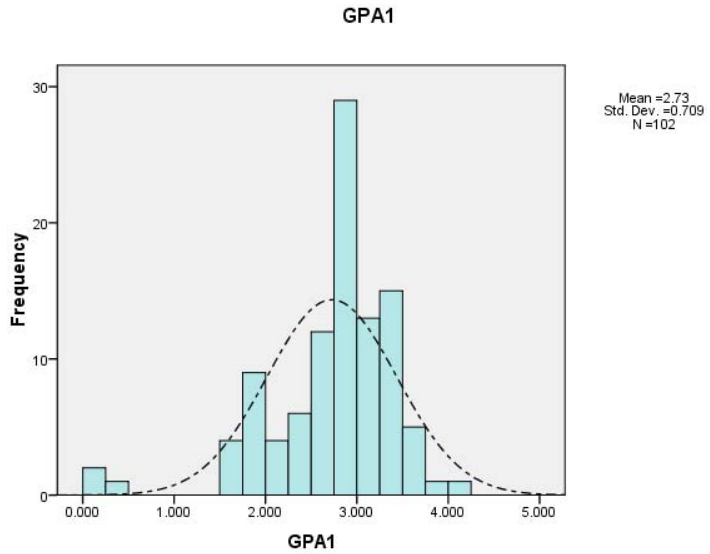


Figure 1. Frequency distribution of GPA prior to treatment

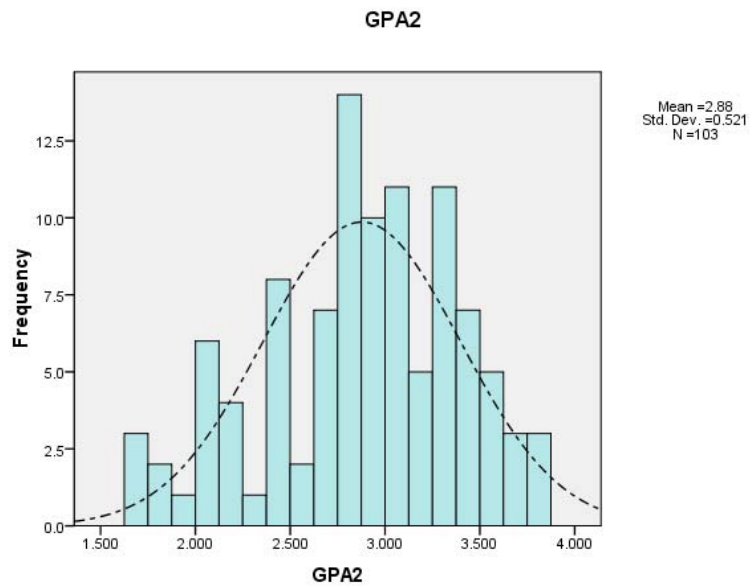


Figure 2. Frequency distribution of GPA immediately after the end of the treatment

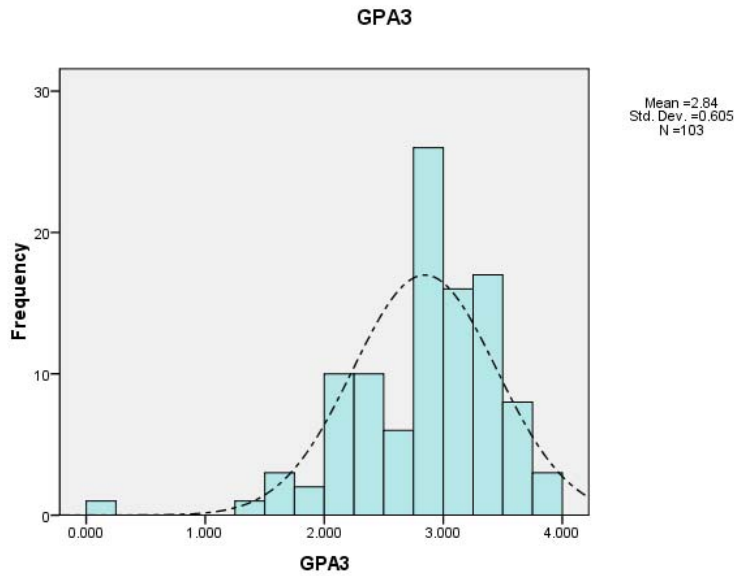


Figure 3. Frequency distribution one academic term after treatment

Table 2 shows the number of students in each group for hypothesis 1, ANCOVA 1.

Table 2. Number of students in each group for hypothesis 1, ANCOVA 1.

Between-Subjects Factors

		Value Label	N
Treatment	0	Distance	43
	1	ADAPT	59

Table 3 shows the result of the test of hypothesis 1 with ANCOVA 1. We must accept the null hypothesis. The ADAPT group did not show a greater gain in GPA during the term the course was taken. This result is highlighted in the table. If the significance level is greater than .05 we must accept the null hypothesis.

Table 3. Results of the test of hypothesis 1 with ANCOVA 1

Tests of Between-Subjects Effects

Dependent Variable:GPA2

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14.104 ^a	2	7.052	54.716	.000
Intercept	13.723	1	13.723	106.469	.000
GPA1	12.860	1	12.860	99.777	.000
Treatment	.320	1	.320	2.486	.118
Error	12.760	99	.129		
Total	866.219	102			
Corrected Total	26.864	101			

a. R Squared = .525 (Adjusted R Squared = .515)

Table 4 shows the results for the test of the first hypothesis with ANCOVA 2. Again, we must accept the null hypothesis. The ADAPT group did not show greater gains by the end of the term immediately following course completion. This result is highlighted in yellow. A significance value greater than .05 leads us to accept the null hypothesis.

Table 4. Results for the test of hypothesis 1 with ANCOVA 2

Tests of Between-Subjects Effects

Dependent Variable:GPA3

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13.629 ^a	2	6.814	29.892	.000
Intercept	12.873	1	12.873	56.469	.000
GPA1	13.001	1	13.001	57.032	.000
Treatment	.059	1	.059	.260	.611
Error	22.569	99	.228		
Total	855.711	102			
Corrected Total	36.198	101			

a. R Squared = .377 (Adjusted R Squared = .364)

Figures 4 and 5 provide the histograms for the residuals of the two analyses conducted for hypothesis 1. There is an assumption that these residuals should be normally distributed. They appear to be fairly normal in both cases, with the exception of several unexpectedly large values in the tails (i.e. value greater than |3|). However, given the adequate sample size for this study ($n > 30$ for each group) we can invoke the central limit theorem and conclude that the results are fairly robust to minor violations of the assumptions.

