THE IMPACT OF INTERPERSONAL INTERACTION ON ACADEMIC ENGAGEMENT AND ACHIEVEMENT IN A COLLEGE SUCCESS STRATEGIES COURSE WITH A BLENDED LEARNING INSTRUCTIONAL MODEL

DISSERTATION

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

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ABSTRACT

A quasi-experiment was carried out in a college success strategies course to evaluate the impact of structured interpersonal interaction on undergraduate students’ Academic Engagement and Academic Achievement. The course, EPL 259: Individual Learning and Motivation, employs a blended learning instructional model that requires students to spend the majority of class time working independently on online activities.

In the experiment, students in six treatment sections were exposed to some combination of two types of interpersonal interaction, categorized as Student-Student Interaction and Student-Instructor Interaction. Student-Student Interaction was facilitated in two different ways: (1) through in-class, cooperative learning activities, and (2) through online, asynchronous discussion board activities. Two sections of EPL 259 received the first Student-Student Interaction format, two sections received the second format, and two sections received neither format. In addition, in each of these three pairs of sections, one section also received Student-Instructor Interaction, facilitated through required, weekly, one-on-one meetings between each student and the instructor.

Academic Engagement and Academic Achievement were each measured in two ways. Academic Engagement was measured: (1) through data on students’ course-related behaviors, including rates of attendance, tardiness, submission of assignments, and late submission of papers, and (2) through students’ scores on a multifactor survey of course
engagement. Academic Achievement was measured: (1) through total points earned on online activities and papers, and (2) through grades on the final examination.

A series of Analyses of Covariance (ANCOVAs), utilizing participants’ Prior Cumulative GPA and measures of Conscientiousness and Extraversion as covariates, was carried out to assess treatment effects. Sections of the course that experienced Student-Student Interaction through in-class, cooperative learning activities displayed significantly higher Academic Engagement (measured through the multifactor survey) than sections that experienced either online, asynchronous discussions or no Student-Student Interaction whatsoever. Likewise, sections of the course that experienced Student-Instructor Interaction through weekly, one-on-one instructor meetings displayed significantly higher Academic Engagement than sections that experienced no Student-Instructor Interaction whatsoever.

An interaction effect between Student-Student Interaction and Student-Instructor Interaction mediated the impact of both treatments on Academic Achievement (measured through final exam grade). In the absence of Student-Instructor Interaction, both forms of Student-Student Interaction (i.e. in-class and online) had a positive impact on Academic Achievement. However, when Student-Instructor Interaction was required, online Student-Student Interaction was observed to have a negative impact. Similarly, in the absence of Student-Student Interaction, required one-on-one instructor meetings were observed to have a positive impact on Academic Achievement. However, when online Student-Student Interaction was required, instructor meetings were observed to have a negative impact.
DEDICATION

This document is dedicated to my wife, Elizabeth, and my daughter, Emily… the true loves of my life. They provide the inspiration and support behind everything I am able to accomplish.
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CHAPTER 1

INTRODUCTION

Background

The year 1984 and those shortly thereafter proved to be important years for higher education. During this time period, a groundswell of support for undergraduate education reform was growing among educational authors and researchers. This support came on the heels of *A Nation at Risk*, the National Commission on Excellence in Education’s (1983) landmark report that spurred national interest in education reform at the elementary and secondary level. In the years that followed this publication, members of the higher education community recognized the need for self-examination at their level of education as well. Over the next ten years, a report by the National Institute of Education (1984) and influential publications by Astin (1984), McKeachie, Pintrich, Lin, and Smith (1986), Chickering and Gamson (1987), and Johnson, Johnson, and Smith (1991a), among many others, brought to light the need for a re-evaluation of longstanding teaching practices in higher education. They provided support for the increasingly held belief that the age old practice of lecturing to students while they sat passively and listened was not the most effective means for educating students. A new conception of student learning that focused on the activities of the student rather than those of the instructor was in
order. With expertise in diverse educational and psychological disciplines, authors like those cited above drew similar conclusions about learning in the college classroom. Though their theories varied and they utilized different terms, including discussion, collaboration, cooperation, and involvement, they all cited classroom interaction as an essential criterion for actively engaging students in the learning process. They saw interpersonal interaction – both between students and between student and instructor – as a critical factor for creating a productive learning environment.

**Psychological Foundations of Student-Centered Learning**

The birth of the student-centered approach to learning in higher educational settings occurred long before the mid-1980s. A suitable starting point lies in the mid-1950s and the rise of cognitive psychology, which challenged the adequacy of behaviorism for describing learning in humans. Learning theorists had debated for decades the mechanisms that underlie human learning. However, as recently as the 1960s, the behaviorist learning principles of researchers like Thorndike (1931), Hull (1935), Spence (1948), and Skinner (1954, 1968) were still dominant in schools of psychology across the country. Behaviorist authors and researchers of this time period believed that principles of human learning could be deduced through scientific investigation. To this end, behaviorist studies focused on the observation of behaviors, rather than unobservable mental states. Any discussion or investigation of cognitive processes was deemed unsound for accomplishing one’s research goals. It is said that behaviorists at this time refused to even use a word like “*motivation* because it connotated
mentalistic processes” (Berliner, 1990, p. 13). Learning was defined as the acquisition of new behavior, which led behaviorists to assume that the laws governing human learning could be understood through experiments on animals. Through years of research, their accepted conclusion was that human beings learned by being consistently exposed to particular consequences for specific behaviors – a process called reinforcement. In his influential publication, *The Science of Learning and the Art of Teaching*, B. F. Skinner (1954) claimed that behaviorist researchers could shape behavior almost at will. More importantly, since classroom educators could only reinforce students’ behaviors at a certain rate, Skinner saw fit to assert that “as a mere reinforcing mechanism, the teacher is out of date” (Skinner, 1954, p. 94).

By the mid 1960s, however, early cognitive theorists like Broadbent (1958), Miller (1956), and Bruner (1960) had garnered the respect of peers and created a divide between the psychological camps (Fincher, 1985, p. 75). To support their cause, the latter two researchers had acquired funding in 1960 from the Carnegie Foundation to found the Center for Cognitive Studies at Harvard University. At the same time, in England, Broadbent (1958) was becoming well known for his theories on human attention. These theories formed the basis for his Filter Model of attention, an early and influential model for the cognitive processing of information in human beings. A decade later, elaborating on Broadbent’s model, Atkinson and Shiffrin (1968) developed their three stage information processing model, which is now commonly cited for its introduction of sensory, short term, and long term memory. By the early 1970s, cognitivist learning principles had inspired many academics to question the adequacy of
traditional behaviorist laws of learning for the education of humans. In his influential essay *The Decline and Fall of the Laws of Learning* (1974a) and his subsequent article on *Instructional Psychology* (1974b), McKeachie challenged the validity of behaviorist principles for guiding the education of undergraduates. The author considered learning a complex, nonlinear process and characterized “educational situations [as] interactive situations in which a developing, learning human being engages with a situation in ways designed to meet his learning needs” (McKeachie, 1974b, p. 187). Like those above, he helped usher in a new era for educational research, opening the door for studies on topics like active learning by authors who recognized that the learning process is multifaceted and governed by many interrelated factors.

**Educational Foundations of Student-Centered Learning**

While cognitive theorists were broadening the understanding of the psychological nature of human learning, an educational researcher named Carroll (1963) was isolating a key factor that governed academic achievement in the classroom. While developing his Model of School Learning, Carroll (1963) underscored the significance of “the time during which the person is oriented to the learning task and actively engaged in learning” (p. 725), a concept he referred to as perseverance. Carroll characterized perseverance as “the amount of time a student is willing to spend on learning the task… an operational definition of motivation for learning” (Carroll, 1989, p. 26). Carroll’s attention to engagement with learning and his characterization of academic motivation as a cognitive process represented a departure from behaviorist notions so prevalent at the time. Bloom
(1968) and Cohen (1971) both saw merit in Carroll’s study and subsequently devoted their own attention to researching student achievement as it related to time spent participating in designated learning tasks. The former utilized Carroll’s Model of School Learning as the foundation for a strategy designed to increase student achievement rates, which he referred to as Mastery Learning (Bloom, 1968). The author coined the term “time on task”, a concept closely related to perseverance, in a later article on Time and Learning (Bloom, 1974).

Carroll’s and Bloom’s ideas continued to be influential, particularly for researchers in elementary and secondary education, throughout the next two decades. Wiley and Harnischfeger (1974) responded to reports in the late 1960s and early 1970s that purported to have found a lack of effect for schooling. The authors sought to refute these charges and to recommend policy changes by identifying the factors that impact student learning. They considered Carroll’s (1963) model and expansions to that model by Bloom (1973) and Anderson (1973) in the synthesis of their own model. In this model, student achievement is a direct function of only two variables: (1) the time a student needs to learn something, and (2) the time a student actively spends trying to learn it. Like the models that preceded it, the Harnischfeger-Wiley model places the behaviors and activities of the student as its central focus. All other factors, including the teacher, the curriculum, and the school’s resources, are secondary. An additional study carried out by authors of the Beginning Teacher Evaluation Study (Fisher, Filby, Marliave, Cahen, Dishaw, Moore, & Berliner, 1978) sought to further refine the concept of time on task and isolate classroom behaviors that facilitate it. This study identified
Academic Learning Time (ALT) as the strongest correlate of student achievement. The authors defined ALT as the portion of class time during which students are engaged in learning activities, experiencing success in these activities, and achieving prescribed learning objectives.

**Introduction of Student-Centered Learning into Higher Education**

By the late 1970s and early 1980s, the student-centered focus and a concern with fostering active student engagement in the learning process made its way into higher education. The two individuals at the forefront of this movement were Alexander Astin and Zelda Gamson. In July of 1984, Astin introduced a theory of student development for higher education that offered a new paradigm for examining the learning process in college. The author had become sensitive to existing efforts to understand undergraduate student development that focused on the impact of institutional policies, procedures, and programs on specific student success outcomes. His concern with these efforts centered on the relative absence of the student in discussions of student success. The author observed that these discussions tended to treat the student simply as the object of various treatments by institutions, administrators, and faculty members. As a result, Astin endeavored to develop a student development theory that examined and explained student success as a function of the student and his or her actions. His theory recognized the student as the fundamental factor in determining the extent of his or her development during college.
The key to Astin’s theory was the concept of involvement. For Astin, involvement had much in common with the concept of motivation. He distinguished it from that concept, however, by emphasizing its behavioral component. The author considered involvement the behavioral expression of the psychological state of being motivated. He also noted similarities between involvement and the concepts of time-on-task and effort, which had received attention from aforementioned educational researchers concerned with classroom learning. According to Astin (1984), “student involvement refers to the amount of physical and psychological energy that the student devotes to the academic experience” (p. 297). In the author’s theory, high levels of student involvement are necessary for the attainment of positive academic outcomes. This theory has profound implications for the college classroom. In the classroom, students who do not invest an adequate amount of effort or energy on relevant academic tasks cannot meet desired learning goals for the lesson. For this reason, the author urges educators to focus their concentration during class time upon what their students do rather than what they do. He calls for the use of instructional techniques that require undergraduate students to become active participants in the learning process, rather than passive recipients of information.

Astin and Gamson were two of the seven educators who co-authored *Involvement in Learning: Realizing the Potential of American Higher Education* (National Institute of Education, 1984), a report commissioned for the purpose of isolating means for improving undergraduate education. The report, released in October, highlighted the necessity for a greater emphasis on student involvement in the learning process within the
country’s colleges and universities. Gamson feared that this report and others, like the Carnegie Foundation’s *Higher Education and the American Resurgence* (Newman, 1985), would go unnoticed by college faculty and administration across the country. As a result, she and her colleague, Arthur Chickering, two members of the board of the American Association for Higher Education, sought sponsorship for the development and dissemination of a set of principles to help guide undergraduate education. Only three years after Astin’s Student Involvement theory was published, Chickering and Gamson’s (1987) *Seven Principles for Good Practice in Undergraduate Education* were in print. These principles resonated loudly in the higher education community. According to Chickering and Gamson, good practice in undergraduate education: (1) encourages student-faculty contact, (2) encourages cooperation among students, (3) encourages active learning, (4) gives prompt feedback, (5) emphasizes time on task, (6) communicates high expectations, and (7) respects diverse talents and ways of learning.

**Differing Conceptions of Active Learning in the College Classroom**

Active learning, the subject of Chickering and Gamson’s (1987) third principle, is a term highly suitable for describing the nature of the activities in classrooms where Astin’s Student Involvement theory governs instruction. Astin contrasted his Student Involvement theory with what he referred to as Content theory. In classrooms governed by Content theory, where dissemination of course content is seen as the instructor’s primary goal, lecturing is generally the main mode of instruction. In these classes, issues related to maximizing the potential for student learning are rarely considered. As a result,
students normally take a passive role in the learning process, often doing little more than recording information provided by the instructor. According to Astin (1984), “the theory of involvement, on the other hand, emphasizes active participation of the student in the learning process” (p. 301). In classrooms governed by Student Involvement theory, where the commitment of students’ physical and psychological energy to the learning process is seen as the instructor’s primary goal, instruction occurs through a myriad of student-centered activities.

In their description of active learning, Chickering and Gamson (1987) argued that, within the classroom, students must be expected to do more than simply sit passively and listen. Rather, they must be encouraged to “talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives” (p. 3). Several years later, Meyers and Jones (1993) developed their own principles of active learning, basing their beliefs on a fundamental principle of education they attributed to Piaget. Piaget (1976) believed that children did not receive knowledge passively, but rather constructed it, creating mental structures through an active process of discovery. Meyers and Jones extended this reasoning to learners of all ages, suggesting that opportunities must be provided for students to actively engage with their instructors, classmates, and course materials in order to form their own mental structures. The authors identified four critical elements associated with this process: talking and listening, reading, writing, and reflecting (p. 21). These elements are the building blocks of learning strategies, including the use of small group work and cooperative learning, in-class discussions, case studies and simulations, problem solving activities, and journal writing. The authors
emphasized, however, that in the absence of structure and guidance provided by the instructor, activities containing these four elements could fail to help students in the construction of knowledge.

The above authors all believed that interaction between students, their peers, and their instructor was a key component in the active learning process. Bonwell and Eison (1991) differed slightly in their conception. The authors crafted a report, the first in the ASHE-ERIC Higher Education series, which offered perhaps the broadest definition of active learning possible. According to Bonwell and Eison, active learning consists of “instructional activities involving students in doing things and thinking about what they are doing” (p. 2). The authors sought to give college professors a variety of options for bringing active learning into the college classroom, recognizing that many professors would be reticent to adopt strategies that required them to leave behind the traditional lecturing model they had always relied upon in favor of pedagogical methods that asked them to involve their students in group work or to engage them in open discussion. As such, the authors provided their readers with a variety of means for bringing active learning into the classroom, conveying the underlying conviction that active learning could be facilitated without abandoning a traditional lecturing format.

To further expand on his beliefs about active learning, Bonwell collaborated in the authorship of an article for the New Directions for Teaching and Learning series of publications (Bonwell & Sutherland, 1996). In this article, he reaffirmed his assertion that a variety of active learning strategies, including those used in the enhancement of traditional lectures, could be equally effective for achieving learning objectives.
According to the authors, the critical issue was encouraging student engagement in the learning process, a condition that could be achieved through a variety of means. Bonwell and Sutherland made it clear in this article that their biggest concern was the growing perception that active learning techniques could only be implemented in the classroom through group work. They specifically referenced Johnson, Johnson, and Smith (1991a), well known cooperative learning researchers, whose research suggested improved success outcomes for students engaged in cooperative learning over those who experienced traditional lectures. Bonwell and Sutherland dismissed the idea that similarly positive outcomes could not be achieved through the use of active learning strategies in a non-collaborative environment.

**Interpersonal Interaction as a Critical Component for Classroom Learning**

While Bonwell and his colleagues made it clear that they supported discussion and interaction in the classroom if the instructor deemed it useful, they alienated themselves from authors like Astin (1984), McKeachie (1986), Chickering and Gamson (1987), Johnson, Johnson, and Smith (1991b), and Meyers and Jones (1993), who steadfastly adhered to the belief that interaction in the classroom is both a necessary and critical component of a productive undergraduate learning experience. Chickering and Gamson’s entire thesis rested on their belief that student-faculty contact, cooperation among students, active learning, and several other key principles were all equally important components to a good undergraduate education. The authors asserted, unequivocally, that “good learning, like good work, is collaborative and social, not
competitive and isolated” (p. 4). If Astin’s beliefs about involvement with one’s peers and one’s instructors were not already clear, they were surely made so by the publication of *What Matters in College? Four Critical Years Revisited* (Astin, 1993). The author analyzed data from more than twenty-five thousand undergraduates and considered nearly two hundred variables that had the potential for influencing student success in college. Astin’s profound conclusion was that curriculum had little impact on student success. Rather, the best predictor of success was student involvement, which manifested itself in both student-faculty and student-student interaction.

McKeachie felt similarly strongly about the positive effects of student collaboration in the classroom. Bonwell and Eison actually acknowledged the author’s work in their report. They cited his influential review of research, carried out in collaboration with colleagues at the University of Michigan (McKeachie, Pintrich, Yi-Guang, & Smith, 1986), and noted the authors’ conclusion that “to promote long-term retention of information, to motivate students toward further learning, to allow students to apply information in new settings, or to develop students’ thinking skills… discussion is preferable to lecture” (Bonwell & Eison, 1991, p. 3). In their research, McKeachie and colleagues found that student participation, instructor encouragement, and student-student interaction were all correlates of enhanced critical thinking. The authors summarized their overarching beliefs about student-student interaction in their now famous assertion that “the best answer to the question, ‘What is the most effective method of teaching?’ is that it depends on the goal, the student, the content, and the teacher. But the next best answer is, ‘Students teaching other students’” (McKeachie et al, 1986, p. 63).
Student-Student Interaction: Structuring Group Work in the Classroom

The use of group work in educational settings had garnered the attention of educational researchers long before the term active learning came into the vernacular. Clearly, the way in which group work is organized and facilitated can vary greatly from setting to setting, based on a given instructor’s beliefs about learning and goals for the lesson. However, according to Bouton and Garth (1983), all “effective learning groups seem to have two major elements: first, an active learning process promoted by student conversation in groups; second, faculty expertise and guidance provided through structured tasks” (p. 73). As noted, Meyers and Jones (1993) made a similar observation a decade later in their discussion of active learning. For the benefits of student interaction to be realized, students must be made to participate together in structured tasks with clear behavioral requirements and specific goals to be pursued. Replacing lecture with activities is not enough, nor is encouraging conversation with no structure or objectives. Bouton and Garth view group work within these parameters as an effective means for enhancing classroom learning, basing this assertion on the following three propositions. First, knowledge is constructed, not transmitted. Thus, the learning process is ill-suited for traditional, lecture-based pedagogy, which presumes the latter. Second, to actively construct knowledge, a learner must be given the chance to voice thoughts about the subject matter and to hear others’ responses to his or her ideas. Finally, to learn course material, students must be given the opportunity to actually do something with it, rather than simply observe the instructor modeling it.
Cooperative Learning as a Means for Structuring Group Work in College

One well-researched form of structured group work is referred to as cooperative learning. A number of educational researchers, including Slavin (1977, 1978, 1979), Aronson (1978a, 1978b), Sharan (1980), Cohen (1986) and their respective colleagues, have written extensively on the subject. However, these authors have focused their efforts almost entirely upon cooperative learning at the primary and secondary level. Among preeminent authors, only Johnson, Johnson, and Smith (1991a, 1991b, 1998, 2007) have committed considerable time and energy to understanding the impact of cooperative learning at the collegiate level. The first two authors, David and Roger Johnson, began studying cooperative learning in terms of what they describe as social interdependence in the mid-1960s. The former was a graduate student of Morton Deutsch, who himself had been a graduate student of Kurt Lewin. Lewin (1948) was an early theorist on group dynamics, who studied how specific members affected the dynamics of a group as a whole and considered the interdependence of members’ goals a highly influential factor. Deutsch (1949) extended the work of Lewin, focusing on types of interdependence and becoming well-known as the originator of social interdependence theory (Johnson, Johnson, & Smith, 2007, p. 16). Johnson (1970), Johnson and Johnson (1974), and their various colleagues (Johnson, Johnson, & Holubec, 1984; Johnson, Johnson, & Smith, 1991a, 1998) translated and expanded Deutsch’s work to educational environments, becoming pioneers in the field of cooperative learning.

In the classroom, cooperative learning occurs when small groups of students function in a state of positive interdependence. According to Johnson and Johnson
positive interdependence is the perception that one is linked with others in such a way that one cannot succeed unless the others do” (p. 13). In this environment, students work cooperatively, striving to achieve their own goals while diligently supporting their fellow group members in their efforts to reach their goals. The alternatives to positive interdependence are negative interdependence and no interdependence. In the former, students work competitively, believing that they can only achieve their goals at the expense of their classmates. In the latter, students work independently, believing that their ability to accomplish their goals is unrelated to their classmates’ ability. In addition to positive interdependence, the authors identified four other elements – individual accountability, promotive interaction, use of social skills, and group processing – as critical for fostering cooperation in the classroom.

In a meta-analysis of studies on cooperative learning in college, Johnson, Johnson, and Smith (1998) found 305 studies that compared the efficacy of cooperative, individualistic, and competitive learning in terms of their relative success in encouraging achievement in the college environment. The authors categorized the studies based on the following three achievement-related outcomes: academic success, quality of relationships, and psychological adjustment to college life. Of the 305 studies in the meta-analysis, 168 investigated the academic success outcome. The authors’ synthesis of these studies supports the assertion that cooperative learning leads to greater academic achievement than either competitive approaches (effect size = 0.49) or individualistic approaches (effect size = 0.53) (p. 33). They report that college students who would score at the 50th percentile in a course as a result of learning competitively or the 53rd
percentile as a result of learning individualistically would score at the 69th or 70th percentile as a result of learning cooperatively.