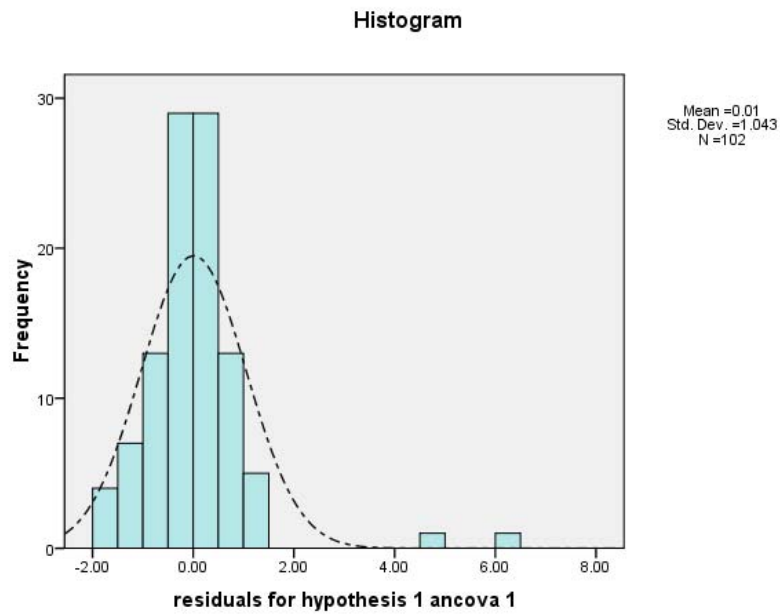


Figure 4. Residuals for hypothesis 1 ANCOVA 1

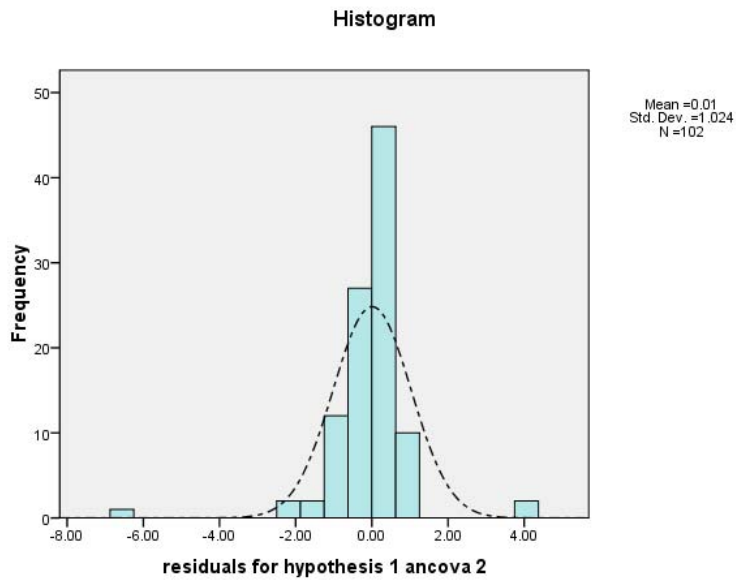


Figure 5. Residuals for hypothesis 1 ANCOVA 2

Table 5 presents the mean GPAs for the two groups at each time of measurement.

Table 5. Mean GPAs at each time of measurement

<i>Report</i>		GPA1	GPA2	GPA3
Treatment				
Distance	Mean	2.85005	2.99800	2.92640
	N	43	43	43
	Std. Deviation	.756654	.479898	.657643
ADAPT	Mean	2.63617	2.79078	2.78603
	N	59	60	60
	Std. Deviation	.663988	.535304	.561712
Total	Mean	2.72633	2.87729	2.84463
	N	102	103	103
	Std. Deviation	.708889	.520696	.604509

Hypothesis 2: The ADAPT course will yield a higher average score on the “That’s Me, That’s Not Me” (TMTNM) procrastination scale than will the distance course (Tuckman, 1991). **Result for hypothesis 2:** There was no statistically significant difference in scores on the “That’s Me, That’s Not Me” procrastination scale between students in the ADAPT group and students in the distance group.

Table 6 shows the descriptive data for the “That’s Me, That’s Not Me” procrastination scale.

Table 6. Descriptive data for the “That’s Me, That’s Not Me” procrastination scale
Statistics

TMTNM		
N	Valid	103
	Missing	0
	Mean	52.15
	Std. Deviation	10.699
	Minimum	28
	Maximum	80

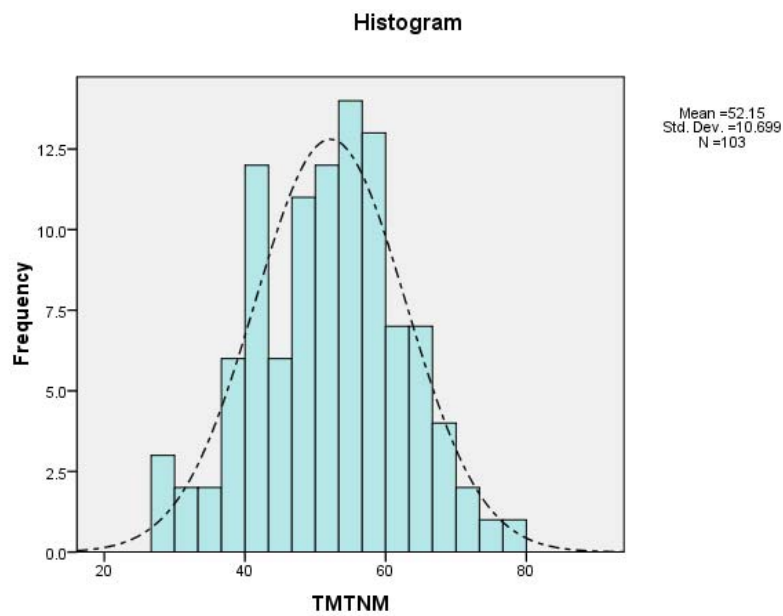


Figure 6. Frequency Distribution for TMTNM scores

Table 7. Group Statistics for TMTNM procrastination scale

Group Statistics

	Treatment	N	Mean	Std. Deviation	Std. Error Mean
TMTNM	Distance	43	50.72	12.097	1.845
	ADAPT	60	53.17	9.548	1.233

Table 8. Independent Sample Test for TMTNM procrastination scale

Independent Samples Test

		t-test for Equality of Means					95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TMTNM	Equal variances not assumed	-1.102	76.951	.274	-2.446	2.219	-6.864	1.972

The t-test of mean differences on TMTNM for students in the ADAPT group versus the students in the Distance course showed a non-significant t statistic ($t[76.95] = -1.102, p = .274$). In order for the difference in means for the two groups to be significant, we must find a t statistic associated with a probability level (p) less than .05. Thus, we must accept the null hypothesis of no differences between the two groups on mean scores for TMTNM.

Hypothesis 3: Female students will have a higher final course grade than will male students in the distance course whilst there will be no difference in grades between males and females in the ADAPT course.

Results for hypothesis 3: There is no statistically significant difference in course grades between females and males in either the ADAPT course or in the distance course. For the distance course, the descriptive data for final course grade are as follows:

Table 9. Final Course Grades - Distance

Statistics

final_grade		
N	Valid	43
	Missing	0
	Mean	10.02
	Std. Deviation	2.041
	Minimum	3
	Maximum	11

The frequency distribution is as follows:

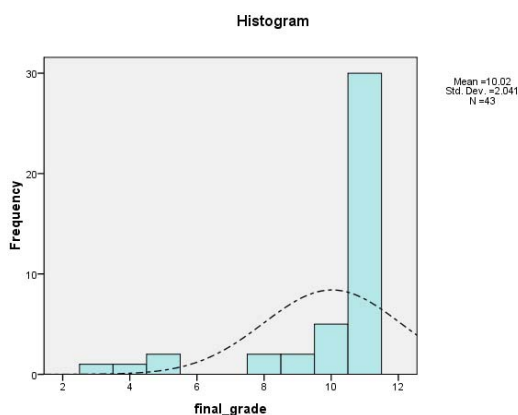


Figure 7. Frequency distribution for final grades - Distance

Notice the distribution is not normal. Although normally distributed data are assumed with a t test, we can invoke the central limit theorem which says the results of the test are robust even if the assumption of normality is violated.

The means for males and females are as follows:

Table 10. Final course grades - Distance

Group Statistics

	sex	N	Mean	Std. Deviation	Std. Error Mean
final_grade	female	27	10.22	2.044	.393
	male	16	9.69	2.056	.514

The t-test for mean differences between males and females shows we must accept the null hypothesis. Males and females are not significantly different.

Table 11. Independent Samples Test for Final course grades - Distance

Independent Samples Test

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Final grade	Equal variances assumed	.827	41	.413	.535	.646

For the ADAPT course, the descriptive data for final course grade are as follows:

Table 12. Final course grades - ADAPT

Statistics

final_grade		
N	Valid	60
	Missing	0
	Mean	9.83
	Std. Deviation	2.637
	Minimum	0
	Maximum	11

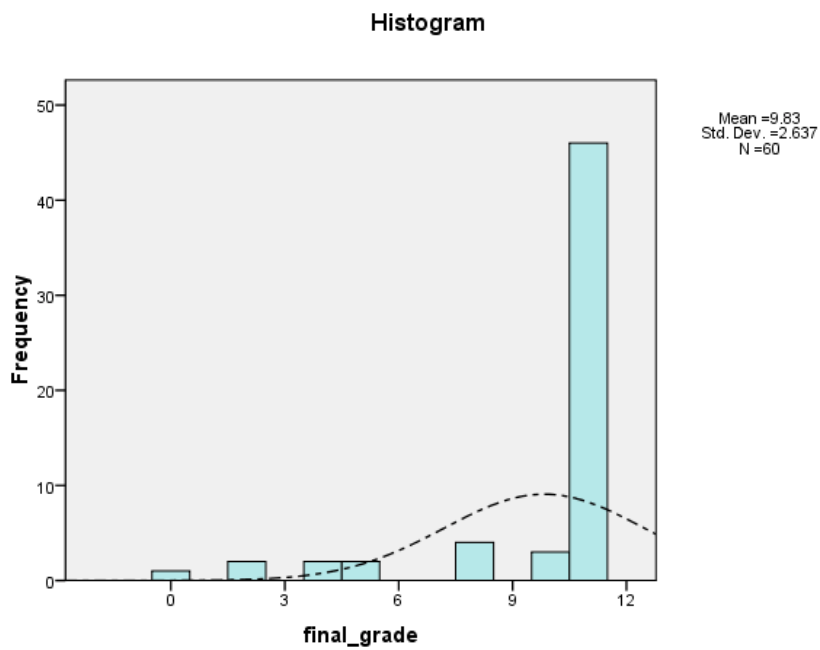


Figure 8. Frequency distribution of final grades - ADAPT

As with the Distance group, the distribution of final course grades was not normal, but again, we can invoke the central limit theorem in order to justify the t-test analysis.

Table 13 contains the means for males and females.

Table 13. Means for males and females

		<i>Group Statistics</i>			
		N	Mean	Std. Deviation	Std. Error Mean
final_grade	female	30	10.30	1.765	.322
	male	30	9.37	3.253	.594

Table 14. t-Test of means for males and females

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
final_grade	1.381	44.703	.174	.933	.676

According to the result of the t test, we must accept the null hypothesis of no mean differences between males and females on final course grade.

Hypothesis 4: The learning orientation SPONTANEOUS will be predominate among students in the ADAPT course while the learning orientation ORGANIZED will be predominate among students in the distance course.

Results for hypothesis 4: The learning orientation INTERACTIVE was predominate in students in the ADAPT course while the learning orientation ORGANIZED was

predominate among students in the distance course.

Table 15 shows the percent of students for each learning orientation within the two groups, Distance versus ADAPT. The modal learning orientation for the Distance group was organized. The modal response for the ADAPT group was Interactive.

Table 15. Percent of students for each learning orientation
*HIGHEST * Treatment Crosstabulation*

			Treatment		
			Distance	ADAPT	Total
HIGHEST	Conceptual	Count	4	7	11
		Expected Count	4.6	6.4	11.0
		% within Treatment	9.3%	11.7%	10.7%
		Std. Residual	-.3	.2	
	Interactive	Count	10	23	33
		Expected Count	13.8	19.2	33.0
		% within Treatment	23.3%	38.3%	32.0%
		Std. Residual	-1.0	.9	
	Organized	Count	24	18	42
		Expected Count	17.5	24.5	42.0
		% within Treatment	55.8%	30.0%	40.8%
		Std. Residual	1.5	-1.3	
	Spontaneous	Count	5	12	17
		Expected Count	7.1	9.9	17.0
		% within Treatment	11.6%	20.0%	16.5%
		Std. Residual	-.8	.7	
Total	Count	43	60	103	
	Expected Count	43.0	60.0	103.0	
	% within Treatment	100.0%	100.0%	100.0%	

Table 4.2 shows the proportions in the various learning categories were not different for the two groups (Distance versus ADAPT). A chi-square greater than .05 leads us to accept the null hypothesis of no significant differences between the two groups.

Table 16. Chi-Square test of learning orientations

<i>Chi-Square Tests</i>			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.066 ^a	3	.070
N of Valid Cases	103		

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 4.59.

However, it should be noted, that within the ADAPT group, the students were not equally distributed across the 4 learning orientations. They were most likely to be in the interactive orientation and least likely to be in the conceptual category. And these differences were significant as indicated by the asymptotic significance level less than .05. Thus, we reject the null hypothesis of equal proportions of students in the four learning orientations.

Table 17. Chi-square test of equal measures - Distance

<i>Test Statistics</i>	
	HIGHEST
Chi-Square	9.733 ^a
df	3
Asymp. Sig.	.02

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.0.

In addition, for the Distance learning group, the students were not equally distributed across the 4 learning orientations. Students in this group were most likely to be in the organized learning orientations and least likely to be in the conceptual orientation. We can reject the null hypothesis and accept the alternative hypothesis that these students are most likely to have an organized learning orientation. See Table 18 for the chi-square results of this test.

Table 18. Chi-square test of equal measures - ADAPT

<i>Test Statistics</i>	
	HIGHEST
Chi-Square	23.698 ^a
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 10.8.

Hypothesis 5: Students in the distance course are older and further advanced (of higher academic rank) than students in the ADAPT course. The distance course also has fewer minorities and more women than the ADAPT course.

Result for hypothesis 5: The students in the distance course are, on average, older and further advanced (of higher academic rank) than students in the ADAPT group; there is no statistical difference in the proportion of males to females in either the ADAPT or distance group; nor is there a statistical difference between the two groups with regard to racial make-up.

First look at the histogram for age. It is not normal, but approximates a normal distribution in that it has two tails.

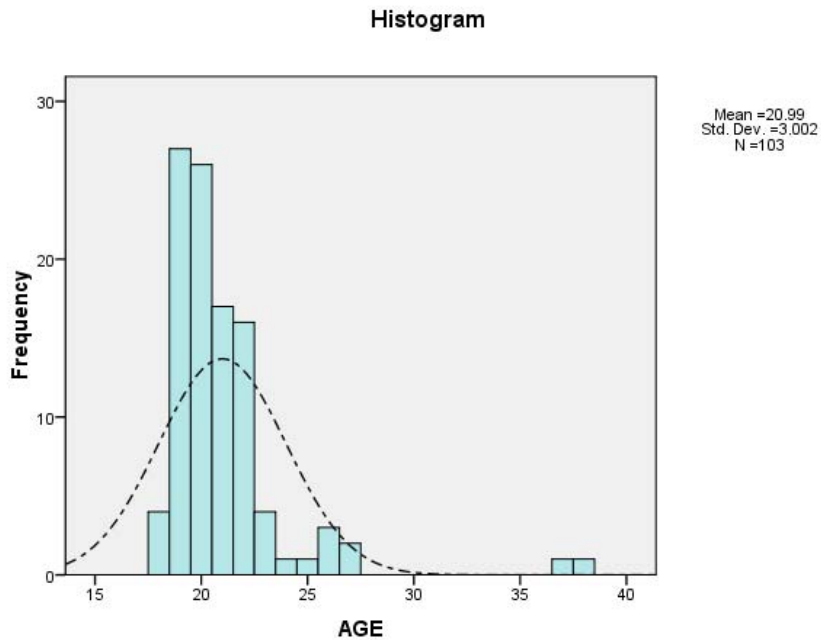


Figure 9. Frequency distribution of age

Table 19. Mean Age for Students in Each Group

		<i>Group Statistics</i>			
					Std. Error
	Treatment	N	Mean	Std. Deviation	Mean
AGE	Distance	43	22.23	3.872	.590
	ADAPT	60	20.10	1.724	.223

Table 20. T Test of Mean Differences on Age

Independent Samples Test

t-test for Equality of Means	t	3.379
	df	54.009
	Sig. (2-tailed)	.001
	Mean Difference	2.133
	Std. Error Difference	.631
	95% Confidence Interval Lower of the Difference	.867
	Upper	3.398

Reject null hypothesis. Accept alternative hypothesis: Students in the distance learning group are, on average, older than students in the ADAPT group.