**Student-Instructor Interaction and its Impact on Student Success**

The value of student-student interaction has already been discussed at length in this document. Bouton and Garth (1983), Astin (1984), Johnson, Johnson, and Holubec (1984), the National Institute of Education (1984), McKeachie (1986), Chickering and Gamson (1987), and Meyers and Jones (1993), among many others, have all supported interpersonal interaction between students in the college classroom as a means for enhancing student learning. However, many authors, including those above, identify student-instructor interaction as an equally valuable component to the learning process. Chickering and Gamson (1987) characterized student-faculty contact, both in-class and out-of-class, as the most significant factor for increasing involvement and motivation in college students. The authors saw fit to make the encouragement of student-faculty contact their first principle for good practice in undergraduate education. The study group that crafted *Involvement in Learning* shared a similar conception. They observed a growing trend toward technology use in the classroom and feared its potential for diminishing interaction between students and their instructors. In response, they made clear their belief that “learning technologies should be designed to increase, and not reduce, the amount of personal contact between students and faculty on intellectual issues” (National Institute of Education, 1984, p. 29).
In his widely read publication, *Leaving College*, Tinto (1987) argued that student-faculty interaction, both inside and outside the classroom, was critical both to students’ intellectual growth and to their perseverance in college. Six years later, Astin (1993) echoed this sentiment. The author found greater development in students who interacted with faculty both inside and outside the classroom, identifying student-student interaction and student-faculty interaction as the twin keys to students’ collegiate success. In the early 1990s, Pascarella and Terenzini (1991) expanded understanding of the student-faculty relationship. The authors found that the impact of student-faculty interaction is mediated by both the frequency and nature of that interaction. Increased interactions of an intellectual or academic nature, rather than purely social interactions, had the greatest impact on student success. Analyzing the college student of the 1990s, Kuh and Hu (2001) found that students who were more academically prepared and who expended greater effort on their coursework had greater interaction with faculty. They also determined that increased student-faculty interaction correlates with an increased expenditure of effort on other educationally focused endeavors. Umbach and Wawrzynski (2005) analyzed two national sets of student-reported data and concluded that students experience higher degrees of engagement and learning when they have frequent course-related interactions with their instructors, participate in active and collaborative learning in the classroom, and interact with faculty members who challenge them academically and emphasize higher order thinking skills.
Blended Learning and the Modern College Classroom

It is largely coincidental that the active, student-centered approach to learning came to prominence in an era when technological advances allowed computers to gain great popularity as teaching tools for the college classroom. Coincidence notwithstanding, it is difficult to argue that the use of computers in a classroom environment does not increase the potential for involving students actively in the learning process. By the early 1990s, researchers interested in the impact of computer technology on teaching, learning, engagement, and achievement had applied the term blended learning to characterize the integration of technology into traditional classroom pedagogy. In a blended learning classroom, computers can support a myriad of learning activities that require students to read, write, reflect, communicate, collaborate, and problem solve, among various other activities that commonly connote active learning. A given instructor can elect to utilize computers as a minor part of his or her course or to make them the primary vehicle for student learning. Beyond this, that instructor can use computers to generate a great deal of communication and collaboration between students or to produce an environment in which students effectively isolate themselves from one another.

The ADAPT Model

Active Discovery and Participation through Technology (ADAPT; Tuckman, 2002) is a hybrid instructional model used in a blended learning course in college success strategies for undergraduates at the Ohio State University. In this course (EPL 259: Individual Learning and Motivation), more than 82% of class time is allocated to student-
centered, computer-mediated activities that encourage students to participate actively in the learning process. EPL 259 students spend this time working independently on online learning activities, writing papers, and posting their thoughts on online message boards within the University’s courseware platform. Use of the remaining 18% of class time is at the instructor’s discretion. However, in most cases, a given instructor will utilize it at the beginning of class: addressing his or her students, lecturing briefly on pertinent content, clarifying assignment expectations, and confirming assignment submission deadlines. After having worked as a graduate teaching associate for the course in 2004-2005, the author of this paper has supervised and evaluated the course from 2005 until the present. Since its inception in 2000, comparisons have been made between course takers and non-course takers, matched along independent variables including ACT score, prior cumulative GPA, year-in-school, and gender. Results have consistently suggested higher GPAs, retention rates, and graduation rates for the course takers (Tuckman, 2003; Tuckman & Kennedy, 2009).

In terms of Bonwell and Eison’s definition, ADAPT can be considered an exemplar for active learning in the college classroom. EPL 259 students spend more than four-fifths of class time “doing things and thinking about what they are doing” (Bonwell & Eison, 1991, p. 2). According to Tuckman (2002), the instructional design for ADAPT is a blend of the objectivist and constructivist approaches to pedagogy. It combines these 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, p. 262). These performances are “designed to engage
students in self-reflection, skillful problem solving, and independent thinking” (Tuckman, 2002, p. 263). As a result, students spend the majority of their class time performing activities in the online ADAPT environment, reflecting on what they are doing, and constructing knowledge based on their experiences with the course content. This student-centered manner of instruction encourages active engagement in the learning process and discourages the passivity that can be common in a lecture-based classroom.

As noted, evaluations of student achievement have demonstrated significant GPA gains for EPL 259 course takers over non-course takers both during the academic term of enrollment and the term that follows. However, a question remains as to whether the relative absence of interpersonal interaction in the course could be limiting its potential to raise course takers’ GPAs even higher. In its present form, the ADAPT model offers no formal mechanism for student-student interaction aside from required online discussions, which only offer opportunities for “virtual interaction”. This interaction takes the form of postings on a discussion board. As such, it does not occur in “real time” (i.e. synchronously), nor does it offer students the opportunity to converse in a face-to-face fashion. Similarly, the ADAPT model provides no formal mechanism for interpersonal (i.e. synchronous, face-to-face) interaction between student and instructor. After the opening lecture by the instructor, the principle means for interaction between an individual student and his or her instructor is through the electronic submission of course assignments and the subsequent receipt of written instructor feedback. For any one-on-one conversation between student and instructor to occur, it must be initiated by the
student. As such, if a given student chooses to avoid this type of interaction, he or she has the ability to do so with relative ease.

**Research Questions**

Like most course designers, the goal for the administrators of EPL 259 is to cultivate a classroom learning environment that: (a) engages undergraduate students in their coursework, and (b) facilitates an acquired understanding of important course concepts (e.g. Strategies for Achievement; Tuckman, Abry, & Smith, 2008). When this goal is met, the EPL 259 learning environment should be effective in helping students develop a clear conception of themselves as learners with an understanding of the strategies and behaviors necessary for succeeding academically. As discussed above, a wide range of educational scholars have contributed to a substantial body of research on classroom learning. These researchers have provided convincing evidence of increased academic achievement as an outcome of structured interpersonal interaction in the college classroom. They recognize the value of interpersonal interaction as a means for engaging students in the learning process and improving their ability to comprehend course concepts. As a result, these researchers recommend increased opportunities for both student-student interaction and student-instructor interaction in the college classroom as a means for enhancing the learning environment. At present, however, the ADAPT model for teaching college success strategies to undergraduates provides no formal means for encouraging either form of interpersonal interaction in the EPL 259
classroom. As such, worthwhile experimental research is proposed in the interest of gaining answers to the following questions:

RQ1: Does the addition of student-student interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase academic engagement?

RQ1a: Does the addition of face-to-face/synchronous discussion between students increase academic engagement to a greater extent than the addition of online/asynchronous discussion between students?

RQ2: Does the addition of student-student interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase academic achievement?

RQ2a: Does the addition of face-to-face/synchronous discussion between students increase academic achievement to a greater extent than the addition of online/asynchronous discussion between students?

RQ3: Does the addition of student-instructor interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase academic engagement?

RQ4: Does the addition of student-instructor interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase academic achievement?

Student-Student Interaction will be facilitated through either cooperative learning activities (i.e. face-to-face/synchronous discussion) or online message board discussions (i.e. online/asynchronous discussion). Student-Instructor Interaction will be facilitated through weekly, one-on-one instructor meetings held during class time. The insights gained as a result of this research will be useful for determining whether specific modifications to the ADAPT hybrid instructional model, and thus the EPL 259 course, should be made. Increases in Academic Engagement and/or Academic Achievement for
students in the experimental treatment sections would warrant consideration of the addition of a Student-Student Interaction and/or Student-Instructor Interaction component to the ADAPT model. The addition of these components to the model would be made on a trial basis while further evaluation of their impact on student success could be undertaken.
CHAPTER 2

LITERATURE REVIEW

Introduction

The purpose of this literature review is to orient the reader with the professional literature on interpersonal interaction in the postsecondary classroom. This review of literature is divided into four subsections. The first subsection focuses on blended learning, the integration of technology with traditional pedagogy in the classroom to enhance both teaching and learning. An understanding of blended learning is important because the proposed quasi-experiment will take place in the context of a college success course (EPL 259: Individual Learning and Motivation) employing a blended learning format – Active Discovery And Participation through Technology (ADAPT; Tuckman, 2002). The second subsection focuses on methods for achieving student-student interaction in the college classroom. The discussion is centered on cooperative learning and the particular model (Johnson, Johnson, & Holubec, 1984) being employed in the proposed study. The third subsection focuses on two formats for student-student interaction commonly employed in the blended learning classroom: face-to-face, synchronous interaction (e.g. cooperative learning) and online, asynchronous interaction (e.g. internet discussion boards). The proposed study will distinguish between the effects
of both formats on student success (i.e. engagement and understanding) in the blended learning environment. The final subsection focuses on student-instructor interaction in the college classroom. The proposed study will gauge the impact of one-on-one student-instructor interaction on these same success outcomes.

**Blended Learning: Background and Definitions**

Over the past two decades, web-based technologies have become almost ubiquitous at colleges and universities across the country. The spread of technology within these educational institutions has forced faculty and administration alike to reconsider longstanding beliefs about effective means for helping students learn in the college classroom (Garrison & Kanuka, 2004). In the classroom, the combined use of traditional pedagogical techniques and modern web-based technologies is commonly referred to as blended learning (So & Brush, 2008; Vaughan, 2007; Osguthorpe & Graham, 2003). Since the late 1990s, researchers have envisioned blended learning in a variety of ways, designing what some describe as hybrid instructional models (Garnham & Kaleta, 2002; Skill & Young, 2002; Tuckman, 2002) and evaluating them for their effectiveness in bringing about desired learning outcomes. A defining feature of blended learning lies in its effort to move beyond the use of technology as little more than a means for introducing a complex concept or supplying additional information within a course taught in a traditional format (Bleed, 2001). Rather, blended learning implies a new conception of the way courses are developed and offered, based on an understanding
of how traditional and modern instructional techniques can best be integrated to accomplish goals for student learning.

Blended learning has been given many different definitions; some practical and concrete, others broad and philosophical. Rovai and Jordan (2004) define blended learning as “a flexible approach to course design that supports the blending of different times and places for learning, offering some of the conveniences of fully online courses without the complete loss of face-to-face contact” (p. 4). Osguthorpe and Graham (2003) envision blended learning as the “harmonious balance between online access to knowledge and face-to-face human interaction” (p. 228). Verkroost and colleagues define blended learning “as the total mix of pedagogical methods, using a combination of different learning strategies, both with and without the use of technology” (Verkroost, Meijerink, Lintsen, & Veen, 2008, p. 501). According to Bleed (2001), blended learning “incorporates creative uses of technology, architecture, and people… to improve learning and to provide the socialization that supports the making of meaning” (p. 18). Garrison and Kanuka (2004) view blended learning as “a fundamental reconceptualization and reorganization of the teaching and learning dynamic… [so that] a quantum shift occurs in terms of the nature and quality of the educational experience” (p. 97).

**Blended Learning: Reasons for Use**

Osguthorpe and Graham (2003) identified six reasons why an educator would use a blended learning model for instruction in his or her classroom: (1) pedagogical richness, (2) access to knowledge, (3) social interaction, (4) personal agency, (5) cost
effectiveness, and (6) ease of revision (p. 231). According to the authors, “the central
purpose that should drive all other motives [for using blended learning] is to improve
student learning” (p. 231). They use the term pedagogical richness – the degree to which
instruction succeeds in facilitating student learning – to describe the primary reason why
any educator should adopt a blended learning model. The authors’ second reason, access
to knowledge, speaks to the wealth of information technology can introduce to the
classroom. Through courseware platforms, educational software, and the internet, a
blended learning environment provides an instructor with a greater array of options than
other models for introducing course material and allowing students to explore relevant
course content and information.

A blended learning model also offers students enhanced opportunities for social
interaction, Osguthorpe and Graham’s (2003) third reason. Social interaction is
considered critical for its role in motivating questioning, idea generation, and idea
contemplation, which can lead to greater mastery of concepts as well as an enhanced
understanding of self. In the blended learning classroom, interaction between students
can occur in either a face-to-face or virtual fashion. Students can discuss course content
either in the classroom, through small group discussions, or online, through a variety of
means for chatting or posting comments. The authors’ fourth reason, personal agency, is
considered valuable for placing control and direction over learning in the hands of
students. In blended learning models, where students are expected to access course
materials online, students must take increased responsibility for both the pace and manner
in which they process course content. The authors’ fifth reason, cost effectiveness,
suggests potential financial benefits stemming from the manner in which institutional resources (e.g. instructors, classrooms, computers) are utilized. Finally, the authors’ sixth reason, ease of revision, stems from the fact that most blended environments are developed by course instructors who wish to enhance existing classroom environments. The authors point out that, as course designers, these instructors often take advantage of the opportunity to “create a learning atmosphere that is flexible, responsive, and spontaneous” (p. 232).

Tuckman (2002) cites an additional reason for blending technology with traditional classroom pedagogy. According to the author, the use of technology in the classroom can serve the dual purpose of facilitating student learning and enabling regular assessment of student progress. Unlike traditional classrooms, which provide instructors with limited opportunities for assessing student understanding (e.g. mid-term exam, final exam, term paper), blended learning classrooms can offer enhanced opportunities for instructors to assess their students’ performance on a frequent and consistent basis. Citing Siedel and Walters (1994) and Simmons (1995), Tuckman notes that the “process of tightly integrating instruction and assessment serves to make the latter a seamless part of the former, and one that has relevance to the student far beyond earning a grade” (Tuckman, 2002, p. 262).

**Blended Learning: Design and Implementation**

Great variation exists between different blended learning designs based on the needs and goals of the designer and instructor (Garrison & Kanuka, 2004; Osguthorpe &
Graham, 2003). Voos (2003) notes that the success of blended learning courses lies in careful course design that focuses on utilizing different instructional and media options for their strengths in bringing about student learning. The author explains how “blended designs can enhance student and faculty satisfaction with learning, when the design, the training and development, and the systems and support are well organized” (Voos, 2003, p. 4). Several authors have noted that the online component within a blended learning environment makes it possible, and sometimes preferable, to reduce the amount of time students are required to spend in class (So & Brush, 2008; Vaughan, 2007; Voos, 2003; Garrison, Kanuka, & Hawes, 2002). These authors posit that since most online activities are designed to be completed independently, it is unnecessary to require students to complete them during class time. In addition, Vaughan (2007) points out that most students appreciate having the flexibility to complete activities like these on their own time. One effect of utilizing online technologies during out-of-class time is that instructors can shift the focus of class time from passive learning (e.g. lecturing) to active learning, including opportunities for increased interaction and discussion between students (Meyer, 2003). So and Brush (2008) warn, however, that a reduction in class time leads to an increased need for self-regulation among students, who must possess the necessary motivation and time management skills to complete their coursework in a timely fashion.

Voos’ (2003) comment above underscores the need for careful planning and deliberate choices on the part of course designer in the face of a multitude of technological and pedagogical options. Graham (2006) highlights this necessity, pointing
out that a poorly designed blended learning environment can combine the least effective aspects of traditional and online instruction and thus create a negative learning experience for the affected students. With his co-author, he alerts course designers to “the threat of an out-of-balance, discordant blend that frustrates both student and teacher” (Osguthorpe & Graham, 2003, p. 229). In light of the rapid growth and near pervasiveness of technology in higher educational settings, a number of authors have seen fit to voice concern over potential pitfalls with blended learning in the college classroom. These authors challenge the unquestioned effectiveness of technology-based pedagogy and warn educators of the dangers of using it in the absence of adequate knowledge, forethought, and planning. Watson (2001) cites previous evaluation studies by Cuban (1986) and Bowers (1988) to support the notion “that unreflexive and unabashed optimism about the necessarily transformative nature of new educational technologies is both naïve and historically unfounded” (p. 261). According to Bennett, Priest, and Macpherson (1999), “from a pedagogical perspective… web based strategies have the potential to be just as inflexible and inappropriate as any other form of poor instruction” (p. 208). Torrisi-Steele (2002) explains that “inadequate knowledge of the potential of new [online] technologies together with the hype surrounding new technologies in the teaching and learning arena may lead to the mistaken belief that simply translating teaching materials inherently results in improving the quality of the learning environment” (p. 2).
Blended Learning: Dimensions

A number of authors (Khan, 2001; Singh & Reed, 2001; Margaryan & Bianco, 2002; Singh, 2003; Troha, 2003; Roethlisberger, Fernandes, & Forte, 2005; Verkroost, Meijerink, Lintsen, & Veen, 2008) have seen fit to describe blended learning in terms of the various dimensions along which it can vary. The work of Verkroost, Meijerink, Lintsen, and Veen (2008) draws from the research of Singh and Reed (2001) and Troha (2003), though unlike these authors it focuses specifically upon blended learning in a higher educational setting. The authors identify four dimensions of blended learning for courses at the college or university level: (1) Structured versus Unstructured Learning, (2) Individual versus Group Learning, (3) Face-to-Face versus Distance Learning, and (4) Self Learning versus Teacher Directed Learning. The authors acknowledge that various preconditions, including course, curriculum, resources, student demographics, and teacher background knowledge, will impact every course designer’s decisions with regard to the balance of the blend along these dimensions.

The first of the authors’ (Verkroost, Meijerink, Lintsen, & Veen, 2008) dimensions (Structured versus Unstructured Learning) relates to both content and pacing. The level of structure in content reflects the amount of freedom students are given with respect to approaching, analyzing, and comprehending course concepts. The level of pacing reflects the degree of freedom students are given in controlling their rate of processing course materials. The second dimension (Individual versus Group Learning) relates to social interaction between classmates. Individual learning implies solitary consideration of course concepts, while group learning implies interpersonal
communication among classmates for the sharing of knowledge and analysis of course concepts. The third dimension (Face-to-Face versus Distance Learning) relates to location. When learning occurs in a classroom, it is described as face-to-face; when it occurs from remote locations through online activities, it is described as distance. The final dimension (Self Learning versus Teacher Directed Learning) relates to responsibility. It reflects the degree to which students are given responsibility for self-regulating their learning and exerting control over the learning process.

**Blended Learning: Impact on Students**

Several studies have examined blended learning in light of its strengths in encouraging interaction, enhancing engagement, building community, and forming connections between students. In an early study of this type, Aspden and Helm (1984) assessed whether college students in a blended learning environment experienced an increased sense of connectedness with their classmates, instructors, and institution. The authors used qualitative data obtained from student diaries and interviews carried out during the second phase of a formative evaluation of on-campus students’ online learning experiences. During this phase, the authors observed issues emerging from the data with respect to the nature of contact between students, instructors, and the university. They thus sought to investigate student interaction and engagement within the blended learning environment students were experiencing. According to the authors, “on-campus, students have the physical embodiment of the institution – the architecture, the setting, the people, the resources – with which they can identify and a sense of being at [college] is supported
by recognition of this environment” (p. 249). The authors concluded that the strength of
the blended learning environment - and its online component specifically - lies in its
ability to simulate “the presence of the institution” for students when they leave campus,
allowing them to retain their connection with their classmates and their engagement with
their studies.

both the nature and quality of students’ overall educational experience. According to the
authors, “the heart of this argument is the quality and quantity of the interaction and the
sense of engagement in a community of inquiry and learning” (Garrison & Kanuka, 2004,
p. 97). Within a blended learning environment, the authors view community as the
stabilizing force that binds students to one another in a setting where access to
information and an open dialogue about course topics are considered essential. The
authors conceptualize a community of inquiry as resultant from the interconnectedness of
three elements: social presence, cognitive presence, and teaching presence. At the
intersections of these elements are the pedagogical concepts of content, climate, and
discourse. Discourse, which rests at the intersection of social and cognitive presence,
represents the interaction between members of the learning community through dialogue
designed to promote the construction of meaning and the confirmation of understanding.
The authors view this discourse as a necessary means for challenging existing beliefs,
arguing that isolated learning cannot accomplish similar goals.

Rovai and Jordan (2004) investigated sense of community within classroom,
blended, and fully online graduate courses at a small, urban university in the southeastern
United States. One of the authors (Rovai, 2002) had previously determined that a key component to low retention rates and diminished cognitive learning in fully online courses related to the reduced sense of community among learners. In the present study, the authors used a self-report measure to assess student connectedness and learning in three sections of a course, each employing a different instructional format as indicated above. Students in the blended section of the course scored significantly higher than those in the other two sections on both variables. The authors noted that the blended learning section successfully avoided the feelings of isolation that the fully online section produced while offering enhanced communication options for students that the classroom section could not.