Hypothesis states there are more women in the Distance course than the ADAPT course.

Chi-square with gender by treatment.

Table 21. Descriptive data for males and females in each group

Crosstab

		Treatment			
		Distance	ADAPT	Total	
sex	female	Count	27	30	57
		Expected Count	23.8	33.2	57.0
		% within Treatment	62.8%	50.0%	55.3%
		Std. Residual	.7	-.6	
male		Count	16	30	46
		Expected Count	19.2	26.8	46.0
		% within Treatment	37.2%	50.0%	44.7%
		Std. Residual	-.7	.6	
Total		Count	43	60	103
		Expected Count	43.0	60.0	103.0
		% within Treatment	100.0%	100.0%	100.0%

Table 22. Chi-Square test of proportions for males and females

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.658 ^a	1	.198		
Continuity Correction ^b	1.181	1	.277		
Likelihood Ratio	1.668	1	.196		
Fisher's Exact Test				.231	.139
Linear-by-Linear Association	1.642	1	.200		
N of Valid Cases	103				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.20.

b. Computed only for a 2x2 table

Table 21 shows the distribution of males and females in the two groups. Table 22 shows the differences in the proportions for males and females does not differ for the two groups.

Hypothesis states the distance course also has fewer minorities

Table 23. Chi-square with race by treatment

Crosstab

		Treatment			
		Distance	ADAPT	Total	
ethnicity	White non-Hispanic	Count	33	45	78
		Expected Count	32.6	45.4	78.0
		% within Treatment	76.7%	75.0%	75.7%
		Std. Residual	.1	.0	
	Black	Count	7	9	16
		Expected Count	6.7	9.3	16.0
		% within Treatment	16.3%	15.0%	15.5%
		Std. Residual	.1	-.1	
	Hispanic, Asian, other)	Count	3	6	9
		Expected Count	3.8	5.2	9.0
		% within Treatment	7.0%	10.0%	8.7%
		Std. Residual	-.4	.3	
Total	Count	43	60	103	
	Expected Count	43.0	60.0	103.0	
	% within Treatment	100.0%	100.0%	100.0%	

Table 24. Chi-Square test for racial make-up

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.298 ^a	2	.861
Likelihood Ratio	.305	2	.859
Linear-by-Linear Association	.142	1	.706
N of Valid Cases	103		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.76.

We accept the null hypothesis of no differences between the two groups with regard to racial make-up.

Hypothesis states Distance learners are at a higher academic rank (level) versus ADAPT students.

(Lower scores on this index corresponds to a higher rank/level)

Descriptive data for the rank variable are given on Tables 25 and 26 and Figure 5.1.

Table 25: Statistics for academic rank

Statistics

RANK

N	Valid	100
	Missing	0
	Mean	1.27
	Std. Deviation	1.188
	Minimum	0
	Maximum	3

Table 26: Descriptive Data for academic rank

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	senior	38	38.0	38.0	38.0
	junior	19	19.0	19.0	57.0
	sophomore	21	21.0	21.0	78.0
	freshman	22	22.0	22.0	100.0
	Total	100	100.0	100.0	

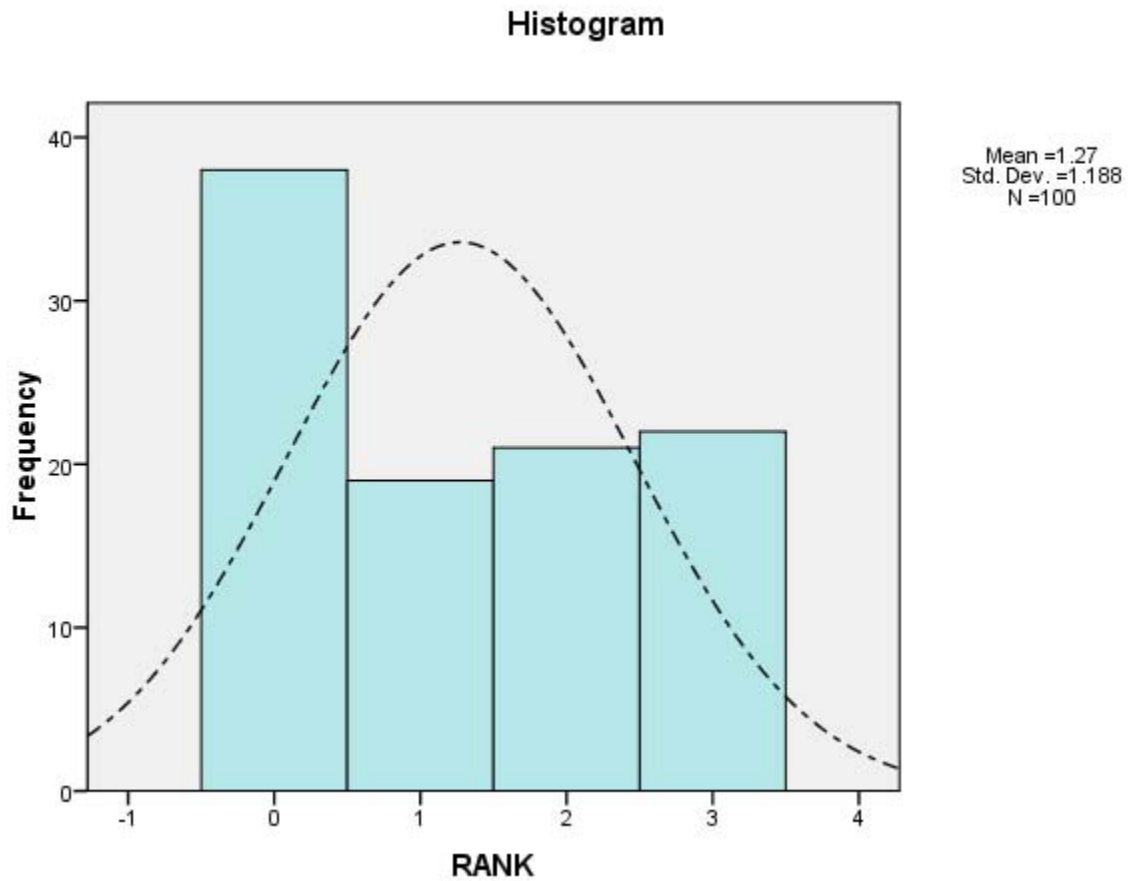


Figure 10. Frequency distribution of academic rank

Although the data are not normally distributed (an assumption for the test conducted), samples larger than 30 cases tend to be robust to deviations from normality and produce a valid test of the hypothesis.

Table 27. Group statistics for academic rank for each group

Group Statistics

	Treatment	N	Mean	Std. Deviation	Std. Error Mean
RANK	Distance	41	.49	.870	.136
	ADAPT	59	1.81	1.074	.140

Table 28. Independent samples test

Independent Samples Test

t-test for Equality of Means	t	-6.800
	df	95.649
	Sig. (2-tailed)	.000
	Mean Difference	-1.326
	Std. Error Difference	.195
	95% Confidence Interval of the Difference	Lower Upper
		-1.713 -.939

Conclusion: Reject the null hypothesis. Accept the alternative hypothesis. Students in the Distance learning group tend to be of higher rank than those in the ADAPT group.

Chapter 5: Summary and Discussion

SUMMARY

The main purpose of this study was to compare two instructional delivery methods currently used for teaching a college level learning and motivation course. The two delivery methods compared in this study were the blended style called the ADAPT method (Active Discovery And Participation thru Technology) and the Distance method. The ADAPT method is a hybrid, or blended methodology wherein the curriculum is web-based with students completing the curriculum online but in a classroom/laboratory setting with the instructor, student, and curriculum all present. The Distance method utilizes the identical web-based curriculum; however students complete their work from a remote location and at a time of their choosing within the time parameters built into the curriculum. In both delivery methods course work is submitted electronically. In the ADAPT method students see an instructor regularly in a classroom/laboratory setting. In the Distance method students do not normally see the instructor in person and communication between student and instructor is most often conducted electronically and asynchronously.

One intent of this research was to uncover whether there was any benefit to taking the ADAPT version of the learning and motivation course over the distance version of the

same course, or vice versa, by comparing gains in grade points averages both the term the course was taken and one term immediately following the term the course was taken. The curriculum has been developed so that course content is uniform across the two instructional delivery methods. Print materials in each method are identical. The course content is presented, practiced, submitted, and assessed electronically in both methods. The curriculum is administered and students complete the work at the same pace in both methods. The ADAPT method uses a blended approach wherein students complete the curriculum online but do so from a campus-based computer laboratory environment. Students in the distance course complete the curriculum from a remote location of their choice.

As mentioned earlier, previous research comparing the ADAPT method to traditional classroom instruction using the same learning and motivation course curriculum showed that students in the ADAPT environment had higher gains in grade point averages than did students who took the course in a traditional classroom setting (Tuckman, 2002). With an identical curriculum being administered via two different instructional methodologies (ADAPT and Distance) the question was asked, what are the differences between and among the students taking each type of course? Do students in one group or the other do better in terms of their gains in grade point average?

The meta-analysis of current research conducted for the Department of Education in 2009 suggested that the online environment proved more successful than the traditional face-to-face environment. Their findings went on to suggest that a blended instructional

environment was as effective, if not slightly more so, than a wholly online instructional environment.

The data used in this study suggest there is little or no difference between and among students in the two different instructional delivery methods in terms of gains in grade point average. These findings are consistent with the findings in the 2009 meta-analysis conducted for the U.S. Department of Education – in that blended and wholly online instruction are equally effective. Their meta-analysis of only ten studies using a blended approach found no significant differences in student learning compared to a wholly online approach.

In summary the data in this study suggest:

- There is no statistical difference between the two methodologies with regard to improved grade point averages.
- There is no statistical difference in the gender make-up between the two methodologies.
- There is no statistical difference in the ethnic make-up between the two instructional methodologies.
- There is no statistical difference in procrastination scores between students in the two methodologies based upon their scores from the “That’s Me, That’s Not Me” procrastination survey taken during the third week of the course.

- The ADAPT students preferred the INTERACTIVE learning orientation while the distance students preferred the ORGANIZED learning orientation. These orientations were based upon the results of the Preferred Learning Orientation survey taken during the first week of the course.
- Students in the distance course are on average older and of higher academic rank than students in the ADAPT course.

Both groups appear to have gains in GPA both the term the course was taken and the term following. In this respect it appears students in both types of courses benefited from learning the content of the course. Both groups appear to do equally well. It is interesting to note that while both groups had gains in GPA for two terms compared to their incoming GPA both groups had slight drops in GPA from the term the course was taken to the term immediately following. Students in the distance group experienced a larger drop in GPA than did students in the ADAPT group. It would appear that while both groups benefited in the short-term, the ADAPT group experienced a longer-term benefit with regard to raising their overall GPA.

Of the all the hypotheses tested, only one was fully supported by the data. Students in the distance course are older and of higher academic rank. This is consistent with the available literature on distance education (Simonson, 2006; Dillion & Greene, 2003; Kramarae, 2000). However, the literature also suggests that a higher percentage of women enroll and complete online courses compared to men. In this study the ratio of females to males is approximately equal (50/50) – contrary to what was find in the

literature. Upon further investigation of the overall population of the institution where this course is taught, the 50/50 ratio of males to females within the course is consistent with the ratio of males to females across the university as a whole. Information publicly available on the university website showed the enrollment of 29,622 men and 29,469 women during the Autumn 2006 term – the same time frame as the current study.

DISCUSSION

At the beginning of the study, it was put forth that students in the blended version of the learning and motivation course would experience a more pronounced benefit in terms of a gain in GPA than students in the distance version. This suggestion was based upon the notion that students in the ADAPT course would be more likely to procrastinate, and that those who tend to procrastinate would do better in an environment with an accountability element – that element being that the ADAPT students had to check in at a regularly scheduled time, face-to-face, with a course instructor twice a week. The students in the distance course were not required to check-in face-to-face with an instructor regularly. While it was suggested that the ADAPT course would prove more beneficial, the data show there is no difference between the two methodologies. And this, of course, raises the question *why are there no differences?* One possible reason for the success of both the ADAPT (blended) and the distance version is that each of the two models represents a student-centered approach to learning. Traditional face-to-face instruction tends to be teacher-centered with the focus being on what and how the teacher chooses to teach. In a student-centered approach to learning, the learner is center-stage

(Harker & Koutsantoni, 2005, Schober, 2006). Content and available assistance are both more targeted and more individualized compared to traditional face-to-face instruction. The student is the center of the instructional process throughout the delivery of the content. Course material for this particular learning and motivation course is designed such that students apply concepts to their personal and immediate learning situations. Module questions and situational scenarios are meant to be answered based upon the individual experiences of each student. In other words, each student has a unique interaction with the concepts presented throughout the course modules. This is true for both versions of the course

A second potential explanation for this dual success is the strength and consistency of the curriculum itself. The content is based upon solid educational and psychological research (Tuckman, 2002) and is delivered to students in identical web-based formats. The structure of the course limits the ability of students to procrastinate. Learning modules for course content open and close at the same rate for students in both types of courses. All students must complete the modules within the specified timeframe. It cannot be determined, based upon the available data, exactly when within that timeframe students actually complete the work. Distance students, who are suggested to be more self-regulated, may complete the work immediately while the ADAPT students, for whom it is suggested have higher procrastination tendencies, may wait until the very end of that timeframe to complete the work. Thus both complete the work within the specified time but the procrastination variable is still in play. Those who consistently miss the module cut-off times early in the course were more likely to drop the course to

avoid a failing grade. Those who did not complete the course were not included in this study. Given the available data, it would not be possible to determine why a student dropped the course.

The structure of the learning and motivation course may be an equalizing factor for the ADAPT students. The data show that the distance students are indeed older and further along in their studies. The literature suggests that these older students possess the traits necessary to be successful with less supervision (i.e. they possess and employ more self-regulation strategies). The younger and less experienced ADAPT students, through the design of the curriculum, are being supported by a course structure meant to reduce the amount of procrastination they exhibit. The ADAPT students are being held accountable for their work through regular face-to-face meetings with an instructor. The goal of such structure would be to help these students learn self-regulation strategies and help them develop the discipline necessary to implement those strategies.

Thus the design of the course itself may be a major factor in why there is little or no difference in between the two versions of the course. We are unable to see the level of actual procrastination given the current design. We are, however, able to note that the ADAPT students maintain a slightly higher GPA gain the term after the course was taken than do the students in the distance course. This suggests that the ADAPT students are implementing at least some of the strategies learned through participating in the course, and may have indeed started changing their procrastination habits.