Kurthen and Smith (2005) investigated how students interacted in the online and face-to-face aspects of the blended courses at their university, collecting qualitative data through instructor interviews, structured classroom observations, and the analysis of online postings on discussion boards. They concluded that student interaction was enhanced when between 40% and 80% of the course components were online, but that interactions were impeded when less than 40% were online. They attributed this finding, in part, to norm internalization, suggesting that students have to “overcome some resistance and internalize the norms and rules of another learning modality” (p. 241) if they are to embrace it. Thus, according to the authors, when online components are only minimally used within a course, students may be more likely to resist accepting them as a valid or attention-worthy medium for interaction. With this in mind, the authors caution
instructors of blended learning courses to avoid increasing online components capriciously or for reasons unrelated to student comprehension of course content.

**Student-Student Interaction: Facilitating Classroom Learning**

As discussed in the previous section, a key strength of blended learning lies in its ability to facilitate increased communication and more productive interpersonal interaction between students. Interpersonal interaction in the college classroom has been supported by educational researchers as a means for enhancing the learning process and improving the educational experience overall. According to Palloff and Pratt (1999), “key to the learning process are the interactions among students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interactions” (p. 5). Bouton and Rice (1983) support interaction among students, warning against traditional classroom teaching methods, like lecturing, which discourage communication between classmates and place them in a passive role that encourages lower order thinking and learning skills. Similarly, Cleveland-Innes and Emes (2005) support discussion and the exchange of ideas in the college classroom as a means for improving student motivation and enhancing the application of deeper learning strategies. According to Petonito (1991), “as active participants in the quest for knowledge, students learn to develop their own resources for learning and become prepared to meet the intellectual challenges that lie ahead” (p. 501). Rovai and Jordan (2004) have explained how “approaches to learning that promote social constructivism, or learning within a social context, and that feature active group construction of
knowledge, rather than transfer of knowledge, provide ideal learning environments” (pp. 2-3) for college students.

**Student-Student Interaction: Collaboration versus Cooperation**

The broad term commonly applied to any planned interpersonal interaction between students in a college classroom is collaborative learning. This term is particularly common when a specific, well-defined format for the interaction (e.g. cooperative learning) has not been identified. Whipple (1987) identifies collaborative learning as a form of pedagogy focused on cooperation between instructors, students, and administrators as a means for encouraging active participation in the learning process. Smith and MacGregor (1992) describe it as “an umbrella term” (p. 1) for any pedagogical approach that requires students to work collectively in the application or exploration of course concepts. Kaufman, Sutow, and Dunn (1997) envision collaborative learning as encompassing a wide range of instructional activities that all require students to work in small groups in the pursuit of some academic goal. According to the authors (Kaufman, Sutow, & Dunn, 1997), one end of the collaborative learning spectrum holds highly unstructured activities (e.g. open-ended discussions within conveniently formed groups), while the other end holds highly structured activities (e.g. cooperative learning). Cuseo (1992) concurs with this description, identifying cooperative learning as the most structured and well-defined form of collaborative learning.

It is notable, however, that several authors (Bruffee, 1995; Matthews, Cooper, Davidson, & Hawkes, 1995; Wiener, 1986) define collaborative learning as a discrete
entity and not simply a broad term for any classroom interaction. Trimbur (1989) describes collaborative learning as a particular method of discussion in which students “engage in a process of intellectual negotiation and collective decision-making… to reach consensus through an expanding conversation” (p. 602). Proponents of this definition, like those cited above, view collaborative learning as an organized means for encouraging the social construction of understanding through group discourse.

Collaborative and cooperative learning are thus considered fundamentally different entities, similar mainly for their underlying assumption that students learn more effectively as a result of working together. According to Bruffee (1995), there are four aspects of collaborative learning that distinguish it from cooperative learning. The first is that collaborative learning is not designed to establish structures for ensuring student accountability or participation. It eschews the parameters and organization of cooperative learning in favor of a more organic interaction among students. According to the author, “collaborative learning defines only one social role – a recorder, who writes a report of the group’s discussion and consensus and then speaks for the group to the class as a whole” (Bruffee, 1995, p. 16). This purposeful lack of structure could lead to lack of participation among a certain percentage of students who lack interest in the subject matter or motivation to contribute their thoughts and energy to the process.

The second feature of collaborative learning that distinguishes it from cooperative learning is its purposeful shift of authority from the instructor to the students themselves. According to Bruffee (1995), the collaborative learning process does not require the instructor to intervene in group activities, nor is intervention of this nature recommended.
In making this shift a priority, and effectively removing the instructor’s leadership from the process, proponents of collaborative learning recognize the increased potential for inefficient interaction. In the absence of the instructor’s guidance, discussions can proceed in unproductive or counterproductive directions with group members failing to address pertinent information or generate the desired consensus on the subject matter of consequence. The third distinguishing feature of collaborative learning is that it places the instructor in a position of being unable to monitor and evaluate student interaction within a given group. To encourage students to interact in a more genuine and honest fashion, it is recommended that the instructor avoid being present in the vicinity of their interaction. The fourth and final feature of collaborative learning is that it encourages dissent. That is, any disagreement or dissatisfaction that occurs during group interaction is viewed as a natural part of the learning process. Unlike cooperative learning, no negative consequences are dispensed to students who disengage with the assignment, challenge other group members’ assertions, or defy the instructor’s expectations for the learning experience. Rau and Heyl (1990) offer a conception of collaborative learning with a structure similar to Bruffee’s (1995), though the authors augment the format with parameters for participation designed to help “minimize student ‘free riders’, who exploit the work of others” (p. 142).

**Student-Student Interaction: Foundations of Cooperative Learning**

Whether it’s conceived as a form of collaborative learning or differentiated from collaborative learning entirely, cooperative learning can be viewed as a unique, well-
defined, and highly structured model for in-class group work that focuses on ensuring participation on the part of all involved students. According to Slavin (1996), there are four main theoretical perspectives on cooperative learning and achievement: motivational perspectives, social cohesion perspectives, developmental perspectives, and cognitive elaboration perspectives. Motivational perspectives, for which the author (Slavin, 1977, 1980, 1983a, 1983b, 1995) and others (Johnson & Johnson, 1974, 1978, 1989, 1992, 1998; Johnson, Johnson, & Smith, 1991a, 1991b, 1998) are well known, focus on goal and reward structures. Within this perspective, group work must be arranged so that each group member’s ability to meet his or her goals is dependent upon the success of the group as a whole. This is often accomplished by rewarding group performance as a means for helping ensure individual accountability. Social cohesion perspectives (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978; Sharan & Sharan, 1992; Cohen, 1994) are also motivational in nature. They differ from the motivational perspectives above, however, in that they focus on the caring nature of group members and the expectation that students will want to help each other succeed. Methods for building group cohesion are thus critical to this perspective and take the place of the aforementioned reward-based structures for ensuring individual accountability.

Cognitive theories on cooperative learning, like those within the developmental perspective and the cognitive elaborative perspective, focus neither on group goals nor group cohesiveness (Slavin, 1996). They differ from motivational theories in their conception that increased learning comes as a result of the cognitive processes that are engaged during interpersonal interaction. Along with Piaget (1926), the developmental
perspective can be traced to the work of Vygotsky (1962, 1978). Vygotsky’s view of cognitive development was based on social interaction and the use of language. He believed that knowledge was constructed by individuals in cooperation with more knowledgeable others who could help them comprehend information they could not comprehend on their own. Vygotsky’s Zone of Proximal Development (ZPD) is described as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers” (Vygotsky, 1978, p. 86). This conceptual framework supports a cooperative learning technique called scaffolding - a process through which an instructor or fellow student with greater competence in a given subject area provides necessary help to the student within his or her ZPD. The cognitive elaborative perspective (Dansereau, 1988; Webb, 1989) differs from the developmental perspective by focusing on the retention and recall of information in one’s memory. This is accomplished through a cognitive restructuring process. Cooperative learning techniques in this perspective often place students in pairs and require them to explain important concepts to one another. In an instance where two students have read the same text, one can summarize what was read and the other can make corrections and additions as necessary.

**Student-Student Interaction: Johnson and Johnson’s Approach**

Johnson, Johnson, & Stanne, 2000) have written extensively on cooperative learning from a motivational perspective. Unlike many others, who have restricted their investigations to primary and secondary education, the authors have devoted considerable time to the examination of cooperative learning in the college classroom (Johnson, Johnson, & Smith, 1991a, 1991b, 1998; Smith, 1989). As discussed above, cooperative learning is a highly structured form of collaborative group work that encourages students to work together to achieve both shared and personal learning goals. This is accomplished through the implementation of a reward structure that promotes individual accountability for the attainment of group success. For a student to accomplish his or her goals, all other members of his or her group must also accomplish theirs. Clearly, careful planning must take place on the part of the instructor for cooperative learning groups to work effectively. In the absence of this planning, which includes the provision of clear parameters for interaction, performance, and evaluation, student groups can become complacent or even counterproductive. According to Johnson, Johnson, and Smith (1998), two common consequences of poorly planned learning groups are those that result in competition between students in close proximity to one another and those that result in isolated learning punctuated by distracting, off-topic conversation (p. 28).

According to Johnson, Johnson, and Smith (1991a), student-student interaction in the college classroom can be structured in three different ways: competitively, individualistically, and cooperatively (p. 1:14). The authors refer to these three formats as goal structures. Each goal structure differs based upon the nature of the interdependence between students as they work to achieve their learning goals. When a
classroom environment is oriented towards a competitive goal structure, there is negative interdependence among students with respect to the achievement of their goals. In this environment, students work to achieve their goals with the understanding that they can only do so at the expense of their classmates doing the same. When a classroom is oriented towards an individualistic goal structure, there is no interdependence among students with respect to the achievement of goals. In this environment, students work independently, in an isolated fashion, giving no consideration to what other students are attempting to accomplish academically. However, when a classroom is oriented towards a cooperative goal structure, there is positive interdependence with respect to the achievement of goals. In this environment, students work together, recognizing that each group member can best achieve his or her personal goals by contributing positively to the learning of others.

**Student-Student Interaction: Cooperative Learning’s Critical Elements**

A number of authors with a motivational perspective (Johnson, Johnson, & Holubec, 1984; Cook, 1991; Kaufman, Sutow, & Dunn, 1997) have investigated the various elements that must be present for successful cooperative learning to take place. Johnson, Johnson, and Holubec (1984) identified the following five elements as essential: positive interdependence, face-to-face promotive interaction, individual accountability, social skills, and group processing. Positive interdependence is the common belief among all group members that one cannot succeed unless everyone succeeds. Face-to-face promotive interaction describes the situation where students exchange ideas,
encourage one another, and offer each other verbal assistance in the learning process. Individual accountability implies that every group member’s full participation is valued and necessary for goal attainment. Social skills are the interpersonal communication skills that allow groups to work together efficiently and effectively. Group processing reflects the group’s ability to evaluate their performance in terms of relationship building and goal attainment.

Cook’s (1991) list of essential elements for cooperative learning differs only slightly from Johnson, Johnson, and Holubec’s (1984) list. The author identified six elements: positive interdependence, individual accountability, a rationale for grouping, structured student interaction, instructor facilitation, and attention to social skills. Only two of these elements - instructor facilitation and a rationale for grouping – are not present on the former authors’ list. The instructor facilitation element addresses the need for the instructor’s attention to each group’s activities to ensure that productive, goal-driven interactions are taking place. The rationale for grouping element highlights the need for heterogeneity in group make-up to allow students’ diverse skills and abilities to complement one another. In addition, Cook’s (1991) list does not include an element related to group processing. The list of elements developed by Kaufman, Sutow, and Dunn (1997) is also very similar to the one offered by Johnson, Johnson, and Holubec (1984). Containing six elements, it differs only in its inclusion of an appropriate grouping element similar to the one proposed by Cook (1991). The similarities between the three lists suggest a great deal of consistency between the ideas of leading researchers in the field. Despite minor differences, the work of Cook (1991) and Kaufman, Sutow,
and Dunn (1997) corroborates the earlier work of Johnson, Johnson, and Holubec (1984), lending support to their assertion that five critical elements must be present for motivationally-based cooperative learning endeavors to succeed. Their list remains the standard for the field.

**Student-Student Interaction: Impact of Cooperative Learning**

Due to most authors’ preoccupation with cooperative learning at the elementary and secondary level, studies of the impact of cooperative learning on college student success outcomes are not as common. The largest and most comprehensive study of cooperative learning in higher education is Johnson, Johnson, and Smith’s (1998) meta-analysis. This study represents an update of an initial meta-analysis carried out in 1993. In that study, the authors analyzed 120 experiments and quasi-experiments carried out between 1924 and 1992, comparing the effectiveness of cooperative, competitive, and individualistic learning on college students’ academic achievement (Johnson & Johnson, 1993). In 1998, this meta-analysis was updated with an additional 48 studies (Johnson, Johnson, & Smith, 1998). As a result of their analysis of these 168 studies, the authors found that, across all subject matter, cooperative learning environments promoted higher individual academic achievement in college students than either competitive or individualistic environments (competitive: effect size = 0.49, individualistic: effect size = 0.53) (Johnson, Johnson, & Smith, 1998). It is notable that the authors identified an additional 137 studies that sought to assess the impact of cooperative learning on outcomes other than college students’ academic achievement. The authors categorized
these studies as investigating either the quality of college students’ relationships or their psychological adjustment to college life. Like academic achievement, overall positive results were found in both categories for students exposed to cooperative learning over individualistic or competitive learning.

Since Johnson, Johnson, and Smith’s (1998) meta-analysis, various authors examining the impact of cooperative learning within specific disciplines have found results that support the authors’ conclusions about its impact on undergraduate students’ academic achievement. Miller and Groccia (1997) found greater knowledge acquisition, as well as greater satisfaction, independence, and teamwork skills, in biology students involved in cooperative learning than those in traditional lecture-oriented formats. Giraud (1997) and Potthast (1999) both found evidence for higher academic achievement among statistics students in cooperative learning groups versus those in standard lecture formats. Stockdale and Williams (2004) found evidence of greater academic achievement (overall effect size of 0.42) in educational psychology students in a cooperative learning environment over those in an individual study format. Anderson, Mitchell, and Osgood (2005) found evidence that biochemistry students in cooperative learning classes outperformed their peers in traditional, lecture-based classes in terms of their content knowledge, critical thinking, and problem-solving, and that they were also more positive about their learning experience. Bilgin (2005) found evidence for cooperative learning as a more successful strategy than traditional problem solving in helping undergraduate chemistry students solve quantitative chemistry problems. Moore (2005) found increased academic achievement and greater retention rates for minority
engineering students in a cooperative learning calculus program over those enrolled in traditionally formatted calculus courses. Endorf, Koenig, and Braun (2006) found evidence for increased understanding of physics in recitation sections that used cooperative learning over those that used three other instructional techniques. Zipp (2007) found that a two-step cooperative learning exam process in a sociology course increased achievement significantly for all students, regardless of performance on the initial, individually-based exam.

Based on the research discussed above, support exists for cooperative learning as a means for improving college students’ academic achievement. Conversely, little research has been carried out to lend support to cooperative learning as a means for increasing college students’ engagement with their coursework. As noted, Johnson, Johnson, and Smith (1998) located 305 studies carried out between 1924 and 1997 on cooperative learning in college. They categorized 168 of them as investigative of academic achievement, 95 as investigative of quality of relationships, and 42 as investigative of psychological health and self esteem. None were categorized as investigative of student engagement with the learning process. Why? It seems reasonable to speculate that when educators employ cooperative learning in their classrooms with the goal of researching its impact on specific success outcomes, they do so with the expectation that the increased interaction it fosters will necessarily increase students’ engagement with their coursework. One could also speculate that the majority of researchers interested in investigating academic achievement consider student engagement in coursework a necessary prerequisite for achievement. In this way,
engagement with coursework is conceived as critical for learning, but not something that needs to be measured in and of itself. They presume that increases in academic achievement provide evidence that students’ engagement in their coursework increased as well.

Peterson and Miller (2004) carried out one of the few existing studies of the effects of cooperative learning on student engagement. The authors sought to compare cooperative learning environments with large-group instruction environments to determine whether the quality of students’ experiences differed between them. They used Csikszentmihalyi, Larson, and Prescott’s (1977) experience sampling method (ESM) as a means for measuring students’ perceptions of their experiences. Employing the ESM, Peterson and Miller’s instructors randomly interrupted their undergraduate educational psychology students at various times during their course activities, asking them to respond to a questionnaire designed to measure various dimensions of their experience - the "emotional, cognitive, and motivational aspects of consciousness" (Csikszentmihalyi, Rathunde, & Whalen, 1993, p. 54). Analyzing the results, the authors found that quality of experience was significantly higher during cooperative learning than during traditional large-group instruction and that this variable accounted for 47% of the variance. Specifically, the authors found that students in the cooperative learning environment were more engaged in their activities, more apt to perceive their learning task as important, and more likely to experience ideal levels of challenge and skill. Peterson and Miller indicated that they expected the significant result for increased engagement because small group activities provide students with increased opportunities
to involve themselves in the exchange of ideas with their peers. According to the authors, “the implication for teachers… is that carefully designed and monitored cooperative learning tasks that help students achieve future goals can help students engage more actively in their learning experiences” (Peterson & Miller, 2004, p. 132).

In-Class versus Online Interaction between Students

As discussed in the previous section, cooperative learning as a format for in-class group work has been linked to a number of positive academic outcomes in the traditional classroom. In our modern technological era, however, a variety of computer applications have given instructors new options for encouraging communication between their students. Through blended learning, the instructor has the opportunity to bring about student-student interaction either through face-to-face communication (e.g. cooperative learning) or through online communication (i.e. chat rooms, threaded discussion boards). Discussions that occur in chat rooms are synchronous (i.e. occurring in real time), while those that occur on threaded discussion boards are asynchronous (i.e. subject to variable response rates). In a blended learning classroom, the threaded discussion board is generally preferred over the chat room. This is logical, since the real time conversation that occurs in a chat room is easily facilitated in a classroom in a traditional, face-to-face format. For this reason, chat rooms are more often employed as an interaction tool by instructors of distance education courses. Within a blended learning classroom, then, the most widely employed formats for student-student interaction are face-to-face discussions and online threaded discussions. Within this literature review, an entire
section has been devoted to research supporting the value of the former to college students in their efforts to achieve desired academic outcomes, including engagement with coursework and the consequent attainment of high course grades and grade point averages. A large and recently accumulated literature also exists to support the value of the online threaded discussion for attaining similar goals.

**In-Class versus Online Interaction: Key Differences**

By its very nature, the online discussion differs from the face-to-face discussion in several key ways. First, as discussed above, face-to-face discussions are synchronous (e.g. occurring in real time), while online threaded discussions are asynchronous (e.g. occurring intermittently with indeterminate periods of inactivity). As everyone knows from personal experience, face-to-face interaction occurs at a rate governed only by human perception and the ability to cognitively process and respond to verbalized content. Online interaction in a threaded discussion format differs from face-to-face (verbal) interaction in that it was not designed to approximate this type of communication. Rather, it was designed to allow communication where reflection takes precedent over timely discourse (Meyer, 2003). Secondly, in a given time period, face-to-face interaction allows for the communicative exchange of many ideas relating to many interrelated topics. In a face-to-face discussion, the verbal exchange is both fluid and continuous, making the collaborative development of diverse and complementary ideas possible. Conversely, the asynchronous nature of online threaded discussion limits the lively exchange of many ideas to several reflective “posts”, often related to a single
topic. In this environment, collaboration is minimized and ideas are generated largely in an independent fashion. Gay, Pena-Shaff, and Martin (2001) highlight this distinction. In their assessment of students who participated in online threaded discussions, the authors noted that very few had what could be conceived as genuine interactions with their classmates. The authors described students’ online submissions as “private arguments and analyses… posted to a public bulletin board” (p. 41).

Finally, for each of the two discussion formats, students’ motivation to participate and, therefore, their rates of participation are influenced by different factors. Face-to-face interaction, particularly in an unstructured format, is influenced and often driven by interpersonal factors. In any face-to-face conversation, each individual has an equal opportunity to contribute to the discussion simply by choosing to verbally interject his or her comments. However, the personalities, temperaments, and social skills of the individuals in conversation may create a situation where certain people feel more compelled to contribute than others, leading to unequal rates of participation. While the online threaded discussion is also influenced by interpersonal factors, the remote and asynchronous nature of this format inherently reduces their impact (Kiesler, Siegel, & McGuire, 1984; Olaniran, Savage, & Sorenson, 1996; Phillips & Santoro, 1989). In the online format, however, motivation to participate is more susceptible to factors related to the discussion topic and the communication medium. Student apathy for course content, lack of confidence in writing skills, and reticence to engage others through the written word can all have a negative impact on participation rates in the threaded discussion.
format (Mason, 1994; Vrasidas & McIsaac, 1999; Taylor, 2002; Vonderwell & Zachariah, 2005).

**In-Class versus Online Interaction: Impact on Student Success**

Tutty and Klein (2007) explored the effects of method of collaboration between students, comparing face-to-face interaction with asynchronous online interaction in an undergraduate computer literacy course at a public university in the northwest. A second independent variable related to group composition was included, whereby students were grouped as either homogeneous higher-ability, homogeneous lower-ability, or heterogeneous ability. The authors cited Hara (2002) and Joung (2003) in noting that little empirical evidence existed at the time of the study to support the notion that “the positive effects of collaborative learning on achievement in face-to-face settings transfer to environments where communication is mediated by computers” (Tutty & Klein, 2007, p. 105). In their study, the authors found that students in the face-to-face interaction groups performed significantly better than those in the online interaction groups on the posttest designed to measure knowledge and skills covered in the course. This signified greater understanding of course content on behalf of the face-to-face interaction groups. The authors attributed the finding, in part, to the ease with which face-to-face students could share information with one another.