Power Analysis

Another possibility for the non-significant differences could be due to sample size particularly of the distance group. This study was not a true experimental design with randomized participants but rather a quasi-experimental study with samples of convenience. At the time the data were collected, there was a very limited pool of available participants in the distance version of the course for whom research permission had been granted. For this study, every available subject was included in the analysis - a total of 43 for the distance group. While a much larger sample was indeed available for the ADAPT group, the researcher was limited by the availability of participants in the distance method. With careful consideration, it was decided to go ahead and move forward with the study using the available distance participants. As already stated, every available distance course participant was included.

If this study is repeated, a power analysis is recommended. Given the amount of time that has passed since the original data collection, and the on-going data collection that takes place each term the course is taught, it is surmised that there is a much larger pool of distance course participants available from which to pull a new sample group for a repeat study. A power analysis would indeed help the researcher determine an appropriate sample size for both groups. Rather than using one academic year worth of data, as was done in this study, future researchers could gather data over two or more academic years if the power analysis determined a larger sample was needed.

Upon further research in statistical literature, it was also determined that doing a power analysis after-the-fact was not recommended. "Power analysis is useful for design,

not analysis” (Lenth, 2001). However, if a new repeat study or similar study were to be designed, conducting a power analysis to determine an appropriate sample size would be advisable.

Limitations Inherent in the Sample Groups

Given that this study was not a true experimental study, there are certain limitations inherent in the sample groups. The samples used were samples of convenience pulled from a population of course-enrolled students who had given permission during the first week of class for their course data to be collected and used for future research. The limitations of the sample groups include, but are not limited to, non-randomization of participants, personal characteristics of the students within each group (i.e. work ethic, level of social and cognitive maturity, motivation for taking the course), limited availability of a sample pool for the distance group, specific reasons why the student enrolled in the course in the first place, and the reason for choosing a particular method (ADAPT or DISTANCE). Another limitation is that the course used is an elective course. The students who choose to enroll in this elective course may be very different in character, maturity, motivation, and ability than students who chose not to take the course. Using historical data, as was done for this study, it is not possible to identify these variables.

Description of Sample Groups by Age

The findings of this study support the hypothesis that the Distance students are

older and further advanced than the ADAPT students. It is interesting to look closer at the age distribution as well as the majors represented in each group. Let's look first at the age distribution of the student in each group:

ADAPT

The age range is 18-27

The average age is 20 years

The Median is 20 years

DISTANCE

The age range is 19-38

The average age is 22 years

The median age is 20 years

18	4		18	0
19	23		19	4
20	18		20	8
21	5		21	12
22	5		22	11
23	3		23	1
24	0		24	1
25	0		25	1
26	1		26	2
27	1		27	1
			28-26	0
			37	1
			38	1
	60	Total Students		43

In the ADAPT group the ages are clustered around the 19-20 year olds which traditionally represents the Freshman/Sophomore academic rank. In the Distance group the ages are clustered around the 21-22 year old which traditionally represent the junior/senior academic rank. Each group has older non-traditional students, however the Distance group contains the largest number of students older than 22.

In taking a closer look at the oldest students to enroll in the course, we find the following:

METHOD	AGE	MAJOR	GENDER	RACE
Distance	38	Continuing Education	Male	Black
Distance	37	Nursing	Female	Black
Distance	27	Continuing Education	Female	White
ADAPT	27	Explorations	Male	White

Description of Sample Groups by Major

In the ADAPT section 30% of students were enrolled in the business college, 22% represented the medical field (Nursing, Allied Medical Professions, and Pharmaceutical) and 10% were Social and Behavioral Science majors.

In the DISTANCE section 33% were Social and Behavioral Science majors, 19% represented the undergraduate medical field, and 12% came from the College of Education and Human Ecology.

Overall the medical professions (Nursing, Allied Medical Professions, and Pharmaceutical) and Business School majors made up the largest percentage of students - 40% of the total enrollment at 20% each; while Social and Behavioral Science majors represented the second largest group of students at 18% of the overall enrollment.

Colleges represented in both groups

Business School (BUS)	21
Social & Behavioral Sciences (SBS)	19
Nursing (NUR)	11
Allied Medical Professions (AMP)	10
Education & Human Ecology (EHE)	7
Explorations (EXP)	7
Arts & Sciences (ASC)	5
Engineering (ENG)	5
Agricultural (AGR)	3
Biological sciences (BIO)	3
Continuing Education (CED)	3
Humanities (HUM)	3
Mathematics & Physical Sciences (MPS)	3
Architecture (AHR)	1
Pharmaceutical (PHR)	1
Academy (PSEOP) – Post Secondary	1

ADAPT

18	BUS
7	AMP
6	EXP
5	ASC
6	NUR
6	SBS
2	BIO
2	EHE
2	ENG
2	HUM
1	AGR
1	AHR
1	MPS
1	PSEOP

DISTANCE

14	SBS
5	EHE
4	NUR
3	ENG
3	CED
3	BUS
2	MPS
3	AMP
2	AGR
1	PHR
1	HUM
1	EXP
1	BIO

RECOMMENDATIONS FOR FURTHER RESEARCH

Teacher Impact on Learning

One important potential confounding variable in this study was instructor characteristics. Since analyzing instructor characteristics was not the focus of this study, the effects of instructor characteristics were accounted for in the residual error of the statistical analysis. In an attempt to reduce the impact of instructor characteristics, this study selected instructors who were as similar as possible to each other in teaching experience, ethnicity, gender, and age. One avenue for future research may lie in looking at the impact of the instructor on student learning. How do the instructor characteristics influence student learning in such a structured and student-centered course?

Differential Student Drop Rates

As was mentioned in chapter 3, students who did not complete the course were not included in this study. Examining the number of students who enroll in the course, then drop the course, for each methodology might expose interesting patterns. Student drops can be analyzed in two categories: students who attend at least one class between weeks 1 and 3 and then drop; and students who attend class and then drop the course after the 3rd week. At the time of this study, students in the first category were permitted to drop without a grade penalty on their transcripts. It was as if they had never enrolled. The second category of students, however, received a W (withdraw) on their transcripts. This information was not the focus of this study at the on-set and thus the data were not collected. Unfortunately, the student drop information for the time frame in which this

study was conducted was not accessible in a timely manner due to a computer conversion. Thus examining differential drop rates is something that would need to be planned going forward with a new study.

Procrastination Factor

One purpose of the course in this study is to help students reduce their tendency to procrastinate. As noted earlier, however, the design of the course may limit the impact of a student's procrastination tendencies by providing a highly structured curriculum with an element of face-to-face accountability in the ADAPT version. Both versions of the course allow students the same time-frame in which to complete carefully paced learning modules. With the existing data it is impossible to know how much a student procrastinated in completing each module. As was suggested earlier, the distance students who are older and more academically advanced may complete the modules early within the given timeframe while the younger and less experienced ADAPT students may continue to exhibit procrastination habits by waiting until the end of the time-frame to complete assignments. How do we know if students are actually reducing their tendency to procrastinate given the current structure of the course?

The procrastination survey, "That's Me-That's Not Me" is taken by students during the third week of the course but is not currently taken again either at the end of the course or at the end of the following term – both times when GPA is examined for course effectiveness. Examining student responses to the "That's Me – That's Not Me" survey at the beginning of the term they enroll in the course (as it's currently taken) and again at

the end of the following term might reveal subtle behavioral and attitudinal changes that are not as noticeable immediately at the end of the course. Would a “before and after” analysis of the survey results yield any useful information on the long-term effectiveness of this particular learning and motivation course?