Fahy, Crawford, and Ally (2001) used a tool for analyzing transcripts of online text-based conferences to draw conclusions about aspects of the interactions between people. Participants were members of an online graduate course at a large university in a
A major Canadian city. The authors’ analysis focused on two interactional features of the online discussions: type of content exchanged and the directedness of the interaction. The former provides information on people’s perceptions of learning within the online interactional environment, while the latter provides information on the degree to which exchanges between people were symmetric and equal. With respect to the latter, the authors noted a great deal of variability throughout the conference. This led them to conclude that the interaction was asymmetric and non-complementary, an indication that participation and interaction between individuals was sporadic and resulted in questionable levels of productivity. According to the authors, “in the absence of information about the participants' motivations and personal outcomes derived from network interaction, their widely differing levels of participation seemed to indicate different levels of purpose, and varying perceptions of benefit” (Fahy, Crawford, & Ally, 2001, p. 16).

Olaniran, Savage, and Sorenson (1996) compared face-to-face communication with online communication in a study of students’ decision-making processes. Participants were undergraduate communications students at a large private university in the southwest. All students were placed in small groups and given tasks that required them to develop decision proposals that had the potential to resolve a specific controversy. Two stages to the development process – idea generation and idea evaluation – were instituted. Each group was given two similar tasks, one to be carried out through face-to-face interaction and the other through computer-mediated communication. The results of the study suggested that students were more satisfied
overall with face-to-face interaction than computer-mediated interaction. According to the authors, “unexpectedly, across both idea generation and evaluation, subjects reported that [face-to-face] meetings were more effective than [online] meetings” (p. 254). In addition, while students were found to have generated more ideas within their online interaction groups, they perceived themselves to have been significantly less effective in this interaction format. This finding can be interpreted to suggest that participants lacked confidence in the ideas they generated in this format. These findings led the authors to caution other instructors about selecting online interactional formats for collaboration when face-to-face interaction is possible.

In a study by Ocker and Yaverbaum (1999), the authors evaluated face-to-face collaboration and asynchronous computer-mediated communication in terms of their effect on outcomes including student learning and student satisfaction with the learning experience. The participants were 43 graduate students enrolled in an information systems course required of all students seeking an MBA at a mid-sized university in the northeast. As part of their work in the course, students were placed in small groups and asked to collaborate on two different case studies. For one case study, interaction was facilitated through face-to-face collaboration. For the other, interaction was facilitated online through asynchronous, web-based discussion. The authors’ measured student learning based on their performance on an exam administered after each case study. While face-to-face collaboration produced higher exam scores than online interaction, the difference was not significant. However, the authors found that students enjoyed the
learning experience more during face-to-face interaction and that they believed their discussions were of higher quality.

Newman, Webb, and Cochrane (1995) used content analysis to measure critical thinking within face-to-face collaborative groups and asynchronous online discussion groups. The authors analyzed interaction between undergraduate students at a university in England. To do so, they used transcripts of student interaction obtained during a previous experiment (Webb, Newman, & Cochrane, 1994). In that experiment, the researchers had required students to complete half their coursework for a given undergraduate seminar in small groups through face-to-face interaction and the other half in small groups through asynchronous online conferencing. The discussions resulting from the former were recorded and then transcribed by the research team, while those from the latter were stored automatically by the computer conferencing system. The authors’ analysis of the interaction between students demonstrated that both formats provided opportunities for critical thinking, but that face-to-face interaction was stronger for novelty and that online interaction was stronger for interpretation and importance. The authors surmised “that the asynchronous computer conferencing environment discouraged students from contributing novel, creative ideas (as in brainstorming), but rather encouraged considered, thought out contributions” (Newman, Webb, & Cochrane, 1995, p. 11).

Meyer (2003) postulated that the above findings (Newman, Webb, & Cochrane, 1995) could also result from the way students work in the asynchronous online environment. That is, unlike face-to-face conversation, where the rapid exchange of
diverse thoughts can readily facilitate creative thinking and the development of new ideas, interaction in an online discussion environment can encourage students “to work in a linear fashion” (Meyer, 2003, p. 58) and focus mainly on reiterating the ideas present in comments other students already contributed. Meyer integrated both face-to-face discussion and asynchronous online discussion into her graduate level courses in educational leadership. At the end of the term, the 22 participants were asked to offer their comments on both discussion formats. According to the author (Meyer, 2003), the comments could be categorized into four themes. The first was that the asynchronous online discussions expanded time, making it necessary to commit more time out-of-class to contributing one’s required postings to the discussion board. The second was related to the way students experienced their time in the given format. According to Meyer (2003), students enjoyed the energy of the face-to-face discussion and the way in which it allowed them to “build upon each others’ comments, collaborate on the spot, and benefit from the enthusiasm of others” (p. 61). Conversely, the online format was deemed slow and cumbersome. The third related to the quality of the discussion. Face-to-face discussions were sometimes seen as competitive and students sometimes believed it difficult to obtain clarification or supporting evidence for people’s comments. However, the online discussions were viewed as an opportunity for all to contribute equally. Students were also able to share links to relevant journal articles through the online discussion medium. The final theme related to student needs. Some students preferred face-to-face discussion because it offered multiple means for communicating and interpreting feelings and meanings (e.g. verbal cues, facial expressions). Others preferred
the online discussion for the time it allowed for reflection and precise written communication of ideas.

Vrasidas and McIsaac (1999) studied the factors that influenced student interaction in a small graduate level course in telecommunications at a large university in the southwest. Throughout the semester, class meetings for the eight participants were intermittently face-to-face and online. Over the sixteen-week term, a total of eight discussions were held. Four were face-to-face discussions and four were asynchronous online discussions. For each of the online discussions, a different pair of students was assigned to create and post the discussion question. All other students were then asked to respond to it at least once. The authors collected data on the number of interactions in both the face-to-face and online discussions as well as feedback from students on their perceptions of the course and interactions within it. Based on their analysis, the authors concluded that interaction was affected by structure, class size, feedback, and prior experience with online technology. With respect to structure, the authors noted that required, graded activities appeared to bring about increased interaction. They also used structure to explain extremely low participation rates in the asynchronous online discussions. According to the authors, students perceived these discussions as “busy work” (Vrasidas & McIsaac, 1999, p. 28) and unnecessary in a course where they were often preceded by a writing assignment and a face-to-face discussion on the same topic. The authors also suggested that the lack of participation in the online discussions could have stemmed from the fact that “students’ needs for socializing, learning, and discussing” (Vrasidas & McIsaac, 1999, p. 29) were all adequately met in the course’s
face-to-face component. Van Eijl and colleagues (2000) drew a similar conclusion in a similar situation. According to the authors (Van Eijl, Pilot, Jong, De Voogd, & Janssens, 2000), students who collaborated during class time did not demonstrate a need to also collaborate online in any fashion. The authors found that face-to-face interaction was both faster and more stimulating for the involved students.

Ellis, Prosser, Goodyear, and O’Hara (2006) investigated students’ conceptions and approaches to learning through discussion. Participants were undergraduate students in a psychology course at a university in Australia. Throughout the semester, students participated in structured discussions designed to help them understand psychological theory and relate it to their own experiences and the experiences of others, for the purpose of comprehending important concepts in social work practice. During class, discussions were facilitated in a face-to-face manner, in both large and small groups. After class, students were required to make at least two postings on an online, asynchronous discussion board. Students had the option of originating new posts or responding to posts that other students had already made. According to the authors, the online discussions that resulted were typically a continuation of the face-to-face discussions that had just ended. In the study, fifty-one students agreed to complete a questionnaire about their experience and, from this group, nineteen were selected to take part in an interview. From this data, the authors concluded that learning was most likely to occur when students: (1) committed themselves to thinking holistically and challenging their beliefs, (2) engaged in face-to-face discussions with the goal of analyzing their own experiences and impressions in the context of the main concepts and
ideas under discussion, and (3) engaged in online discussions with the goal of reflecting upon and evaluating posted material for the purpose of challenging key ideas. It is notable that these conclusions, and particularly the latter two, seem most applicable when a two-step, sequential discussion approach, like the one outlined above, is employed.

**In-Class versus Online Interaction: Conclusions**

In sum, findings from the above studies suggest that the availability of online discussion technology does not necessarily mean its use will contribute positively to students’ learning experience in the blended environment. Studies have demonstrated that face-to-face interaction allows greater ease of communication than online interaction (Tutty & Klein, 2007; Meyer, 2003) that can result in a better understanding of course content (Tutty & Klein, 2007; Ocker & Yaverbaum, 1999). Students may find face-to-face communication more effective and more enjoyable than online interaction, which can lead to increased confidence in the quality of their discussions and the achievement of their learning goals (Olaniran, Savage, & Sorenson, 1996; Ocker & Yaverbaum, 1999). In addition, face-to-face interaction appears to encourage creativity and the production of more novel ideas than online interaction, which seems more suited to encouraging reflection and careful construction of the written word (Newman, Webb & Cochran, 1995; Meyer, 2003). It appears that online interaction can lead students to work linearly, rehashing content contributed by others rather than thinking creatively and interjecting their own original thoughts and ideas (Meyer, 2003). Finally, students interacting online appear to do so with different purposes and thus widely differing
participation rates (Fahy, Crawford, & Ally, 2001). Some may find online interaction
tedious and unnecessary, particularly when they’ve already had the opportunity to
interact with their classmates in a face-to-face environment (Vrasidas & McIsaac, 1999;
Van Eijl, Pilot, Jong, De Voogd, & Janssens, 2000).

**Student-Instructor Interaction in the College Classroom**

As discussed in the previous two sections, student-student interaction in the
classroom is critical for the achievement of various academic success outcomes.
However, interaction between student and instructor is no less important. This is
particularly true in a blended learning environment, where technology is often utilized as
an information source. In this environment, time spent engaged with online learning
materials can replace time spent interacting with the instructor – a situation that can be
detrimental to the learning environment. Indeed, over the years, a number of prominent
researchers in higher education (Chickering & Gamson, 1987; Pascarella & Terenzini,
1991; Astin, 1993; Tinto, 1994; Ewell & Jones, 1996) have pointed to student-instructor
relationships as a critical component for fostering student academic achievement in
college. These authors have provided insights into the positive impact of both in-class
and out-of-class interaction between students and faculty members on college campuses.

**Student-Instructor Interaction: Early Research on Impact**

In an early study by Pascarella, Terenzini, and Hibel (1978), the authors
investigated the impact of interaction with faculty members outside the classroom on
students’ academic performance. The study was carried out with undergraduate students at a large private university in the northeast between 1975 and 1976. Participants were freshmen who responded to a survey designed to collect information on their patterns of interaction. The authors found that students who met with faculty members to discuss “intellectual or course-related matters” and “matters related to my future career” performed significantly better academically than was predicted from pre-enrollment characteristics. Conversely, students who failed to meet with faculty for one of these reasons tended to perform lower than expected. The authors attributed the significant relationship to students’ increased understanding of the value faculty members place on high academic achievement as well as faculty members’ ability to influence the values, attitudes, and behaviors of the students who seek relationships with them. The authors (Pascarella & Terenzini, 1978; Terenzini & Pascarella, 1980) carried out two additional studies on student-faculty interaction in which they controlled for pre-college factors. These studies, which also involved first-year students, demonstrated that the frequency of contact between students and faculty was positively related to students’ academic and intellectual growth (Pascarella & Terenzini, 1978) and that quality of contact was positively related to academic achievement (Terenzini & Pascarella, 1980). In the latter study, conversations with faculty that centered on intellectual topics were found to have the greatest positive impact on students’ academic success.

Terenzini, Theophilides, and Lorang (1984) completed a longitudinal study to investigate influences on students’ perceptions of their academic skill development during their college years. The study was carried out between 1978 and
1981 at a large public university in the northeast. During the summer prior to their first year, students in the study completed a form requesting information on both their personal and family background and on their anticipated educational goals and expectations for college. In the Spring of the next three years, students received a comprehensive instrument designed to acquire information about students' attitudes and experiences during the previous academic year. The authors found evidence of students' perception that their mastery of certain academic skills increased during each year of the study. The rate of growth in these skills, including critical thinking, application of abstract principles, and evaluation, was found to be very stable. The authors also found that students' level of classroom involvement was consistently related to this perceived growth throughout the study. Finally, data supported the conclusion that both the quality and frequency of faculty interaction with students, both inside and outside the classroom, are positively related to the aforementioned perceptions of academic growth.

Endo and Harpel (1982) studied the impact of student-faculty interaction on a number of educational outcomes at their large western university. The authors analyzed data collected from the 1975 Freshman Questionnaire and the 1979 Graduating Students Survey. The study distinguished between what the authors referred to as “formal” and “informal” interaction. Formal interaction was characterized as professional in nature, where the faculty member limits discussion to academic and advising-related topics. Informal interaction was characterized as friendly and personable, where the faculty member displays a broad interest in the student’s personal and emotional well-being. According to the authors, after controlling for background variables, frequency of
informal interaction with faculty was positively correlated with six of seven intellectual outcomes as well as satisfaction with education. Frequency of formal contact, however, provided few correlations. In addition, unlike the aforementioned study by Terenzini and Pascarella (1980), formal contact had no significant impact on academic achievement, although it was statistically close. The authors surmised that, because their study covered the four years of college and not just the first year, the potential effect may have been harder to detect. A final finding was that faculty helpfulness was positively correlated with both progress toward intellectual goals and satisfaction with education.

**Student-Instructor Interaction: Recent Research on Impact**

Woodside, Wong, and Wiest (1999) investigated the relationships between student-faculty interaction, academic achievement, and students’ self-concept among undergraduates at a mid-sized public university on the west coast. All participants completed a published survey on college students’ self perceptions as well as a published survey on their teachers’ use of both verbal and non-verbal communication in the classroom. All participants also provided their most recent exam score in the course during which they received the surveys, which was used as an index of academic achievement. A series of regression analyses was performed in which teachers’ communicative behaviors always served as the independent variable and the four subscales of students’ self perceptions and the students’ exam scores were the dependent variables. Of the five analyses, only two were significant. Teachers’ classroom behaviors significantly predicted students’ exam scores as well as their perceptions of
scholastic competence. Teachers’ classroom behaviors had no significant contribution to students’ perceptions of self worth, social acceptance, or intellectual ability. These findings suggest that faculty members who are more interactive with their students in the classroom, both verbally and non-verbally, can expect improved academic performance and greater feelings of competence with the coursework.

Cleveland-Innes and Emes (2005) studied the impact of students’ interaction with peers and faculty members on deep learning. According to the authors, when students seek out faculty members for help in understanding subject matter, the one-on-one discussions that result are opportunities “for faculty to encourage students to go beyond just dealing with the problem and to engage students in a meaningful conversation regarding the material or subject” (p. 256). The authors noted that increased interaction between students and faculty can produce a more genuine interest in course topics and concepts. The outcome can be greater commitment to the course and a deeper understanding of course concepts. As a result of their study, which examined students in a challenging statistics course at their university, the authors determined that while peer-peer interaction occurs more commonly than peer-faculty interaction, the opportunity for interaction of either type “leads to a chain of events culminating in learning outcomes” (p. 257).

Umbach and Wawrzynski (2005) examined faculty attitudes and behaviors to identify those that contribute to positive undergraduate outcomes, including increased student engagement and learning. Their study utilized data from Spring 2003 from both the National Survey of Student Engagement (NSSE) and a parallel study that collected
data on the attitudes and behaviors of faculty employed at the 137 colleges and universities participating in the NSSE. The authors found that course-related interactions between students and faculty had a positive impact on student engagement for the first-year and senior students in the study. On campuses where faculty reported frequent course-related interactions with their students, these students reported greater engagement with their learning and more positive perceptions of their campus as a supportive learning environment. Course-related interactions with faculty also led to gains in personal/social development, general knowledge, and practical competencies. In addition, greater student engagement and more positive learning outcomes were found on campuses where faculty members involved students in active and collaborative learning opportunities, challenged them academically, emphasized higher-order cognitive activities, and valued enriching educational experiences.

Graunke and Woosley (2005) measured variables affecting academic success in a cohort of sophomore undergraduates at a Midwestern university during two consecutive semesters in 2002. The authors examined two categories of independent variables: demographic variables and academic experiences and attitudes. All students completed a survey to measure variables within these two categories. Grade point averages were obtained from student records. According to the authors, the only variables within the academic experiences and attitudes category that were significantly correlated with grade point average during both semesters were commitment to major and faculty and staff interactions. A multiple regression analysis was then performed, which demonstrated that, of the two, only interactions with faculty was a significant positive predictor of
grade point average during both semesters. This study suggests that faculty members can have a more profound effect on student success than other environmental variables if they make purposeful attempts to interact meaningfully with their students.

Ullah and Wilson (2007) utilized data collected from the NSSE at one Midwestern public university between 2003 and 2005 to draw conclusions about the impact of specific student behaviors on academic achievement. The results of the study indicated that students experienced the greatest positive impact on their academic achievement when they actively involved themselves in their learning, for example, by asking questions in class and participating in class discussions. The authors’ results also demonstrated that students who built stronger relationships with faculty experienced greater overall academic achievement as well. As such, to promote greater academic achievement, the authors encourage faculty to explore opportunities to involve their students more actively in the learning process. Among several suggestions, the authors include collaborative assignments and opportunities for enhanced classroom participation. They also encourage faculty members to make greater efforts to form quality relationships with their students in the interest of encouraging their success.

**Student-Instructor Interaction: Conclusions**

In sum, there appears to be substantial evidence that interaction with one’s instructors enhances a student’s ability to attain desired academic outcomes. According to Woodside, Wong, and Wiest (1999), instructors who are more interactive with their students in the classroom bring about improved academic performance in their students
as well as increased perceptions of scholastic competence. Both frequency of contact with faculty members (Pascarella & Terenzini, 1978) and quality of contact, particularly for the discussion of intellectual or course-related content (Pascarella, Terenzini, & Hibel, 1978, Terenzini & Pascarella, 1980), were found to improve first year students’ academic performance. During the sophomore year, out of a number of academic variables, students’ interactions with faculty were found to be the only significant positive predictors of grade point average (Graunke & Woosley, 2005). Over the course of their college careers, students’ interactions with faculty members contributed to a more genuine interest in course concepts and topics (Cleveland-Innes & Emes, 2005), increased engagement in the learning process (Umbach & Wawrzynski, 2005), enhanced perceptions of academic growth (Terenzini, Theophilides, & Lorang, 1984), and improved academic performance (Ullah & Wilson, 2007). In addition, frequency of informal contact between students and faculty members, where the latter displayed a broad interest in the overall well-being of the former, was correlated with a variety of positive intellectual outcomes as well as student satisfaction with college (Endo & Harpel, 1982).

**Conclusion**

A primary goal of the blended learning classroom is the effective synthesis of proven pedagogical techniques with new technological innovations for enhancing both communication and access to information. The end result is a modern classroom where interaction with learning materials, the instructor, and one’s classmates can occur both in-
class or at a distance through online technologies. Of greatest concern, then, both to the blended learning course designer and the course instructor, is the creation of a balanced blend where neither technology nor traditional pedagogy dominates the blend at the expense of the other. In situations where this occurs, significant aspects of the learning environment are sacrificed to the detriment of the students and their pursuit of academic achievement and specific learning goals.

The preceding four sections of this document expand on the proven benefits of both student-student and instructor-student interaction in the college classroom. When students have the opportunity to interact with one another and with their instructor in a structured manner, they tend to become more engaged with subject matter, more confident in their ability to comprehend it, and more likely to understand it (i.e. to achieve high academic performance). As such, for a given blended learning classroom, suitable research questions focus on two areas: (1) the impact of student-student and student-instructor interaction on academic engagement and academic understanding outcomes, and (2) for the unique situation of the blended learning environment, the relative benefits of the manner in which student-student interaction is facilitated (i.e. online/asynchronous discussion versus face-to-face/synchronous discussion). Active Discovery And Participation through Technology (ADAPT; Tuckman, 2002) is a blended learning model applied in EPL 259: Individual Learning and Motivation, a course in college success strategies for undergraduates at the Ohio State University. With limited student-student and student-instructor interaction in the classroom, EPL 259 and the
ADAPT model lend themselves to research in the two areas outlined above. To this end, the research questions for a proposed study are as follows:

RQ1: Does the addition of student-student interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase academic engagement?

RQ1a: Does the addition of face-to-face/synchronous discussion between students increase academic engagement to a greater extent than the addition of online/asynchronous discussion between students?

RQ2: Does the addition of student-student interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase academic achievement?

RQ2a: Does the addition of face-to-face/synchronous discussion between students increase academic achievement to a greater extent than the addition of online/asynchronous discussion between students?

RQ3: Does the addition of student-instructor interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase academic engagement?

RQ4: Does the addition of student-instructor interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase academic achievement?
CHAPTER 3

METHODOLOGY

EPL 259 and the ADAPT Instructional Model

The research outlined in this section is designed for EPL 259: Individual Learning and Motivation – Strategies for Success in College, a course in college success strategies for undergraduate students at the Ohio State University. The course is taught through the Active Discovery and Participation through Technology (ADAPT) hybrid instructional model developed by Tuckman (2002). EPL 259 focuses on both cognitive and motivational aspects of academic success in a college environment. Students taking the course are introduced to four Strategies for Achievement and their Substrategies (Tuckman, Abry, & Smith, 2008; see Table 3.1). They are then helped to apply these strategies to procrastination avoidance, building self-confidence, taking personal responsibility, active listening, active reading, exam preparation, paper writing, and life management in the college environment.
Table 3.1: Strategies for Achievement and their Substrategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Substrategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take Reasonable Risk</td>
<td>Bite-Size Pieces - Break tasks into manageable steps</td>
</tr>
<tr>
<td></td>
<td>Go For Goal - Set challenging but attainable goals</td>
</tr>
<tr>
<td>Take Responsibility for Your Outcomes</td>
<td>Think Positive - Believe in your effort and capability</td>
</tr>
<tr>
<td></td>
<td>Plan - Build a plan</td>
</tr>
<tr>
<td>Search the Environment</td>
<td>Just Ask - Ask questions</td>
</tr>
<tr>
<td></td>
<td>Visualize It - Build models</td>
</tr>
<tr>
<td>Use Feedback</td>
<td>Keep Track - Monitor your actions</td>
</tr>
<tr>
<td></td>
<td>Tell Yourself - Give yourself instructions</td>
</tr>
</tbody>
</table>

In terms of the four dimensions of blended learning proposed by Verkroost, Meijerink, Vintsen, and Veen (2008), EPL 259 can be described as primarily: (1) Structured, (2) Individual, (3) Face-to-Face, and (4) Self-Directed. The course can be described as Structured because students must proceed through all learning activities in a linear fashion and complete and submit all assignments (papers, online learning modules, or online message board postings) according to a predetermined calendar of due dates. The course can be described as Individual because most assignments and course activities are carried out in the absence of required interaction with other students. The only required interaction in the course occurs through online message board postings, though this interaction is not interpersonal in a traditional sense. It does not occur verbally, face-to-face, and in “real time”. The course can be described as Face-to-Face because the amount of required classroom meeting time in the course is no less than the amount that would be required of a similar class that did not employ web-based technologies. While the ADAPT course shares many similarities with a distance education course, its distinguishing feature lies in its mandatory class time, instituted for the purpose of
providing students regular access to their instructor. During this meeting time, the instructor can introduce topics, provide instructions for completing assignments, remind students of due dates, and answer questions when they arise. Finally, the course can best be described as Self-Directed because students spend the overwhelming majority of class time working independently. Though prescribed due dates exist for all assignments, students must be highly self-regulated to complete and submit them on time.

EPL 259 differs from many other courses that employ blended learning models in its commitment to class attendance and the critical role it plays in enhancing student learning. It functions on the premise that the presence of an instructor is critical for the facilitation of student learning, independent of whether students engage in course activities in a physical (i.e. classroom) or virtual (i.e. online) environment. As such, while many blended learning models reduce the amount of classroom meeting time required for students with the expectation that they can complete their online coursework successfully from a distance, the ADAPT model retains the traditional approach of requiring an amount of class time commensurate with the amount of content being taught. There are two required class sessions for each section of EPL 259 per week and each session lasts 1 hour and 48 minutes. While the EPL 259 instructor is present in the classroom for the entire hour and 48 minutes, he or she uses only a fraction of that time to communicate with students or encourage their structured interaction with each other. At the beginning of each class, usually for no more than 20 minutes, the instructor will address his or her students, introducing the topic of the day, discussing expectations for assignments, and apprising students of upcoming due dates. This is usually done in a
lecture-style format, though the instructor will often take the opportunity to ask the class some questions to help increase students’ attention and participation. When the opening lecture ends, students are normally given the remaining class time (at least 1 hour and 28 minutes) to work individually towards the completion of online learning activities. During this time, the instructor monitors the class and answers students’ questions as necessary.

There are ten weeks in an academic quarter at the Ohio State University and EPL 259 is organized so that students can complete one chapter in their textbook, Learning and Motivation Strategies: Your Guide to Success (Tuckman, 2008), each week. The chapters covered during the course include: (1) Learning and Motivation Strategies for Achievement, (2) The Keys to Achievement, (3) Procrastination: The Thief of Time, (4) Believing in Yourself: Self-Confidence, (5) Taking Responsibility: It’s Up to You, (6) Active Listening, (7) Active Reading, (8) Preparing for Exams, (9) Using Critical Thinking to Prepare Papers and Speeches, and (10) Resilience: Managing Your Life in School. In addition to reading these chapters, students complete course activities for EPL 259 that fall into three broad categories: online modules, writing assignments, and discussions. Online modules, which make up the first category, are a means for encouraging students to reflect upon their lives in college and to apply concepts from the textbook chapters to the situations they have experienced, are currently experiencing, or anticipate experiencing in the future. When students complete the activities within a given module, they submit their work electronically to their instructor, who reads their responses, provides feedback (when necessary or appropriate), and assigns grades.
Writing assignments, which make up the second category, take two different forms. The first is referred to as a Portfolio, ten of which are assigned during the quarter. The Portfolio generally requires the student to either analyze a situation in light of course concepts or to apply course concepts or tools to the completion of a task. In some cases the Portfolio assignment requires the student to analyze actual, personal experiences, while in others it presents a hypothetical situation for analysis. The second form for writing assignments is the Hope Paper, four of which are assigned during the quarter. Hope Papers are highly similar to Portfolios, differing only in the fact that their content relates to material from A Hope in the Unseen (Suskind, 1998), a secondary reading for the course. A Hope in the Unseen follows the life of a diligent young African American student named Cedric Jennings from his urban high school in Washington, D.C. to his undergraduate program at Brown University. The true story provides a role model for students taking EPL 259 and a means for analyzing how the four Strategies for Achievement and their Substrategies can be applied in a college environment.

Discussions, which make up the third and final category, have been revised and reformatted more than any other category. At different times over the past four years, students have been asked to do as little as six discussions and as many as thirteen, covering material from both Learning and Motivation Strategies and A Hope In the Unseen. With the exception of two quarters during the 2007-2008 academic year, these discussions have always been completed in an asynchronous manner through online discussion boards. Students are asked to post one original thought on the discussion board in response to the given discussion topic or question and to then reply to the
responses posted by at least two of their classmates. This process was instituted in the course with the goal of allowing students to engage in a simulated discussion around relevant course concepts. However, in light of the existing attendance requirements, student participation in discussions in a traditional format (i.e. in-class, synchronously, face-to-face) could be facilitated just as easily.

**Research Rationale**

It is posited here that students would undergo an enhanced learning experience if the fundamental ADAPT model was retained within EPL 259 (as described above), but augmented with carefully planned opportunities for interpersonal interaction (both student-student and student-instructor) within the classroom. That is, rather than relying upon students to initiate and maintain meaningful contact with their instructors and with each other – what might be termed “organic interaction” – the course administrator could design and implement structured interpersonal learning activities within the course to help foster the development of a mutually-supportive learning community among students. Two feasible and potentially productive options for enhancing student-student and Student-Instructor Interaction in the EPL 259 classroom are as follows:

- Discussion-based activities carried out between students in small groups
- Mandatory, one-on-one meetings between students and their instructor

It is reasonable to hypothesize that interpersonal interaction in these formats serves as a means for increasing attention to both the course materials and the learning process (i.e.
Academic Engagement) and for enhancing comprehension of specific course concepts (i.e. Academic Achievement).

Research Questions

RQ1: Does the addition of Student-Student Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase Academic Engagement?

RQ1a: Does the addition of face-to-face/synchronous discussion between students increase Academic Engagement to a greater extent than the addition of online/asynchronous discussion between students?

RQ2: Does the addition of Student-Student Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase Academic Achievement?

RQ2a: Does the addition of face-to-face/synchronous discussion between students increase Academic Achievement to a greater extent than the addition of online/asynchronous discussion between students?

RQ3: Does the addition of Student-Instructor Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase Academic Engagement?

RQ4: Does the addition of Student-Instructor Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase Academic Achievement?

Hypotheses

H1: The addition of Student-Student Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increases Academic Engagement.

H10: The addition of Student-Student Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model does not increase Academic Engagement.
H1a: The addition of face-to-face/synchronous discussion between students increases Academic Engagement to a greater extent than the addition of online/asynchronous discussion between students.

H1a0: The addition of face-to-face/synchronous discussion between students does not increase Academic Engagement to a greater extent than the addition of online/asynchronous discussion between students.

H2: The addition of Student-Student Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increases Academic Achievement.

H20: The addition of Student-Student Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model does not increase Academic Achievement.

H2a: The addition of face-to-face/synchronous discussion between students increases Academic Achievement to a greater extent than the addition of online/asynchronous discussion between students.

H2a0: The addition of face-to-face/synchronous discussion between students does not increase Academic Achievement to a greater extent than the addition of online/asynchronous discussion between students.

H3: The addition of Student-Instructor Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increases Academic Engagement.

H30: The addition of Student-Instructor Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model does not increase Academic Engagement.

H4: The addition of Student-Instructor Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increases Academic Achievement.

H40: The addition of Student-Instructor Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model does not increase Academic Achievement.
Nature of Proposed Modifications

Student-Student Interaction

The benefits of interaction between students in the EPL 259 classroom can be linked to Bouton and Garth’s (1983) three propositions regarding effective classroom learning. First, knowledge is acquired through an active construction process, rather than a passive transmission process. Meaningful learning results when students are required to think critically about important course concepts and to process them at a deep and personal level. The small group discussion is a suitable vehicle for encouraging active processing of this type. As such, all discussion questions will be carefully crafted to encourage critical thinking and all discussions will be monitored to ensure, as much as possible, that all students are actively participating in the construction of knowledge.

Second, to actively construct knowledge, students must be given the opportunity to voice their thoughts about course concepts and to then hear and consider their peers’ responses to what they said. Discussions involving multiple participants allow different perspectives, conceptions, and opinions to be voiced and considered, with the potential for increasing student engagement with and understanding of the subject matter in question. As such, all discussions will be monitored to ensure that no ideas or opinions are either repressed or suppressed. With a wide array of ideas to consider, a more rigorous and detailed analysis of the topics under discussion will be possible.

Third, to actively process new subject matter, students must be given the opportunity to do something with it. Small group discussions are more suitable than large lectures for providing these opportunities. Active processing within small group discussions is most
likely when students are engaged in structured activities with specific learning goals. To this end, all small group discussions will be designed to incorporate goal-oriented activities for each group to pursue.

The current ADAPT model for EPL 259 sets aside approximately 40 minutes of class time each week (20 minutes per class meeting) for the instructor to address his or her students. It is notable that not all instructors are observed utilizing all this time, particularly during the second class meeting of the week. Those who make use of the time generally offer short lectures on the main topic of study that week. In the modification discussed here, an emphasis will be placed on the encouragement of active learning over passive learning. As such, the instructors of two of the six treatment sections will be expected to engage their students in a small group, discussion-based activity designed to encourage critical thinking around the given week’s subject matter.

To allow for effective facilitation of these activities, the 20 minutes of lecture time normally allocated to the second class meeting of the week will be extended to 40 minutes for these two treatment sections. However, the 20 minutes of lecture time allocated to the first class meeting of the week will remain unchanged and consistent across all six treatment sections. All information on the ten proposed class discussions, including topics and formats, is located at the end of this section (see Appendix A). All formats meet the criteria necessary to be considered examples of Cooperative Learning within a motivational perspective (Johnson, Johnson, & Holubec, 1984).

As noted, both at present and in the past, different topics within EPL 259 have been explored through asynchronous discussions between students on online discussion
boards. The remote and asynchronous nature of these discussion boards reduces the fear of participation that certain introverted students can exhibit and increases time for reflection on the subject matter at hand. However, by its nature, it also reduces the number of interactions between group members, the potential for creative idea development, the exchange of novel ideas and multiple perspectives, and the energy inherent in a “real time” conversation. To add a further dimension to this research, the online discussion format will be retained for certain participants in the proposed study. A comparison can then be made in terms of engagement and understanding outcomes with respect to the two differing discussion formats (i.e. synchronous/in class and asynchronous/online).

Student-Instructor Interaction

As Astin (1993) noted, the benefits of strong student-instructor relationships for enhancing a student’s learning experience are profound. Currently, the student in EPL 259 could conceivably complete the course without ever speaking to his or her instructor. This does not imply an absence of exchanged information between instructor and student, nor does it suggest a failure on the part of the average instructor to obtain an understanding of his or her students. One of the hallmarks of EPL 259 is its large number of course assignments (i.e. online learning modules, papers, and online discussions), which provide the instructor with a great deal of information about his or her students. These many assignments also allow for the provision of an immense amount of meaningful written feedback to students on their performance. However, while extremely valuable for helping students relinquish their negative behaviors in favor of
positive ones, the provision of written feedback is not likely to replace or even approximate an actual one-on-one, interpersonal relationship between two human beings.

As such, to encourage these relationships, mandatory one-on-one meetings between each student and his or her instructor will be instituted on a weekly basis. These meetings will be held during class time – half during the first session of the week and half during the second. Since average class size is approximately 30 students, each one-on-one meeting will last approximately four to five minutes (for a total of 1 hour to 1 hour and 15 minutes per class session) and, presumably, have little to no negative impact on the instructor’s ability to attend to his or her class’s needs. Discussion topics for each meeting have been decided upon (see Appendix C) so they can be facilitated with purpose, rather than amounting to required social time between instructor and student.

While admittedly brief, weekly meetings with students will give each instructor the opportunity to act as a mentor and role model and to convey feelings of care and concern to the student about his or her well-being both inside and outside class. This is particularly important within a course designed to address motivational aspects of the student experience, including procrastination avoidance, self-confidence, taking responsibility, and life management. The only issues with these meetings relate to the instructor’s ability to form meaningful relationships with approximately thirty different students over a ten week period utilizing only four to five minutes of meeting time per student each week. However, with proper commitment and preparation, including clear goals for each meeting and clear, concise notes on each student to help the instructor
recall that student’s background, progress, and needs, it is conceivable that the inherent difficulties can be overcome.

**Experimental Design**

The study follows a between-subjects design. The treatments (Student-Student Interaction and Student-Instructor Interaction) will be administered to specific sections of EPL 259 during the Winter 2010 academic quarter at the Ohio State University. The table below (see Table 3.2) provides information on the organization of the study.

**Table 3.2: Experimental Groups Matrix**

<table>
<thead>
<tr>
<th>Sect.</th>
<th>Title</th>
<th>Student-Student Interaction</th>
<th>Student-Instructor Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Existence</td>
<td>Format</td>
</tr>
<tr>
<td>1</td>
<td>In-Class Interaction + Meeting</td>
<td>Yes</td>
<td>In-Class Interaction</td>
</tr>
<tr>
<td>2</td>
<td>In-Class Interaction Only</td>
<td>Yes</td>
<td>In-Class Interaction</td>
</tr>
<tr>
<td>3</td>
<td>Online Interaction + Meeting</td>
<td>Yes</td>
<td>Online Interaction</td>
</tr>
<tr>
<td>4</td>
<td>Online Interaction Only</td>
<td>Yes</td>
<td>Online Interaction</td>
</tr>
<tr>
<td>5</td>
<td>Meeting Only</td>
<td>No</td>
<td>No Interaction</td>
</tr>
<tr>
<td>6</td>
<td>Control</td>
<td>No</td>
<td>No Interaction</td>
</tr>
</tbody>
</table>

Six sections of EPL 259 will be involved in the study, which follows a quasi-experimental, six-group, 3 x 2 factorial design. The two independent variables of interest are Student-Student Interaction and Student-Instructor Interaction. The first independent
variable, Student-Student Interaction, represents participation in small group learning activities that focus on content from Learning and Motivation Strategies, 2nd Ed. (LMS; Tuckman, Abry, & Smith, 2008). These discussions are either carried out in-class in “real time” (i.e. face-to-face/synchronous) or via Internet discussion boards in a time-delayed fashion (i.e. online/asynchronous). As such, Student-Student Interaction has three levels: in-class interaction, online interaction, and no interaction. The second independent variable, Student-Instructor Interaction, represents participation in mandatory, weekly, one-on-one meetings with the course instructor. These meetings are held during class time and can thus be described as in-class office hours. As a result, Student-Instructor Interaction only has two levels: required meeting and no required meeting.

While students cannot be randomly assigned to different treatment sections, several covariates will be utilized in the statistical analysis to help reduce the impact of this limitation. In addition, measures will be taken, including training and ongoing supervision (see Appendix D), to help reduce potential confounds related to the necessity of having different instructors for different experimental sections. Ethical and policy-related concerns prohibit the random assignment of instructors to different treatment sections. To account for this limitation, instructors will be assigned to treatment sections based on their expressed desire to facilitate the given section’s treatment. Assigning instructors in this manner will contribute to increased confidence that each treatment will be administered effectively and as prescribed.
Experimental Facilitation

Standardization of all non-experimental content (e.g. course topics and assignments), policies, and procedures will be maintained for all six sections involved in the experiment. This will reduce the existence of confounding variables (i.e. those unrelated to the experimental treatments) and diminish their impact on the study. All sections of EPL 259 meet twice each week. All instructors will be told to deliver a brief Powerpoint lecture of no more than twenty minutes at the beginning of the first class meeting of the week. In this lecture, they will be told to address the key concepts related to the textbook chapter in question. They will be told to do nothing that will purposely generate Student-Student Interaction, but that they are welcome to ask general questions, field students’ responses, and then respond as appropriate. In sum, the goal for the lecture will be the provision of information, not the facilitation of discussion. Instructors will be told that they are welcome to address students for no more than five minutes at the beginning of the second class meeting of the week, doing no more than reminding students of due dates and clarifying assignment expectations. Beyond this, they will be told that no further instruction will be necessary. Within this standardized format, treatments will be administered to specific sections in the following manner:

- In-Class Interaction – facilitated on the second class meeting of each week for approximately 40 minutes immediately following the opening five-minute lecture
- Online Interaction – completed at each student’s discretion, either in class or outside of class, before assigned due dates; different due dates will exist for original posts and for required responses to classmates
• Instructor Meetings – facilitated at the instructor’s discretion in a manner allowing the instructor to meet with each student once per week for four or five minutes during either the first or second class meeting

Subjects

Participants will all be students at the Ohio State University. The vast majority will be undergraduates. All will have enrolled in EPL 259: Individual Learning and Motivation during Winter Quarter 2010. EPL 259 is a free elective, which satisfies no specific requirements for graduation but provides students with five undergraduate credits and a grade that impacts their overall GPA accordingly. Students become aware of the course’s existence through a variety of sources, including friends, faculty members, academic advisors, residence hall staff, parents, and advertisements around campus. As a free elective, students are motivated to take the course for several well-defined reasons. Some students presume they will find value in the course content (i.e. learning and motivation strategies) as a means for being better able to succeed in college (e.g. to study more effectively, achieve higher grades, and earn their diploma). Some are advised or instructed to take the course by people who hold coercive power over them (e.g. parents, advisors) and believe that it will serve as a suitable intervention to keep them from being dismissed from the university for academic reasons. Some are members of university-sanctioned programs (e.g. through Minority Affairs) that make enrollment in EPL 259 a mandatory requirement. Finally, some hear that the course is an “easy A”, which is accurate to the extent that the student puts forth the effort necessary to complete his or
her assignments. In EPL 259, only fifteen percent of the total course grade is earned through testing – all in the form of the final exam. All other points are obtained through the completion of online course modules, papers, and discussions, where large deductions only result from haphazard or incomplete submissions.

The nature of the course makes it appealing to students at all points of their college career, though past estimates have suggested that approximately one third of course takers are first year students, one third are sophomores, and one third are upper classmen. The course has traditionally attracted a larger percentage of minority students than that of the undergraduate population overall. In addition, transfer students and returning adult students are also regularly attracted to the course. Though enrollment figures vary from section to section and from quarter to quarter, an average section of EPL 259 contains between twenty-five and thirty-five students. Because students enroll in a specific section of the course through the university’s online registration system based on their own scheduling needs, it is impossible to assign students to specific experimental sections. The result is the aforementioned quasi-experimental design and the expectation that student demographics and class size will differ between sections.

Setting

The classroom for EPL 259 is located within the Walter E. Dennis Learning Center (WEDLC) on the second floor of the Younkin Success Center, a building on the central campus of the Ohio State University in Columbus, Ohio. The classroom contains thirty six computers, half of which face toward the front of the classroom and half of
which face toward the rear. Students complete the majority of their coursework on these computers, which allow them access to their online modules and discussion boards (through Carmen, the university’s courseware platform) and other applicable software (including MS Word for writing their papers). As expected, all computers are stationary. However, all chairs have wheels that allow for ease of relocation should the need arise. The WEDLC’s classroom also contains a main podium computer for the instructor and two projectors that display images on the front and rear walls of the classroom. Certain computer functions, including MS Powerpoint presentations, can be controlled by the instructor from locations within the classroom through handheld remote.

**Independent Variables**

*Student-Student Interaction*

The first independent variable of interest is referred to as Student-Student Interaction. It is defined as interpersonal communication between students in a learning environment (in this case, a college classroom) occurring as a result of participation in structured, discussion-based activities purposefully designed to increase engagement with and understanding of course topics and/or materials. Student-Student Interaction has three levels in this study (see Table 3.3). The first level is no interaction. The second level is online, asynchronous discussion carried out by students at their own discretion within a prescribed time period of one week. Students will be expected to respond to a discussion question through an original online “posting” and to then respond to the content posted by three other students through at least three additional postings attending
to what they wrote. The third level is in-class, synchronous (i.e. “real time”) discussion carried out by students in small groups. All discussions of this type will follow established parameters for Cooperative Learning (Johnson, Johnson, & Holubec, 1984). Of the six sections of EPL 259 participating in the study, two will implement in-class discussions, two will implement online discussions, and two will implement no discussions and thus function as control groups. A total of ten discussions (one per week) will be completed by students in the four sections receiving a treatment. To help stimulate productive discussions featuring diverse perspectives, all discussion groups (both in-class and online) will be heterogeneous with respect to gender, year-in-school, and academic major. The demographic information necessary for ensuring this heterogeneity is obtainable from class rosters available to instructors before the academic term begins, allowing for the construction of groups in advance of the first week of classes.