Earlier Intervention

The learning and motivation course is currently an elective and has been shown to improve student GPA (Tuckman, 2002). Would the long-term impact of this course be more powerful if the course was taken by students as first-term freshmen? This gives students a longer academic life in which to develop and practice the skills stressed in the course. One possible way to find out the long-term impact of this course on GPA would be to conduct a comparative longitudinal study of a cohort of entering freshman who take the course their first term and then following them through the end of their senior year. Overall do students who take the learning and motivation course during their first term have higher final GPA and graduating class ranking than those who do not take the course at all? A variation of this question as already been investigated and Tuckman & Kennedy (2009) have found that not only is GPA enhanced by taking the course in one’s first term, but retention and graduation rate are enhanced as well.

Blended Methodology

The learning and motivation course is currently offered in different educational settings including a major four-year university, a community college, high school, and middle school. The existing and limited research on blended instruction has been conducted at the college level. Yet in the meta-analysis conducted for the U.S. Department of Education, the findings are being generalized toward K-12. What is the impact of blended instruction at the various educational levels? Is it a more appropriate strategy for higher education or is it equally effective in K-12? To date no studies exist looking at blended instruction below the high school level. Given that the course used in this study is offered at the various educational levels, a potential area of researcher interest may lie in assessing the effectiveness of the methodology at the various educational levels.

CONCLUSION

The main purpose of this study was to determine if one methodology or the other (ADAPT or distance) proved better in improving student GPA in a learning and motivation course. The findings in this study suggest there is no significant difference, for this specific course, between the two methodologies in terms of raising student GPA. This study is an important addition to a very limited but growing field of research literature examining the effectiveness of blended instruction as compared to both face-to-face instruction and wholly online instruction. As the field of online and web-based instruction continues to grow and evolve, blended instruction is likely to become more

prevalent in both higher education and K-12. It is important that the research examining its effectiveness, to which this study contributes, also continues to grow.

APPENDIX A: *That's Me –That's Not Me* Procrastination Survey

"That's Me - That's Not Me"

Complete the following items. Select the option that best describes you.

1. I needlessly delay finishing jobs, even when they are important.

- That's not me for sure
- That's not my tendency
- That's my tendency
- That's me for sure

2. I postpone starting in on things I don't like to do.

- That's not me for sure
- That's not my tendency
- That's my tendency
- That's me for sure

3. When I have a deadline, I wait till the very last minute.

- That's not me for sure
- That's not my tendency
- That's my tendency
- That's me for sure

4. I delay making tough decisions.

- That's not me for sure
- That's not my tendency
- That's my tendency
- That's me for sure

5. I stall on initiating new activities.

- That's not me for sure
- That's not my tendency
- That's my tendency
- That's me for sure

6. I keep putting off improving my work habits.

- That's not me for sure
- That's not my tendency
- That's my tendency
- That's me for sure

7. I get right to work, even on life's unpleasant chores.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

8. I find an excuse for not doing something.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

9. I put the necessary time into even the most boring tasks.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

10. I'm an incurable time waster.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

11. When something is too tough to handle, I believe in postponing it.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

12. I promise myself I'll do something and then drag my feet.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

13. Whenever, I make a plan of action, I follow it.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

14. I wish I could find an easy way to get myself moving.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

15. Putting something off until tomorrow is not my style.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

16. I'm a time waster and I can't seem to do anything about it.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

17. I always finish important jobs with time to spare.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

18. I get stuck in neutral even though I know how important it is for me to get started.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

19. I look for a loophole or shortcut to get through a tough task.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

20. Even though I hate myself if I don't get started, it doesn't get me going.

That's not me for sure
That's not my tendency
That's my tendency
That's me for sure

APPENDIX B: Preferred Learning Orientation Survey

Preferred Learning Orientation

Instructions: For each item, choose the number that best describes you, with 1 being the least true and 6 being the most true.

I prefer tasks requiring the operation, construction, or manipulation of objects or materials, over ones requiring reading or writing.

(least true) 1 2 3 4 5 6 (most true)

I seek an organized structure, want lessons to be clearly spelled out in step-by-step order, and want to know the teacher's expectations.

(least true) 1 2 3 4 5 6 (most true)

I keep a sharp focus on technical information, and enjoy complex ideas.

(least true) 1 2 3 4 5 6 (most true)

I learn best in face-to-face dialogue, and enjoy discussing the content of lessons with a small group of peers.

(least true) 1 2 3 4 5 6 (most true)

I focus on the immediate, am not interested in the past and future, and do not like to plan or prepare.

(least true) 1 2 3 4 5 6 (most true)

I place high value on good study habits, enjoy completing workbooks, and like practice and drill.

(least true) 1 2 3 4 5 6 (most true)

I like to experiment and invent, and enjoy analyzing and solving complex problems.

(least true) 1 2 3 4 5 6 (most true)

I prefer a personalized approach to learning, and want people to accept and value me.

(least true) 1 2 3 4 5 6 (most true)

I like competitive interactions more than cooperative ones, and am more responsive to instructional games than lectures or discussions.

(least true) 1 2 3 4 5 6 (most true)

I have difficulty grasping abstractions, and do best when learning the practical aspects of a subject.

(least true) 1 2 3 4 5 6 (most true)

I display a stronger desire to be capable and gain intelligence than to have freedom to act, social belonging, or meaningful relationships.
(least true) 1 2 3 4 5 6 (most true)

I am interested in and seem to have superior insight into what people think, feel, or want.
(least true) 1 2 3 4 5 6 (most true)

I respond to classwork only when I find it to be fun and entertaining, and become inattentive if it requires study and concentration.
(least true) 1 2 3 4 5 6 (most true)

I tend to be sensible, stable, and practical, rather than imaginative, creative, or ingenious.
(least true) 1 2 3 4 5 6 (most true)

I have a preference for long-term independent projects, which I can carry out with little teacher help.
(least true) 1 2 3 4 5 6 (most true)

I enjoy the communication process, and have a talent for expressing my feelings and thoughts.
(least true) 1 2 3 4 5 6 (most true)

I am satisfied with an overall grasp of learning, and am not good at mastering details or searching for facts.
(least true) 1 2 3 4 5 6 (most true)

I like a clearly defined schedule and standards so I know what to do, rather than taking independent action.
(least true) 1 2 3 4 5 6 (most true)

I am interested in explaining facts using theories and principles, rather than just learning them or understanding their meaning.
(least true) 1 2 3 4 5 6 (most true)

I like cooperative interaction and dramatic play more than competing with peers or doing paper-and-pencil tasks.
(least true) 1 2 3 4 5 6 (most true)

APPENDIX C: Electronic Research Permission Form

Dear EPL 259 student:

We in the Walter E. Dennis Learning Center - the creator and host of the EPL 259 (Individual Learning & Motivation) course - are continually trying to make this course better and better, and to be confident in the knowledge that it is enabling students to improve in college.

To this end, we are asking you to participate in this effort by permitting us to use the data you provide in this course, and to access your grade point average (GPA), as a way of evaluating the course as a whole, as well as its different aspects. Part of this data is already required as an integral part of this course. That is the information you receive as a result of taking the That's Me, That's Not Me Survey at the beginning and the School Strategies Scale at the end of the course. The other part, giving us permission to access your GPA, is voluntary, and you may withdraw it at any time.

Rest assured that all information from and about you that is related to the course will be kept entirely confidential. You will never, at any time, be identified individually; all data will be averaged across students taking the course. We will not use any of this data until the quarter after you have completed this course. Your data and your permission to use it will have no effect on your grade for this course.

If you have any questions about our course improvement or data collection efforts, before you agree to participate, you may call me at 688-8284, email me at tuckman.5@osu.edu, or make an appointment to see me in my office.

Sincerely,

Bruce W. Tuckman, Ph.D. Professor and Director

I give my consent to participate in the Walter E. Dennis Learning Center data collection as described above.

Type in your name below if you agree. Type in "Leave me out" if you do not agree. In either case you will receive credit for responding.