As noted above, Cooperative Learning is a format for classroom discussion that focuses on small group task completion with clear parameters governing student participation. A common concern in any discussion format is certain students’ lack of desire to participate. In the absence of parameters for participation and consequences for not participating, some students will sit passively and allow their peers to complete all the work. The result is not only detrimental to the “freeloading” students, who will gain little from the experience, but unfair to the students who commit themselves to doing the majority of the hard work. When addressed from a motivational perspective, the parameters for cooperative learning ensure that the success of the individual and the
success of the group are interconnected. As a result, any group can only achieve its goals if every member does his or her part and any individual can only achieve his or her goals if the group succeeds as a whole.

Table 3.3: Independent Variable - Student-Student Interaction

<table>
<thead>
<tr>
<th>Levels</th>
<th>Treatment</th>
<th>Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Interaction</td>
<td>None</td>
<td>The standard ADAPT model will be employed</td>
</tr>
<tr>
<td>Online Interaction</td>
<td>Asynchronous</td>
<td>The standard ADAPT model will be supplemented with ten weekly, required, online message board discussions. Each student will be assigned to a four-person online discussion group. Every group member will be required to post an original response to a weekly topic question. Following this, each group member will be required to post a comment in response to the original content posted by each of his or her fellow group members. Separate deadlines will be instituted for original posts and responses.</td>
</tr>
<tr>
<td>In-Class Interaction</td>
<td>Face-to-Face, Synchronous</td>
<td>The standard ADAPT model will be supplemented with ten weekly, required, in-class cooperative learning activities. Each student will be assigned to a four-person cooperative learning group. Every group member will be required to participate in his or her group’s activities by following the written instructions for that activity and responding to the instructor’s directions. All activities were designed for correspondence with Johnson, Johnson, and Holubec’s (1984) five criteria for effective cooperative learning.</td>
</tr>
</tbody>
</table>

According to Johnson, Johnson, and Holubec (1984), five elements must be present for cooperative learning to be effective: positive interdependence, face-to-face promotive interaction, individual accountability, social skills, and group processing. The ten Cooperative Learning activities for the appropriate experimental sections of EPL 259
have been constructed with the goal of ensuring that these five elements are present (see Appendix A). The instructor will break the class into groups of four, ideally, which will remain intact for the duration of the course. Each group will engage in one Cooperative Learning activity in class at the same time each week within the ten week academic term. Content from all ten chapters of the textbook is represented within the ten activities and, in most cases, a given activity corresponds with the textbook chapter being studied at that time. In addition, two of the ten Cooperative Learning activities incorporate material from *A Hope in the Unseen*, the supplemental reading for the course.

As noted, the experimental sections that do not receive Cooperative Learning opportunities will receive corresponding opportunities to engage in asynchronous online discussions through discussion boards within Carmen, the university’s course platform. These online discussions were developed through modification of the existing Cooperative Learning activities for use in an asynchronous online environment (see Appendix B). In accordance with the strength of the online medium, students need not complete these discussions in class. Rather, they can complete them at their discretion within a prescribed one week timeframe from any location they find suitable. For each discussion topic, students are required to write and submit one original posting that meets the requirements for the discussion. Students must then respond to the original posting of two of the three students in their pre-assigned group, addressing the content within each of these students’ postings. Separate due dates will be instituted for each week’s original posting and for the two responses that follow it. Additional postings beyond the required three are recommended to students in the interest of expanding and enhancing the
discussion. However, variations in students’ posting times make it unreasonable to enforce this as a mandatory requirement.

*Student-Instructor Interaction*

The second independent variable of interest in this study is referred to as Student-Instructor Interaction. It is defined as interpersonal communication between an individual student and his or her instructor in a one-on-one fashion for the discussion of academic, course-related, or otherwise intellectual subject matter with the goal of increasing engagement with and understanding of course topics and/or materials (see Table 3.4). Student-Instructor Interaction has two levels in this study. The first level is no interaction. The second level is in-class, face-to-face, one-on-one discussion between student and instructor on a weekly basis. During these discussions, the instructor is encouraged to be friendly and personable, but the discussion must focus on topics broadly related to academic success rather than frivolous content outside the arena of intellectual or collegiate achievement. A list of weekly discussion topics is included in Appendix C.

A critical feature of this independent variable is the instructor’s ability to relate to each student individually based on the knowledge he or she acquires about that student and his or her unique needs. As such, within the parameters of the weekly discussion topics, it will be at the instructor’s discretion to pursue a line of conversation with each of his or her students that captures and maintains the student’s interest, conveys understanding of and empathy for the student's unique situation and challenges, and communicates a desire to help the student meet these challenges and ultimately achieve academic goals. Per the 3 x 2 factorial design, three of the six experimental sections of
EPL 259 will receive this treatment. As discussed previously, each student will meet with his instructor during class time once per week (excluding the first week, a total of nine meetings) for four to five minutes per meeting. Though these meetings will be brief, the existence of discussion topics and adequate preparation on the part of the instructor (including the perusal of notes from prior meetings) should promote fruitful, constructive conversation.

Table 3.4: Independent Variable - Student-Instructor Interaction

<table>
<thead>
<tr>
<th>Levels</th>
<th>Treatment</th>
<th>Operationalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Required</td>
<td>None</td>
<td>The standard ADAPT model will be employed.</td>
</tr>
<tr>
<td>Meeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required</td>
<td>Weekly, In-Class, One-on-One Meetings with Instructor</td>
<td>The standard ADAPT model will be supplemented with nine weekly, required, in-class, one-on-one meetings between each student and the instructor. Due to instructional demands, meetings will not begin until the second week of class. Meetings will be held during class time to reduce the potential for skipped meetings and to make the process more efficient for instructor and students alike. Prescribed topics for each meeting have been developed. However, flexibility on the part of the instructor will be necessary in the interest of generating meaningful discussion with each individual student. The instructor’s goals are: (a) to discuss academic, intellectual, or course-related matters, and (b) to convey an attitude of caring and concern for the student as a person.</td>
</tr>
</tbody>
</table>

**Experimenters**

The experimenters will all be instructors for EPL 259: Individual Learning and Motivation. Some of the instructors are graduate teaching associates (GTAs) in the Ohio
State University School of Educational Policy and Leadership. These instructors are currently pursuing graduate degrees and are thus teaching the course as a means for funding their education and acquiring teaching experience at the college level. Others are lecturers, who already obtained a graduate degree at the Ohio State University or elsewhere. These instructors are teaching the course as a means for pursuing and furthering their career interests and receiving compensation for the work they do. All experimenters will have a minimum of one academic quarter of teaching experience with the course. All will have agreed to attend an experimenter training session prior to the beginning of the quarter in which the experiment will be undertaken (see Appendix D). This training session will familiarize all six instructors with the goals and procedures for the experiment and their role in carrying it out. It will also ensure standardization between experimental sections, as discussed below.

The experimenter training session held prior to the quarter will include: (1) an overview of the experimental design, (2) an in-depth discussion of the measures that must be taken to ensure standardization, both in the administration of treatments and the control of potentially confounding variables, (3) an analysis of the Student-Student Interaction variable, (4) an analysis of the Student-Instructor Interaction variable, (5) an analysis of both dependent variables (i.e. Academic Engagement and Academic Understanding), (6) a breakdown of course assignments and point totals for all sections, (7) a discussion of administration procedures for the ABC Nightline video on Cedric Jennings, and (8) a review of attendance procedures. The two instructors administering Cooperative Learning activities will also agree to attend three additional information
sessions during that quarter designed to adequately prepare them to administer each week’s treatment. In addition, the researcher will be sure to speak with all six instructors on a weekly basis (at minimum) to ensure that all procedures are followed and all treatments are administered as intended.

**Potential Confounds and Design Constraints**

Potential confounds exist with respect to both the participants (i.e. the students taking the course) and the experimenters (i.e. the course instructors). Students register for EPL 259 in the same manner they register for any other course at the university. As such, random assignment of students to experimental sections is not possible. To compensate for this design constraint, demographic information on students in the experimental sections, including gender, age, racial/cultural group affiliation, enrollment classification, college or school of enrollment, and Prior Cumulative GPA will be obtained. Descriptive statistics for each of these categories will be used to create demographic profiles of each section, useful for making general comparisons of their similarities and differences. In addition, an analysis of covariance (ANCOVA) will be used to control for the effects of several variables that could influence the results of the quasi-experiment. The ANCOVA allows for the statistical control of these potentially confounding variables – referred to as covariates – which could not be controlled by the experimenter due to design constraints (e.g. the inability to randomly assign participants to experimental sections).
For this quasi-experiment, participants’ prior rate of academic success was identified as a potentially confounding variable worthy of statistical control. As such, participants’ Prior Cumulative GPA will be used as one of the covariates in the ANCOVA. As noted above, information on participants’ Prior Cumulative GPA will be acquired through a demographic survey administered online during the second week of class. Conscientiousness and Extraversion, two of the “Big Five” dimensions of human personality, were also identified as potentially confounding variables. As such, measures of these variables will serve as additional covariates in the analysis. The “Big Five” dimensions of human personality, which also include agreeableness, neuroticism, and openness, represent a well-researched taxonomy, or descriptive model, of broad human personality traits (Fiske, 1949; Goldberg, 1981; McCrae & Costa, 1987). According to John and Srivastava (1999), “these dimensions do not represent a particular theoretical perspective but were derived from analyses of the natural-language terms people use to describe themselves and others” (p. 2-3). Evidence for correlations between “Big Five” Conscientiousness and Extraversion and students’ academic performance (Paunonen & Ashton, 2001; Lounsbury, Sundstrom, Loveland, & Gibson, 2002; Chamorro-Premuzic & Furnham, 2003; Komarraju & Karau, 2005; O’Connor & Paunonen, 2007) support their utility as covariates in this study. The measurement of these covariates will be undertaken through participants’ completion of a “Big Five” inventory developed by the researcher and administered online during the second week of classes. The inventory was constructed as a parallel measure to the NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Construction was informed by an item analysis of the NEO-FFI.
(Saucier, 1998) using items acquired from the International Personality Item Pool (IPIP; Goldberg, 1999).

Six sections of the course are involved in this quasi-experiment and each of the six has a different instructor. Instructors will be assigned to treatment sections according to their desire to implement and facilitate the treatment(s) in question. While desirable for increasing the generalizability of the results based on scientifically-derived experimental principles, ethical considerations and policy issues prohibit random assignment of instructors to treatment sections. For this type of quasi-experiment, however, one could argue that assignment of instructors in a purposeful manner is actually preferable to random assignment. This is due to the fact that most real world instructors will only employ instructional techniques that they consider appropriate and desirable for their classrooms. Thus, matching instructors with the treatments they desire is more representative of what occurs in actual classrooms. Conversely, by introducing chance into the assignment process, random assignment creates the potential for a poor match between instructor and treatment, something that does not regularly occur in the average classroom. A mismatch of this type could have the undesired effect of compromising treatment administration and reducing the impact of the treatment on the dependent variables. For the quasi-experiment in question, which employs only six treatment sections, the negative impact of a poor match between a single instructor and his or her treatment could be large enough to effectively invalidate the experimental results.
The existence of different instructors for different treatment sections, while unavoidable, is potentially troublesome if instructor differences result in variations in: (1) treatment administration, (2) aspects of the course unrelated to the treatments, and/or (3) measurement of the dependent variables. Through the initial training session and the meetings that follow throughout the quarter (see Appendix D), inconsistency of treatment administration between experimental sections should be minimized. Of the three treatments, in-class Student-Student Interaction (through Cooperative Learning) is the most complex, which is why regular meetings with the instructors of these two sections will be so critical for ensuring consistent treatment administration between their sections. The initial training session, regular communication with instructors, and the mutually agreed upon syllabus will also be helpful for addressing aspects of the course unrelated to the treatments. All three will contribute to increased standardization of course-related, non-treatment variables. In addition, the course’s reliance on technology as its main instructional vehicle will serve as an inherent means for maintaining consistency of non-treatment variables between experimental sections.

In this study, the measurement of Academic Engagement is an objective process that should not be affected by instructor differences. Academic Engagement is measured by tabulating specific student behaviors, including rates of tardiness, absenteeism, meeting assignment due dates, and submitting assignments. As such, having been briefed on definitions of these behaviors during the training session, all instructors should assess and record these behaviors in a similar manner. Measurement of Academic Achievement occurs in two ways: (1) through averages of student grades on portfolios and online
modules completed throughout the quarter, and (2) through final exam grades. Grading rubrics exist for all portfolios and for the final exam. The existence of these rubrics contributes to decreased subjectivity and increased standardization of grading between instructors. While no grading rubrics exist for the online modules, their creation is neither feasible nor necessary. Each of the ten modules contains an average of twenty-five activities totaling approximately sixty points, which translates to approximately two and one half points per activity. Self-Assessments, Self-Surveys, and Quickpractices are one-point activities. Spotquizzes, broken into ten parts, are a combination of one- and two-point activities. Assignments and Applications are five-point activities. As such, with one exception, each online activity is worth no more than five points (see Table 3.5 below). With so few points to assign per activity, the potential for instructor subjectivity to significantly affect overall grades on online modules is very low.

Table 3.5: Online Module Point Summaries

<table>
<thead>
<tr>
<th>Module</th>
<th>Assignments &amp; Applications</th>
<th>Spotquiz Activities</th>
<th>Quickpractices, Self-Assessments, &amp; Self-Surveys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6 30 10 15 3 3 19 48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4 20 10 15 5 5 19 40</td>
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<td>8 40 10 15 7 7 25 62</td>
<td></td>
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<td>5</td>
<td>8 40 10 15 5 5 23 60</td>
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<td></td>
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<td>8</td>
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<td></td>
<td></td>
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<td>9</td>
<td>11 55 10 15 7 7 28 77</td>
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<td>10</td>
<td>9 45 10 15 11 13 30 73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>78 395 100 150 69 71 247 616</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dependent Variables

Academic Engagement

The first dependent variable is referred to as Academic Engagement. It is conceptualized as the extent to which a student exerts effort toward the understanding of course content. Its value is supported by the longstanding assertion that the degree to which learning occurs in an academic environment is a function of the amount of time students are willing to commit to the learning process (Carroll, 1963; Bloom, 1974; Wiley & Harnischfeger, 1974). As a dependent variable, Academic Engagement is operationalized (i.e. measurable) as the extent to which a student performs the behaviors necessary to achieve success in a given academic course. Note that this operational definition is course-specific and focused on student behaviors. It equates Academic Engagement with the expenditure of energy on course-related tasks and is thus observable in behaviors carried out in the interest of successfully completing coursework. In this definition, a student seen coming to class, completing and submitting course assignments, and doing both in a timely manner, is understood to be engaged with his or her studies. As such, Academic Engagement is quantifiable through the measurement of: (1) tardiness to class, (2) absence from class, (3) submission of assignments after prescribed due dates, and (4) failure to complete and submit assignments (see Table 3.6).

The validity of this operational definition of Academic Engagement is supported by the unique nature of the EPL 259 course. In courses with a low number of total assignments (e.g. only a term paper and a final examination), an operational definition of Academic Engagement based, in part, on assignment completion could lack value.
However, in EPL 259, which includes 247 online module activities and 15 written assignments (i.e. Portfolios and Hope papers), it is both applicable and practical. Similarly, in courses where lecture is the dominant source of instruction and most course work is completed outside the classroom, an operational definition of Academic Engagement that included a focus on attendance might lack some validity. However, in a course like EPL 259, more than four-fifths of class time is allocated to students for the completion of course assignments. Attendance is so integral to student success in the course that attendance points represent approximately five percent of the overall course grade and additional points can be deducted at the instructors’ discretion for tardiness. As a result, low attendance rates and high tardiness rates are both indicative of reduced effort to complete the course’s required tasks and can thus be considered correlates of diminished Academic Engagement.

It is worth noting that, according to Steele and Fullagar (2009), “no consensus on a conceptualization of engagement exists. Existing definitions lack a strong conceptual foundation and often confuse the antecedents and outcomes of engagement with facets of engagement” (p. 6). With its focus on students’ behavior, the author's conceptualization of Academic Engagement shares similarities with Pace’s (1980a, 1980b) conceptualization of effort and Astin’s (1984) conceptualization of involvement. Pace and Astin were contemporaries but not colleagues at the University of California, Los Angeles who came to similar conclusions about learning in the college environment. Pace (1984) believed that measurement of the effort students commit to their academic endeavors was critical for evaluating the quality of their educational experience. He held
college students “accountable for the amount, scope, and quality of effort they invest in their own learning and development, and specifically in using the facilities and opportunities that are available in the college setting” (Pace, 1984, p. 6). Astin (1984) believed that learning and development were only possible if students committed a sufficient amount of energy, time, and effort to the educational process. He applied the term involvement to describe “the amount of physical and psychological energy that the student devotes to the academic experience” (Astin, 1984, p. 297). According to Chen, Lattuca, and Hamilton (2008), “both researchers stressed the behavioral dimensions of their respective concepts and their work formed the foundation for the current operational notions of engagement” (p. 340).

Svanum and Bigatti (2009) conceptualized what they referred to as academic course engagement by focusing on student behaviors in a manner that shares similarities with the manner proposed in the EPL 259 study. Svanum and Bigatti’s study differed from the proposed EPL 259 study, however, in that they asked college students to report their attendance and assignment completion rates through a questionnaire, rather than actually tracking these behaviors on their own. According to the authors (Svanum & Bigatti, 2009), their questionnaire “consisted of six individual questions that asked about the amount of completed textbook readings, the extent of textbook review, study guide use, attendance at lectures and at a review session, and hours studied for the exam” (p. 124). Their research was guided by the results of a study by Robbins, Lauver, Le, David, Langley, and Carlstrom (2004), who conceptualized engagement as a multi-faceted construct. These authors encouraged future researchers to define and measure
engagement as a more narrow construct in the interest of bringing about increased theoretical clarity. As a result, Svanum and Bigatti defined engagement in terms of students’ involvement in course-related tasks and effort towards completing them, making possible a simple and clearly defined measurement process.

As an alternative to the behaviorally-based method for measuring students’ course engagement outlined above, the Student Course Engagement Questionnaire (SCEQ; Handelsman, Briggs, Sullivan, & Towler, 2005) will also be administered to the students in all six experimental sections. Though student engagement in college has in recent years received a great deal of attention from higher educational researchers (see Kuh, 2001), the developers of the SCEQ observed a dearth of efforts to measure college students’ engagement in their coursework specifically. The authors “used an inductive approach to capture the many potential dimensions of student engagement… then assessed the psychometric properties of the instrument’” (Handelsman, Briggs, Sullivan, & Towler, 2005, p. 185). An exploratory factor analysis and examination of reliability estimates resulted in four factors accounting for 42.69% of the variance. The first factor, skills engagement (13.91% of the variance), focuses on study behaviors similar to those outlined in the proposed EPL 259 study. The second factor, emotional engagement (10.20% of the variance), focuses on emotional involvement with the course. The third factor, participation/interaction engagement (9.68% of the variance), focuses on class participation and interpersonal involvement with classmates and the instructor. The final factor, performance engagement (8.90% of the variance), focuses on performance and
goal attainment in the course. The SCEQ will be administered online during the seventh week of the academic quarter, approximately two-thirds of the way through the term.

Table 3.6: Dependent Variable – Academic Engagement

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Definition</th>
<th>Measurement Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tardiness or Early Departure (Behavioral Component #1)</td>
<td>The student either arrives late for class (more than five minutes after the hour) or leaves class before dismissal by the instructor.</td>
<td>The instructor keeps track of the number of times each student exhibits the behavior during the quarter. Greater numbers indicate decreased Academic Engagement.</td>
</tr>
<tr>
<td>Unexcused Absence (Behavioral Component #2)</td>
<td>The student misses class without a valid, documented excuse (i.e. hospitalization or illness worthy of medical attention, death or extreme illness in the family).</td>
<td>The instructor keeps track of the number of unexcused absences for each student during the quarter. Greater numbers indicate decreased Academic Engagement.</td>
</tr>
<tr>
<td>Late Submission of an Assignment (Behavioral Component #3)</td>
<td>The student submits a paper (i.e. Portfolio or Hope Paper) after the due date for partial or no credit.</td>
<td>The instructor keeps track of the number of times each student submits a late paper during the quarter. Greater numbers indicate decreased Academic Engagement.</td>
</tr>
<tr>
<td>Failure to Complete/Submit an Assignment (Behavioral Component #4)</td>
<td>The student fails to submit a paper (i.e. Portfolio or Hope Paper) or fails to complete/submit either all or a portion of an online module.</td>
<td>The instructor keeps separate track of missed papers and missed module activities for each student during the quarter. Greater numbers indicate decreased Academic Engagement.</td>
</tr>
<tr>
<td>SCEQ Score</td>
<td>The student completes a multifactor survey of course engagement online.</td>
<td>The instructor administers the survey online during the seventh week of class.</td>
</tr>
</tbody>
</table>
Academic Achievement

The second dependent variable is referred to as Academic Achievement. It is conceptualized as the comprehension of course content necessary for the attainment of desirable grades – those indicative of this comprehension. As a dependent variable, Academic Achievement is operationalized (i.e. measurable) as a student’s performance on assigned, course-related tasks. The greater an individual’s comprehension of course content, the higher rate of success he or she will achieve in completing these tasks. As such, Academic Achievement is quantifiable through the grades the student earns. It is significant to note that course-related tasks can be described as occupying two broad categories: examinations and assignments. For the purposes of this research, the traditional definition of an examination applies. That is, an examination is an academic, course-related task that is completed alone, in class, within a specified timeframe, and without the aid of classmates, the instructor, or reference materials. In EPL 259, only the final exam qualifies as an examination; all other activities (i.e. online modules, papers, and discussions) are categorized as assignments.

As such, Academic Achievement is measurable in two ways: (1) through the student’s cumulative grade on course assignments and (2) through the student’s grade on the final exam (see Table 3.7 below). The former represents the course grade a student would receive if attendance points, the final exam grade, and discussions (as the independent variable in this experiment) were all factored out of the equation. It is the grade a student would receive if his or her performance on course assignments (i.e. the online modules and writing assignments) were the only contributing factors. Its validity
rests in the belief that successful completion of course assignments is possible only through the acquisition of a suitable understanding of pertinent course concepts. The latter (i.e. the final exam) is simply an assessment of what the student has learned – a “test” as traditionally defined. This definition identifies the final exam as a more direct measurement of the student’s knowledge and thus a better means for estimating academic understanding than the pre-final exam course grade. However, to be a valid measure of a student’s understanding of course content, the final exam must be comprehensive. This is true of the EPL 259 final exam, which covers content from all sections of the course.

Table 3.7: Dependent Variable – Academic Achievement

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Definition</th>
<th>Measurement Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Assignment Score</td>
<td>This score represents the sum of the points the student earns on the ten online Modules and ten Portfolio papers.</td>
<td>The instructor assigns grades on these assignments, utilizing rubrics to reduce subjectivity in grading the Portfolios. Higher grades indicate increased Academic Achievement.</td>
</tr>
<tr>
<td>Final Exam Grade</td>
<td>This grade represents the total points the student earns on the course’s final examination.</td>
<td>The instructor assigns grades on the final exam, utilizing a rubric to reduce subjectivity. Higher grades indicate increased Academic Achievement.</td>
</tr>
</tbody>
</table>

Measurement

As discussed above, the analysis of covariance (ANCOVA) has been selected as the most appropriate statistical method for measuring the effects of the treatments (Student-Student Interaction and Student-Instructor Interaction) on the dependent
variables (Academic Engagement and Academic Achievement). Limitations in the experimental design – particularly, the researcher’s inability to randomly assign participants to treatment sections – were the primary reason for the selection of this method. The following potentially confounding variables have been selected as covariates: Prior Cumulative GPA, Conscientiousness, and Extraversion. Previous research provides evidence that each could impact college students’ performance in the classroom (i.e. engagement with course materials and activities, and comprehension of course concepts). By accounting for these covariates, ANCOVA is able to offer a more accurate assessment of the variance in the dependent variables that resulted from exposure to the treatments.
CHAPTER 4

DATA

Data Acquisition

Data were acquired from all participants in the experiment in the interest of: (1) generating a statistically descriptive comparison of the six treatment sections, (2) measuring the three covariates (i.e. Prior Cumulative GPA, Conscientiousness, and Extraversion), and (3) measuring the two dependent variables (i.e. Academic Engagement and Academic Achievement). All data obtained for the first two purposes were acquired through surveys administered to students online. Data obtained for the final purpose were acquired through three means: (1) surveys administered to students online, (2) grades assigned by instructors, indicative of participants’ performance on specific, course-related tasks (i.e. online Module activities, Portfolio papers, the final exam), and (3) records kept by instructors, indicative of participants’ involvement in specific, course-related behaviors (i.e. class attendance, tardiness and early departure, failure to submit assignments, late submission of papers). The researcher visited each treatment section during the first week of class to solicit students’ participation in the experiment, apprise them of their rights as prospective participants (see Appendix H), and provide them general information on prescribed data collection procedures.
Descriptive Statistics

A Demographic Survey (see Appendix E) was administered online to all participants during the second week of class. This survey was used to acquire descriptive statistics, including participants’ gender, age, racial/cultural affiliation, enrollment class, college of enrollment, and prior cumulative Grade Point Average (GPA), for each treatment section. These statistics were used to create a demographic profile of each section (see Tables 5.4 and 5.5). Students were apprised of the Demographic Survey through a message posted on each treatment section’s Carmen page on the Monday morning of the second week of class. In this message, the researcher requested that all students who agreed to participate in the study complete both the Demographic Survey and a Five Factor Personality Inventory (see below) by the end of the week. This message included links to both surveys, which students followed to gain access to the surveys and instructions for their completion. Each treatment section instructor also offered verbal support in class for the completion of both surveys during the week these surveys were made available.

Covariates

The first covariate, Prior Cumulative GPA, was acquired from each participant as part of the Demographic Survey (see Appendix E) administered online during the second week of classes. Students were asked specifically to report their Cumulative GPA at the beginning of the quarter in question (i.e. Winter Quarter 2010). The survey software made it possible to require each student to enter a number with two decimal places that
fell between 0.00 and 4.00. Conscientiousness and Extraversion, the other two covariates in the study, were measured through a Five Factor Personality Inventory (see Appendix F) that was also administered online during the second week of class. As described above, a message was posted on each treatment section’s Carmen page on the Monday morning of the second week, requesting that all participants commit the time necessary to complete both the Five Factor Personality Inventory and the Demographic Survey by the end of the week. This message included a link to both surveys online. Each treatment section instructor also offered verbal support during class time for the completion of both surveys.

The Five Factor Personality Inventory was constructed by the researcher as a parallel measure to the NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Item selection, key direction for each item, and placement of each item within the Five Factor Personality Inventory were guided by Saucier’s (1998) NEO-FFI item analysis. All items were acquired from the online International Personality Item Pool (IPIP; Goldman, 1999), a database of personality items located in the public domain for researchers who wish to avoid the use of copyrighted personality inventories. A section of the IPIP is devoted specifically to the “Big Five” personality factors. Reliability estimates for the items measuring Conscientiousness (Cronbach’s alpha = 0.841) and Extraversion (Cronbach’s alpha = 0.874) suggest adequate internal consistency for both factors. The Five Factor Personality Inventory contained fifty total items – ten for each of the five factors it measures – in a Likert-style response format. Participants were asked to respond to each item by indicating the degree to which the statement in question
was accurate in describing them at the present time. Students received between one and five points for each item. As a result, each student received a final score for each factor that ranged between ten and fifty.

**Dependent Variables**

Two dependent variables, Academic Engagement and Academic Achievement, were measured in the study. Each was measured in two different ways. The first dependent variable, Academic Engagement, was measured: (1) by keeping record of specific student behaviors, and (2) through scores on the Student Course Engagement Questionnaire (SCEQ; Handelsman, Briggs, Sullivan, & Towler, 2005). The second dependent variable, Academic Achievement, was measured: (1) by tallying the total points earned on two major course tasks (i.e. online Module activities and Portfolio papers), and (2) through scores on the comprehensive final examination.

**Behavioral Measure of Academic Engagement**

For the first measure of Academic Engagement, all treatment section instructors were required to record data relating to student behaviors in the following areas: (1) Class Attendance, (2) Tardiness or Early Departure, (3) Submission of Assignments, and (4) Late Submission of Papers. All instructors received Microsoft Excel files containing spreadsheets designed to simplify the data recording process. Each spreadsheet included clear instructions for the instructor to help ensure standardization of data collection between treatment sections. With regard to Class Attendance, instructors were informed
that any student who was present for a given class meeting should receive one point for the class period, while any student who was absent should receive zero points. Every treatment section had nineteen class meetings. As such, at the end of the quarter, each student’s total attendance points were summed and then divided by nineteen to arrive at a score between 0 and 1.00. Students who missed the first day of class and any number of consecutive, subsequent class meetings had that number subtracted from the dividend in the calculation to account for the fact that these absences occurred prior to any exposure to the treatment(s).

With regard to Tardiness or Early Departure, instructors were informed that any student who arrived on time for a given class meeting and left when dismissed should receive one point for the class period, while any student who was either tardy (i.e. arriving more than ten minutes late), early in departure (by any amount of time), or both tardy and early in departure should receive zero points. Instructors were told to indicate absences by leaving the appropriate space on the spreadsheet blank as an indication to remove the class meeting in question from the calculation. As such, at the end of the quarter, each student’s total tardiness/early departure points were summed and then divided by the number of class sessions he or she attended to arrive at a score between 0 and 1.00.

With regard to Submission of Assignments, instructors were informed that any student who submitted a given Portfolio or Hope Paper, independent of whether it was submitted on time or late, should receive one point for that assignment, while any student who failed to submit that Portfolio or Hope Paper should receive zero points. In addition,
instructors were informed that any student who completed more than fifty percent of the online activities in a given Module should receive one point for that Module, while any student who completed fifty percent or less of the activities should receive zero points. The course contains ten Portfolios, five Hope papers, and ten online Modules - a total of twenty-five assignments. As such, at the end of the quarter, each student’s total submission points were summed and then divided by twenty-five to arrive at a score between 0 and 1.00. It should be noted that the decision to utilize Module completion percentages rather than the total number of Module activities each student completed stemmed from the volume of work that could be reasonably expected from the course instructors involved in the study. With 247 total online activities and an average of thirty students per section, it was deemed excessively tedious to expect instructors to count the number of individual activities completed by each student.

Finally, with regard to Late Submission of Papers, instructors were informed that any student who submitted a Portfolio or Hope Paper on time (i.e. on or before the due date) should receive one point for that assignment, while any student who submitted the Portfolio or Hope Paper late (i.e. after the due date) for any reason should receive zero points. Instructors were told to indicate all papers that were not submitted at all by leaving the appropriate space on the spreadsheet blank as an indication to remove the paper in question from the calculation. It would be inaccurate to record a paper as late if it was not actually submitted. As such, at the end of the quarter, each student’s total late paper points were summed and then divided by the total number of papers submitted to arrive at a score between 0 and 1.00. It should be noted that access to Modules is
governed by open and close dates within the Carmen courseware platform, which makes late submission of Module activities impossible.

Each student’s final score for the behavioral measure of Academic Engagement outlined in the preceding paragraphs was determined through a formula that utilized relative weights for each of the four components. Attendance and Submission of Assignments were both recognized as worthy of a full weight (i.e. multiplication by 1.00), while Tardiness or Early Departure and Late Submission of Papers were both recognized as worthy of something less. Because EPL 259 students lose twelve points for an absence and only three points for an instance of tardiness or early departure, Tardiness or Early Departure was given a weight of three-twelfths (i.e. multiplication by 0.25). Similarly, because EPL 259 students lose thirty points for failing to submit a paper and only seven points for submitting a paper late, Late Submission of Papers was given a weight of seven-thirtieths (i.e. multiplication by 0.23). In the formula, the four weighted scores were summed and then divided by the sum of the weights (i.e. 2.48) to arrive at a score between 0 and 1.00 for each student in the study.

**Survey Measure of Academic Engagement**

For the second measure of Academic Engagement, all participants were required to complete a version of the Student Course Engagement Questionnaire (SCEQ; Handelsman, Briggs, Sullivan, & Towler, 2005) adapted specifically for EPL 259 (see Appendix G). The SCEQ was administered online during the seventh week of classes to allow students ample time to have experienced the treatment or treatments common to
their section of the course. Students were apprised of the Questionnaire through a message posted on each treatment section’s Carmen page on the Monday morning of the seventh week of classes. In this message, the researcher requested that all students who completed the Demographic Survey and the Five Factor Personality Inventory also commit the time necessary to complete the Student Course Engagement Questionnaire by the end of the week. The message included a link to the Questionnaire, which students followed to gain access to the Questionnaire and instructions for its completion. Each treatment section instructor also offered verbal support throughout the week for the completion of the Questionnaire.

The Student Course Engagement Questionnaire contains twenty-three items that measure course engagement as a combination of four factors: (1) Skills Engagement, (2) Emotional Engagement, (3) Participation/Interaction Engagement, and (4) Performance Engagement. A reliability estimate for this adapted version of the SCEQ (Cronbach’s alpha = 0.885) suggests adequate internal consistency within the measure. Students were asked to respond to each item on the Questionnaire through a Likert-style response format, indicating the degree to which each statement was characteristic of their thoughts or behaviors while enrolled in the course. Students were instructed to consider only their experiences in EPL 259 and not their experiences in the other courses they were taking concurrently. Students received between one and five points for each item. As a result, each student received a final score for Course Engagement that ranged between twenty-three and one hundred and fifteen.
Academic Achievement as Performance on Course Assignments

For the first measure of Academic Achievement, the researcher examined students’ performance in two major categories of course assignments: (1) online Module activities, and (2) Portfolio papers. The points earned in these two assignment categories represent approximately seventy percent of the total points a student can earn in the course. They reflect the grade a student would earn in the absence of the final exam, discussions (in-class or online), Hope papers, attendance, and bonus points. To obtain a point total for each participant, the researcher exported from Carmen every numerical grade earned by every participant on every assignment that fell into one of the two categories. These grades were exported into a Microsoft Excel spreadsheet. Each row of points in Excel was then summed to obtain a total that ranged between zero and nine hundred and sixteen.

Academic Achievement as Final Exam Grade

For the second measure of Academic Achievement, the researcher examined students’ performance on the course’s comprehensive final examination. The EPL 259 final exam is worth two hundred points and represents approximately fifteen percent of students’ overall course grade. It contains content from all ten course Modules. Questions on the final exam exist in a variety of response formats, including true or false (8%), multiple choice (24%), fill in the blank (8%), analysis (12%), application (12%), short answer (12%), and case study/essay (24%). All participants completed the final exam online in class within their assigned hour and one half timeframe during finals
week. Instructors graded all exams within the next week and posted the points each student acquired online in Carmen. The researcher then exported each participant’s points from Carmen into a Microsoft Excel spreadsheet. As noted above, a range of zero to two hundred points is possible on the final exam.
CHAPTER 5

RESULTS

Method of Analysis

Descriptive statistics were acquired in the interest of comparing treatment sections
demographically. In addition, a series of univariate Analyses of Covariance
(ANCOVAs) was carried out to acquire answers to the six research questions posed in the
study. Treatment and interaction effects were considered significant at the $p \leq 0.05$ level.

Descriptive Statistics

The first table below (see Table 5.1) provides information on treatment allocation
within the six experimental sections. The second table (see Table 5.2) provides
information on the personal characteristics (i.e. gender and race/culture) and professional
characteristics (i.e. course experience and instructor classification status) of the
instructors for each treatment section.
Table 5.1: Allocation of Treatments within Experimental Sections

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Student-Student Interaction</th>
<th>Student-Instructor Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Existence</td>
<td>Format</td>
</tr>
<tr>
<td>1</td>
<td>In-Class Discussion + Meeting</td>
<td>Yes</td>
<td>In-Class Interaction</td>
</tr>
<tr>
<td>2</td>
<td>In-Class Discussion Only</td>
<td>Yes</td>
<td>In-Class Interaction</td>
</tr>
<tr>
<td>3</td>
<td>Online Discussion + Meeting</td>
<td>Yes</td>
<td>Online Interaction</td>
</tr>
<tr>
<td>4</td>
<td>Online Discussion Only</td>
<td>Yes</td>
<td>Online Interaction</td>
</tr>
<tr>
<td>5</td>
<td>Meeting Only</td>
<td>No</td>
<td>No Interaction</td>
</tr>
<tr>
<td>6</td>
<td>Control</td>
<td>No</td>
<td>No Interaction</td>
</tr>
</tbody>
</table>

Table 5.2: Descriptive Statistics – Instructor Information

<table>
<thead>
<tr>
<th>Section</th>
<th>Gender</th>
<th>Race/Culture</th>
<th>Previous Sections Taught</th>
<th>Instructor Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>White</td>
<td>4</td>
<td>Lecturer</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>White</td>
<td>5</td>
<td>Lecturer</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>White</td>
<td>1</td>
<td>GTA</td>
</tr>
<tr>
<td>4</td>
<td>Female</td>
<td>International (Asian)</td>
<td>1</td>
<td>GTA</td>
</tr>
<tr>
<td>5</td>
<td>Male</td>
<td>White</td>
<td>5</td>
<td>GTA</td>
</tr>
<tr>
<td>6</td>
<td>Female</td>
<td>White</td>
<td>1</td>
<td>GTA</td>
</tr>
</tbody>
</table>
The following table (see Table 5.3 below) provides rates of participation in the study for the students in each section. Participation rates were impacted both by students’ willingness to participate (i.e. volunteering their data) as well as their actual behaviors during the course of the experiment (i.e. completing study-related tasks). In sum, all participants had to meet the following four criteria for their data to be included in the study: (1) agreement to participate in the study via signature on an Informed Consent form, (2) completion of all three online surveys, (3) completion of the final exam, and (4) enrollment in the course culminating in a final grade. It is notable that participation rates varied widely between treatment sections, from a low of 45% participation, or 14 students, in Section 6 to a high of 97% participation, or 28 students, in Section 3.

Table 5.3: Participation Rates by Treatment Section

<table>
<thead>
<tr>
<th>Section</th>
<th>Students</th>
<th>Participants</th>
<th>Participation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32</td>
<td>25</td>
<td>78%</td>
</tr>
<tr>
<td>2</td>
<td>32</td>
<td>20</td>
<td>63%</td>
</tr>
<tr>
<td>3</td>
<td>29</td>
<td>28</td>
<td>97%</td>
</tr>
<tr>
<td>4</td>
<td>33</td>
<td>21</td>
<td>64%</td>
</tr>
<tr>
<td>5</td>
<td>35</td>
<td>29</td>
<td>83%</td>
</tr>
<tr>
<td>6</td>
<td>31</td>
<td>14</td>
<td>45%</td>
</tr>
</tbody>
</table>

The following tables (see Tables 5.4 and 5.5 below) offer a demographic comparison of the participants in the six treatment sections. The first table provides information on participants’ personal characteristics (i.e. gender, age, and race/culture), while the second table provides information on their academic characteristics (i.e. enrollment class, college of enrollment, and prior cumulative GPA).
Table 5.4: Descriptive Statistics – Participants’ Personal Information

<table>
<thead>
<tr>
<th>Section</th>
<th>Participants</th>
<th>Gender</th>
<th>Age</th>
<th>Race/Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>Male = 48% Female = 52%</td>
<td>18 = 16% 19 = 20% 20 = 24% 21 = 28% 22 = 12%</td>
<td>White = 76% Black = 12% Asian Am. = 4% Hispanic = 4% International = 4%</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>Male = 15% Female = 85%</td>
<td>&lt;18 = 5% 18 = 35% 19 = 10% 20 = 30% 21 = 5% 22 = 5%</td>
<td>White = 60% Black = 25% Asian Am. = 0 Hispanic = 0 International = 15%</td>
</tr>
<tr>
<td>3</td>
<td>28</td>
<td>Male = 57% Female = 43%</td>
<td>18 = 14% 19 = 21% 20 = 18% 21 = 25% 22 = 4% &gt;22 = 18%</td>
<td>White = 64% Black = 18% Asian Am. = 0 Hispanic = 7% International = 11%</td>
</tr>
<tr>
<td>4</td>
<td>21</td>
<td>Male = 71% Female = 29%</td>
<td>18 = 33% 19 = 33% 20 = 5% 21 = 14% 22 = 0 &gt;22 = 14%</td>
<td>White = 76% Black = 5% Asian Am. = 5% Hispanic = 5% International = 10%</td>
</tr>
<tr>
<td>5</td>
<td>29</td>
<td>Male = 38% Female = 62%</td>
<td>18 = 21% 19 = 38% 20 = 21% 21 = 14% 22 = 7%</td>
<td>White = 72% Black = 24% Asian Am. = 0 Hispanic = 3% International = 0</td>
</tr>
<tr>
<td>6</td>
<td>14</td>
<td>Male = 29% Female = 71%</td>
<td>18 = 21% 19 = 21% 20 = 29% 21 = 14% 22 = 14%</td>
<td>White = 64% Black = 14% Asian Am. = 7% Hispanic = 0 International = 14%</td>
</tr>
<tr>
<td>Section</td>
<td>Participants</td>
<td>Enrollment Class</td>
<td>Colleges Represented</td>
<td>Prior Cum. GPA</td>
</tr>
<tr>
<td>---------</td>
<td>--------------</td>
<td>------------------</td>
<td>----------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>1</td>
<td>25</td>
<td>First Year = 28%</td>
<td>10</td>
<td>Mean = 2.90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sophomore = 28%</td>
<td></td>
<td>St. Dev. = 0.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Junior = 28%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senior = 16%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>First Year = 40%</td>
<td>12</td>
<td>Mean = 2.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sophomore = 25%</td>
<td></td>
<td>St. Dev. = 0.63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Junior = 20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senior = 15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>28</td>
<td>First Year = 25%</td>
<td>14</td>
<td>Mean = 2.72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sophomore = 25%</td>
<td></td>
<td>St. Dev. = 0.78</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Junior = 36%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senior = 14%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>21</td>
<td>First Year = 38%</td>
<td>8</td>
<td>Mean = 2.53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sophomore = 38%</td>
<td></td>
<td>St. Dev. = 0.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Junior = 19%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senior = 5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>29</td>
<td>First Year = 38%</td>
<td>10</td>
<td>Mean = 2.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sophomore = 45%</td>
<td></td>
<td>St. Dev. = 0.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Junior = 10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senior = 7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>14</td>
<td>First Year = 36%</td>
<td>8</td>
<td>Mean = 2.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sophomore = 36%</td>
<td></td>
<td>St. Dev. = 0.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Junior = 21%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senior = 7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The final table (see Table 5.6 below) contains the mean and standard deviation for each of the six treatment sections for all four of the measures (of dependent variables) used in the study.
Table 5.6: Mean and Standard Deviation – Each Treatment Section, All Four Measures

| Section | Academic Engagement | | | Academic Achievement | | |
|---------|---------------------|-----|----------------------|---------------------|-----|
|         | Behavioral Measure | Multifactor Survey Measure | Total Assignment Score | Final Exam Grade |
| 1       | Mean = 0.94 | Mean = 95.00 | Mean = 856.36 | Mean = 181.88 |
|         | St Dev = 0.07 | St Dev = 8.28 | St Dev = 64.27 | St Dev = 8.72 |
| 2       | Mean = 0.94 | Mean = 90.10 | Mean = 847.85 | Mean = 179.25 |
|         | St Dev = 0.04 | St Dev = 10.96 | St Dev = 39.57 | St Dev = 12.20 |
| 3       | Mean = 0.95 | Mean = 83.96 | Mean = 852.97 | Mean = 170.50 |
|         | St Dev = 0.06 | St Dev = 13.12 | St Dev = 64.28 | St Dev = 16.86 |
| 4       | Mean = 0.89 | Mean = 76.33 | Mean = 806.73 | Mean = 183.05 |
|         | St Dev = 0.11 | St Dev = 13.06 | St Dev = 89.95 | St Dev = 11.20 |
| 5       | Mean = 0.94 | Mean = 80.48 | Mean = 842.03 | Mean = 183.66 |
|         | St Dev = 0.06 | St Dev = 11.29 | St Dev = 81.52 | St Dev = 8.87 |
| 6       | Mean = 0.96 | Mean = 74.14 | Mean = 843.63 | Mean = 169.86 |
|         | St Dev = 0.04 | St Dev = 16.42 | St Dev = 68.11 | St Dev = 19.46 |

RQ1: Effect of Student-Student Interaction on Academic Engagement

Six ANCOVAs were carried out to inform an answer to the first research question: “Does the addition of Student-Student Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase Academic Engagement?” Three of these ANCOVAs utilized the behavioral measure of Academic Engagement and three utilized the multifactor survey measure of Academic Engagement. Each ANCOVA carried out one of the following three comparisons: (1) the two “in-class interaction” sections to the two “no interaction” sections, (2) the two “online interaction” sections to the two “no interaction” sections, and (3) all four “in-class or online interaction” sections to the two “no interaction” sections. In addition, for each of the two measures of Academic Engagement, six subsequent ANCOVAs were performed to
compare treatment sections that were similar in level of the second independent variable (i.e. Student-Instructor Interaction).