APPENDIX D: EMAIL PERMISSION REQUEST

Dear (ENTER STUDENT NAME):

You are being contacted because you enrolled in EPL 259 during the (FILL IN APPROPRIATE QUARTER) quarter.

We in the Walter E. Dennis Learning Center - the creator and host of the EPL 259 (Individual Learning & Motivation) course - are continually trying to make this course better, and to be confident in the knowledge that it is enabling students to improve their academic performance in college.

To this end, we are asking you to participate in this effort by permitting us to examine your responses you provided in this course and various demographic variables such as ethnicity, gender, class rank, and grade point average (GPA), as a way of evaluating the course as a whole, as well as its different aspects. Giving us permission to access your GPA is voluntary, and you may withdraw it at any time.

All information from and about you that is related to the course will be kept **entirely confidential**. You will never at any time be identified individually. All data will be averaged across students who took the course.

If you have any questions about our course improvement or data collection efforts you may call me at 614-266-2185, or email me at gebara.2@osu.edu. You may also contact Dr. Bruce W. Tuckman, Director of the Walter E. Dennis Learning Center, at tuckman.5@osu.edu.

Sincerely,

Tammy Gebara
Gebara.2@osu.edu
614-266-2185

Please respond to this email by hitting “reply” and type one of the following responses in the body of the email:

A) I give my consent to participate in the Walter E. Dennis Learning Center data collection as described above.

OR

B) I do not give consent, please leave me out

REFERENCES

- Allen, I. Elaine Ph.D, & Seaman, Jeff, Ph.D. Staying the Course, Online Education in the United States, 2008. Sloan Consortium.
- Carr, S. (2000). As distance education comes of age, the challenge is keeping the students. *The Chronicle of Higher Education* 46, A39-A41
- Cavanaugh, C.S. (2001). The effectiveness of interactive distance education technologies in K-12 learning: A meta-analysis. *International Journal of Educational Telecommunications* 7, 73-88.
- Davis, H., & Fill, K. (2007). Embedding blended learning in a university's teaching culture: Experiences and reflections. *British Journal of Educational Technology* 38(5), 817-828.
- Diaz, D. (2002). Online drop rates revisited. *The Technology Source*. Available online at <http://ts.mivu.org/default.asp?show=articleandid=981id981>.
- Dillion, C., & Greene, B. (2003). Learner differences in distance learning: Finding differences that matter. In M.G. Moore and W. G. Anderson (Eds.), *Handbook of Distance Education* (pp. 235-244). New Jersey: Lawrence Erlbaum Associates.
- Feasley, C. E. (2003). Evolution of national and regional organization. In M. G. Moore and W. G. Anderson (Eds.), *Handbook of Distance Education* (pp. 37-47). New Jersey: Lawrence Erlbaum Associates.

- Garrison, D.R., & Vaughan, N.D. (2008). *Blended learning in higher education: Framework, principles, and guidelines*. San Francisco, Josey-Bass.
- Harker, M., & Koutsantoni, D., (2005). Can it be as effective? Distance versus blended learning in a web-based EAP programme. *ReCall*, 17(2), 197-216.
- Hiltz, S. R. (1993). Correlates of learning in a virtual classroom. *International journal of Man-Machine Studies*, 39, 71-98.
- Holmberg, B. (1995). *Theory and practice of distance education*. London: Routledge.
- Kramarae, C. (2001). *The third shift: Women learning online*. Washington, DC: American Association of University Women Educational Foundation.
- Keegan, D. (1993). Reintegration of the teaching acts. In D. Keegan (Ed.), *Theoretical Principles of Distance Education* (pp. 113-134). New York: Routledge.
- Keegan, D. (1988). On definition distance education. In D. Stewart, D. Keegan, and B. Holmberg (Eds.), *Distance Education: International perspectives* (pp. 6-33). New York: Routledge.
- Kemp, C. (2002). Persistence of adult learners in distance education. *The American Journal of Distance Education*, 16, 65-81.
- Lenth, R. V. (2001), Some Practical Guidelines for Effective Sample Size Determination, *The American Statistician*, 55, 187-193.
- Maki, W. S. & Maki, R. H. (2002). Multimedia comprehension skill predicts differential outcomes of web-based and lecture courses. *Journal of Applied Experimental Psychology*, 8(2), 85-98.

- Morris, L., Wu, S. & Finnegan, C. (2002). Predicting retention in online general education courses. *The American Journal of Distance Education, 19*, 23-36.
- Murphy, P.K. (1999). Modeling the multifaceted persuasion process: Learner and text interactions. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.
- Parker, A. (1999). A study of variables that predict dropout from distance education. *International Journal of Educational Technology, 1*, 1-10.
- Phipps, R., & Merisotis, J. (1999). What's the difference? A review of contemporary research on the effectiveness of distance learning in higher education. Washington, D.C.: The Institute for Higher Education Policy.
- Pollock, P., Hamann, K., & Wilson, B. (2005). Teaching and learning online: Assessing the effect of gender context on active learning. *Journal of Political Science Education, 1*, (1-15).
- Russell, T. (2000). *No significance difference phenomenon*. Raleigh, NC: North Carolina State University.
- Saba, F. (2003). Distance education theory, methodology, and epistemology: A pragmatic paradigm. In M. G. Moore and W. G. Anderson (Eds.), *Handbook of distance education* (pp. 3-20). New Jersey: Lawrence Erlbaum Associates.
- Schlosser, L. & Simonson M. (2002). *Distance education: Definition and glossary of terms*. Bloomington, IN: Association for Educational Communications and Technology.

- Schober, B., Wagner, P., Reiman, R., Atria, M., & Spiel, C. (2006). Teaching Research Methods in an internet-based blended-learning setting. *Methodology, 2*(2), 73-82.
- Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2006). *Teaching and learning at a distance (3rd ed)*. New Jersey: Pearson.
- Simonson, M., C. Schlosser, & D. Hanson (2002). Theory and distance education: A new discussion. In L. Foster, B. Bower, and L. Watson (Eds.), *Distance Education: Teaching and Learning in Higher Education*. Boston, MA: Pearson Custom Publishing.
- Skill, T., & Young, B. (2002). Embracing the hybrid model: Working at the intersections of virtual and physical learning spaces. In N. Chism and D. Bickford (Eds.), *The importance of physical space in creating supportive learning environments* (23-32) *New Directions for Teaching and Learning* (92). San Francisco: Jossey-Bass.
- Tuckman, B. W. (1991). The development and concurrent validity of the Procrastination Scale. *Educational Psychology and Measurement, 51*, 473-480.
- Tuckman, B. W. (1999). *Conducting Educational Research* (5th ed.). Belmont, CA: Wadsworth.
- Tuckman, B. W. (2002). Evaluating ADAPT: A hybrid instructional model combining web-based and classroom components. *Computers and Education, 39*, 261-269.
- Tuckman, B. W. Abry, D., and Smith, D. (2002). *Learning and motivation strategies: Your guide to success*. New Jersey: Prentice Hall.

- Tuckman, B.W. & Kennedy, G. (2009). Teaching learning and motivation strategies to enhance the success of first-term college students. American Educational Research Association, San Diego, CA.
- U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*, Washington, D.C., 2009.
- Vaughan, N. (2007). Perspectives on blended learning in higher education. *International Journal on E-Learning*, 6(1), 81-94.
- Wedemeyer, C. A. (1981). *Learning at the backdoor: Reflections on the non-traditional learning in the lifespan*. Madison, WI: University of Wisconsin Press.
- Wilson, D. & Smilanich, E. (2005). *The other blended learning: A classroom-centered approach*. San Francisco, Preiffer.
- Zhao, Y., Lei, L, Lai, B, & Tan, S. (2005). What makes the difference? A practical analysis of research on the effectiveness of distance education. *Teachers College Record* 107(8), 1836-1884.