**RQ1: Results for Behavioral Measure of Academic Engagement**

No significant treatment effects for Student-Student Interaction were observed for any of the three ANCOVAs that utilized the behavioral measure of Academic Engagement. Similarly, no significant treatment effects were observed for any of the six subsequent ANCOVAs carried out to compare treatment sections similar in level of Student-Instructor Interaction.

**RQ1: Results for Multifactor Survey Measure of Academic Engagement**

Significant treatment effects for Student-Student Interaction were observed for two of the three ANCOVAs that utilized the multifactor survey measure of Academic Engagement. A significant treatment effect was observed for “in-class interaction” over “no interaction” ($F = 35.033$, $p \leq .05$; see Figure 5.1 below) and for “in-class or online interaction” over “no interaction” ($F = 13.207$, $p \leq .05$; see Figure 5.2 below). It is notable that a significant treatment effect was not observed for the comparison of “online interaction” to “no interaction”. In addition, for the sections that required weekly Student-Instructor Interaction, a significant treatment effect was observed for “in-class interaction” over “no interaction” ($F = 22.993$, $p \leq .05$) and for “in-class or online interaction” over “no interaction” ($F = 7.909$, $p \leq .05$). For the sections that did not require weekly Student-Instructor Interaction, a significant treatment effect was observed
for “in-class interaction” over “no interaction” (F = 14.565, p ≤ .05) and for “in-class or online interaction” over “no interaction” (F = 7.234, p ≤ .05).

Figure 5.1: Significant Treatment Effect for In-Class Interaction over No Interaction for Multifactor Survey Measure of Academic Engagement
RQ1a: Distinction between In-Class Interaction and Online Interaction

Two additional ANCOVAs were carried out to inform an answer to the second part of the first research question: “Does the addition of face-to-face/synchronous discussion between students increase Academic Engagement to a greater extent than the addition of online/asynchronous discussion between students?” One of these ANCOVAs utilized the behavioral measure of Academic Engagement and the other utilized the multifactor survey measure of Academic Engagement. Both ANCOVAs compared the two “in-class interaction” sections to the two “online interaction” sections. In addition, for both measures of Academic Engagement, two subsequent ANCOVAs were
performed to compare treatment sections that were similar in level of the second independent variable (i.e. Student-Instructor Interaction).

**RQ1a: Results for Behavioral Measure of Academic Engagement**

A significant treatment effect was not observed for “in-class interaction” versus “online interaction” for the ANCOVA that utilized the behavioral measure of Academic Engagement. Similarly, no significant treatment effects were observed for either of the subsequent ANCOVAs carried out to compare treatment sections similar in level of Student-Instructor Interaction.

**RQ1a: Results for Multifactor Survey Measure of Academic Engagement**

A significant treatment effect was observed for “in-class interaction” over “online interaction” \( (F = 24.250, p \leq .05; \) see Figure 5.3 below) for the ANCOVA that utilized the multifactor survey measure of Academic Engagement. In addition, a significant treatment effect was observed for “in-class interaction” over “online interaction” for the sections that required weekly Student-Instructor Interaction \( (F = 12.020, p \leq .05) \) as well as for those that did not require weekly Student-Instructor Interaction \( (F = 13.338, p \leq .05) \).
RQ2: Effect of Student-Student Interaction on Academic Achievement

Six ANCOVAs were carried out to inform an answer to the second research question: “Does the addition of Student-Student Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase Academic Achievement?” Three of these ANCOVAs utilized total assignment score as the measure of Academic Achievement and three utilized final exam grade as the measure of Academic Achievement. Each ANCOVA carried out one of the following three comparisons: (1) the two “in-class interaction” sections to the two “no interaction” sections, (2) the two “online interaction” sections to the two “no interaction” sections,
and (3) all four “in-class or online interaction” sections to the two “no interaction” sections. In addition, for each of the two measures of Academic Achievement, six subsequent ANCOVAs were performed to compare treatment sections that were similar in level of the second independent variable (i.e. Student-Instructor Interaction).

**RQ2: Results for Total Assignment Score as Measure of Academic Achievement**

No significant treatment effects for Student-Student Interaction were observed for any of the three ANCOVAs that utilized total assignment score as the measure of Academic Achievement. Similarly, no significant treatment effects were observed for any of the six subsequent ANCOVAs carried out to compare treatment sections similar in level of Student-Instructor Interaction.

**RQ2: Results for Final Exam Grade as Measure of Academic Achievement**

No significant treatment effects for Student-Student Interaction were observed for any of the three ANCOVAs that utilized final exam grade as the measure of Academic Achievement. However, a significant interaction effect between the two independent variables (i.e. Student-Student Interaction and Student-Instructor Interaction) was observed for all three comparisons as follows: “in-class interaction” versus “no interaction” (F = 7.360, p ≤ .05; see Figure 5.4 below), “online interaction” versus “no interaction” (F = 22.092, p ≤ .05; see Figure 5.5 below), and “in-class or online interaction” versus “no interaction” (F = 17.912, p ≤ .05; see Figure 5.6 below). In the subsequent comparisons of sections with required weekly Student-Instructor Interaction,
a significant treatment effect was observed for “no interaction” over “online interaction” (F = 16.891, p ≤ .05) and for “no interaction” over “in-class or online interaction” (F = 10.250, p ≤ .05). A significant treatment effect was not observed for the comparison between “in-class interaction” and “no interaction”. In the subsequent comparisons of the sections without required weekly Student-Instructor Interaction, a significant treatment effect was observed for “online interaction” over “no interaction” (F = 6.867, p ≤ .05) and for “in-class or online interaction” over “no interaction” (F = 7.490, p ≤ .05). A borderline significant treatment effect was also observed for “in-class interaction” over “no interaction” (F = 4.161, p = .051).

![Graph](image.png)

Figure 5.4: Significant Interaction Effect for In-Class Interaction versus No Interaction for Final Exam Grade as the Measure of Academic Achievement
Figure 5.5: Significant Interaction Effect for Online Interaction versus No Interaction for Final Exam Grade as the Measure of Academic Achievement
RQ2a: Distinction between In-Class Interaction and Online Interaction

Two additional ANCOVAs were carried out to inform an answer to the second part of the second research question: “Does the addition of face-to-face/synchronous discussion between students increase Academic Achievement to a greater extent than the addition of online/asynchronous discussion between students?” One of these ANCOVAs utilized total assignment score as the measure of Academic Achievement and the other utilized final exam score as the measure of Academic Achievement. Both ANCOVAs compared the two “in-class interaction” sections to the two “online interaction” sections. In addition, for both measures of Academic Achievement, two subsequent ANCOVAs
were performed to compare treatment sections that were similar in level of the second independent variable (i.e. Student-Instructor Interaction).

**RQ2a: Results for Total Assignment Score as Measure of Academic Achievement**

A significant treatment effect was not observed for “in-class interaction” versus “online interaction” for the ANCOVA that utilized total assignment score as the measure of Academic Achievement. Similarly, no significant treatment effects were observed for either of the subsequent ANCOVAs carried out to compare treatment sections similar in level of Student-Instructor Interaction.

**RQ2a: Results for Final Exam Grade as Measure of Academic Achievement**

A notable, but not significant, treatment effect was observed for “in-class interaction” over “online interaction” (F = 3.111, p ≤ .1; see Figure 5.7 below) for the ANCOVA that utilized final exam grade as the measure of Academic Achievement. A significant interaction effect (F = 8.922, p ≤ .05) between the two independent variables (i.e. Student-Student Interaction and Student-Instructor Interaction) was also observed. Based on the subsequent ANCOVAs, a significant treatment effect was observed for “in-class interaction” over “online interaction” for the sections with required weekly Student-Instructor Interaction (F = 10.116, p ≤ .05).
Figure 5.7: Significant Interaction Effect for In-Class Interaction versus Online Interaction for Final Exam Grade as the Measure of Academic Achievement

**RQ3: Effect of Student-Instructor Interaction on Academic Engagement**

Two ANCOVAs were carried out to inform an answer to the third research question: “Does the addition of Student-Instructor Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase Academic Engagement?” One of these ANCOVAs utilized the behavioral measure of Academic Engagement and the other utilized the multifactor survey measure of Academic Engagement. Both ANCOVAs compared the three “required instructor meeting” sections to the three “no required instructor meeting” sections. In addition, for both measures of Academic Engagement, three subsequent ANCOVAs were performed to
compare treatment sections that were similar in level of the second independent variable (i.e. Student-Student Interaction).

**RQ3: Results for Behavioral Measure of Academic Engagement**

A significant treatment effect for Student-Instructor Interaction was not observed for the ANCOVA that utilized the behavioral measure of Academic Engagement. However, a notable, but not significant, interaction effect between the two independent variables (i.e. Student-Student Interaction and Student-Instructor Interaction) was observed ($F = 2.424, p \leq .1$; see Figure 5.8 below). Based on the subsequent ANCOVAs, a notable, but not significant, treatment effect was observed for “required instructor meeting” over “no required instructor meeting” for the sections with required online Student-Student Interaction ($F = 3.089, p \leq .1$).
RQ3: Results for Multifactor Survey Measure of Academic Engagement

A significant treatment effect for Student-Instructor Interaction was observed for the ANCOVA that utilized the multifactor survey measure of Academic Engagement \((F = 7.157, p \leq .05;\text{ see Figure 5.9 below})\). However, significant treatment effects were not observed for any of the subsequent ANCOVAs comparing sections similar in level of Student-Student Interaction.
RQ4: Effect of Student-Instructor Interaction on Academic Achievement

Two ANCOVAs were carried out to inform an answer to the fourth research question: “Does the addition of Student-Instructor Interaction to an undergraduate study skills course employing the ADAPT hybrid instructional model increase Academic Achievement?” One of these ANCOVAs utilized total assignment score as the measure of Academic Achievement and the other utilized final exam grade as the measure of Academic Achievement. Both ANCOVAs compared the three “required instructor meeting” sections to the three “no required instructor meeting” sections. In addition, for both measures of Academic Achievement, three subsequent ANCOVAs were performed.
to compare treatment sections that were similar in level of the second independent variable (i.e. Student-Student Interaction).

**RQ4: Results for Total Assignment Score as Measure of Academic Achievement**

A significant treatment effect for Student-Instructor Interaction was not observed for the ANCOVA that utilized total assignment score as the measure of Academic Achievement. Similarly, no significant treatment effects were observed for any of the three subsequent ANCOVAs carried out to compare treatment sections similar in level of Student-Student Interaction.

**RQ4: Results for Final Exam Grade as Measure of Academic Achievement**

A significant treatment effect for Student-Instructor Interaction was not observed for the ANCOVA that utilized final exam grade as the measure of Academic Achievement. However, a significant interaction effect between the two independent variables (i.e. Student-Student Interaction and Student-Instructor Interaction) was observed ($F = 13.345$, $p \leq .05$; see Figure 5.10 below). Based on the subsequent ANCOVAs, a significant treatment effect was observed for “required instructor meeting” over “no required instructor meeting” for the sections with no required Student-Student Interaction ($F = 12.076$, $p \leq .05$). However, a significant treatment effect was also observed for “no required instructor meeting” over “required instructor meeting” for the sections with required online Student-Student Interaction ($F = 10.038$, $p \leq .05$).
Figure 5.10: Significant Interaction Effect for Required Instructor Meeting versus No Required Instructor Meeting for Final Exam Grade as the Measure of Academic Achievement
CHAPTER 6

DISCUSSION

Effect of Student-Student Interaction on Academic Engagement

The following tables (see Tables 6.1 through 6.4 below) summarize significant treatment effects for the experiment, illustrating the impact of different forms of Student-Student Interaction on students’ Academic Engagement. The first two tables summarize treatment effects measured by the behavioral measure of Academic Engagement. The second two tables summarize treatment effects measured by the multifactor survey measure of Academic Engagement.

Table 6.1: Comparison of Treatment Sections with Student-Student Interaction to those without Student-Student Interaction using Behavioral Measure of Academic Engagement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Student Interaction Comparison</th>
<th>Student-Student Interaction Comparison</th>
<th>Student-Student Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-Class</td>
<td>None</td>
<td>Online</td>
</tr>
<tr>
<td>All Relevant Sections</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with Required Instructor Meetings</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections without Required Instructor Meetings</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
</tr>
</tbody>
</table>
As the above tables indicate, no significant treatment effects were observed for Student-Student Interaction in any of the comparisons that utilized the behavioral measure of Academic Engagement. As described in Chapter 3 of this dissertation, Academic Engagement, conceived as a behavioral construct, is defined as the commitment of personal effort or energy to the completion of academic tasks. As a result, the behavioral measure of Academic Engagement focused solely on the specific behaviors required for the successful completion of coursework. To measure Academic Engagement in this manner, instructors recorded rates of attendance, tardiness, assignment submission, and late submission of papers for all their students. Recorded rates for each of these categories were then entered into a weighted formula to arrive at a score for each student for the dependent variable. Based on the statistical analysis, support does not exist for the conclusion that Student-Student Interaction - either in-class through cooperative learning activities or online through asynchronous postings on
message boards - has an observable influence on Academic Engagement, defined in terms of student behavior.

Table 6.3: Comparison of Treatment Sections with Student-Student Interaction to those without Student-Student Interaction using Multifactor Survey Measure of Academic Engagement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Student Interaction Comparison</th>
<th>Student-Student Interaction Comparison</th>
<th>Student-Student Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-Class</td>
<td>None</td>
<td>Online</td>
</tr>
<tr>
<td>All Relevant Sections</td>
<td>F = 35.033 p = .000</td>
<td>No Significant Effect</td>
<td>F = 13.207 p = .000</td>
</tr>
<tr>
<td>Sections with Required Instructor Meetings</td>
<td>F = 22.993 p = .000</td>
<td>No Significant Effect</td>
<td>F = 7.909 p = .006</td>
</tr>
<tr>
<td>Sections without Required Instructor Meetings</td>
<td>F = 14.565 p = .001</td>
<td>No Significant Effect</td>
<td>F = 7.234 p = .010</td>
</tr>
</tbody>
</table>

Table 6.4: Comparison of In-Class Interaction Sections to Online Interaction Sections using Multifactor Survey Measure of Academic Engagement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Student Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-Class</td>
</tr>
<tr>
<td>All Relevant Sections</td>
<td>F = 24.250 p = .000</td>
</tr>
<tr>
<td>Sections with Required Instructor Meetings</td>
<td>F = 12.020 p = .001</td>
</tr>
<tr>
<td>Sections without Required Instructor Meetings</td>
<td>F = 13.338 p = .001</td>
</tr>
</tbody>
</table>

140
As the above tables indicate, significant treatment effects were observed for Student-Student Interaction in several comparisons that utilized the multifactor survey measure of Academic Engagement. As described in Chapter 3 of this dissertation, the Student Course Engagement Questionnaire (SCEQ; Handelsman, Briggs, Sullivan, & Towler, 2005) was the survey employed. This survey measures Academic Engagement as a composite of four distinct factors: Skills Engagement, Emotional Engagement, Participation/Interaction Engagement, and Performance Engagement. These factors offer a conception of Academic Engagement that extends beyond the behavioral dimension to include the emotional, social, and cognitive dimensions as well. Significant treatment effects were observed for the “in-class interaction” sections over the “no interaction” sections in all three of these comparisons (see Table 6.3). Significant treatment effects were also observed for the “in-class interaction” sections over the “online interaction” sections in all three of these comparisons (see Table 6.4). It is notable, however, that no significant treatment effects were observed for any of the comparisons between “online interaction” and “no interaction” sections. As such, based on the statistical analysis, it is reasonable to conclude that Student-Student Interaction has an observable positive influence on Academic Engagement, measured as a multi-factored construct. However, to have the desired effect, the Student-Student Interaction must be facilitated through face-to-face, synchronous (“in-class”) interaction, rather than online, asynchronous (“online”) interaction. In this study, in-class interaction was facilitated through cooperative learning (Johnson, Johnson, & Holubec, 1984), which lends support for this manner of interaction as an effective means for achieving the desired results.
Effect of Student-Student Interaction on Academic Achievement

The following tables (see Tables 6.5 through 6.8 below) summarize significant treatment effects for the experiment, illustrating the impact of different forms of Student-Student Interaction on students’ Academic Achievement. The first two tables summarize treatment effects for total assignment score as the measure of Academic Achievement. The second two tables summarize treatment effects for final exam grade as the measure of Academic Achievement.

Table 6.5: Comparison of Treatment Sections with Student-Student Interaction to those without Student-Student Interaction using Total Assignment Score as the Measure of Academic Achievement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Student Interaction Comparison</th>
<th>Student-Student Interaction Comparison</th>
<th>Student-Student Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-Class</td>
<td>None</td>
<td>Online</td>
</tr>
<tr>
<td>All Relevant Sections</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with Required Instructor Meetings</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections without Required Instructor Meetings</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
</tr>
</tbody>
</table>
Table 6.6: Comparison of In-Class Interaction Sections to Online Interaction Sections using Total Assignment Score as the Measure of Academic Achievement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Student Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-Class</td>
<td>Online</td>
</tr>
<tr>
<td>All Relevant Sections</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with Required Instructor Meetings</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections without Required Instructor Meetings</td>
<td>No Significant Effect</td>
</tr>
</tbody>
</table>

As described in Chapter 3 of this dissertation, Academic Achievement can be conceived as either academic task completion or the knowledge students acquire through study. The former is a product of effort and is thus behaviorally-focused. In EPL 259, students who expend the energy necessary to complete and submit all their assignments (i.e. Portfolio papers and online Module activities) are able to acquire a large number of points. The result is usually a high course grade. As such, in this experiment, academic task completion was measured as the sum of the scores students received on these two types of assignments. As the above tables indicate, no significant treatment effects were observed for Student-Student Interaction in any of the comparisons that utilized total assignment score as the measure of Academic Achievement. The only notable effect was for “in-class interaction” over “online interaction” (F = 2.840, p = .101) for the comparison of sections that did not require weekly, one-on-one instructor meetings, but it was not statistically significant. As a result, based on the statistical analysis, it is
reasonable to conclude that Student-Student Interaction - either in-class through cooperative learning activities or online through asynchronous postings on message boards - has no observable influence on Academic Achievement, when conceived as academic task completion. It is noteworthy that a similar conclusion was reached with regard to the impact of Student-Student Interaction on the behavioral measure of Academic Engagement. These comparable results support a more general conclusion: opportunities for Student-Student Interaction, either in-class or online, have no observable impact on the effort students commit to other course-related tasks (i.e. those outside the interaction).

Table 6.7: Comparison of Treatment Sections with Student-Student Interaction to those without Student-Student Interaction using Final Exam Grade as the Measure of Academic Achievement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Student Interaction Comparison</th>
<th>Student-Student Interaction Comparison</th>
<th>Student-Student Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-Class None</td>
<td>Online None</td>
<td>In-Class or Online None</td>
</tr>
<tr>
<td>All Relevant Sections</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with Required Instructor Meetings</td>
<td>No Significant Effect</td>
<td>F = 16.891 p = .000</td>
<td>F = 10.250 p = .002</td>
</tr>
<tr>
<td>Sections without Required Instructor Meetings</td>
<td>F = 4.161 p = .051</td>
<td>F = 6.867 p = .014</td>
<td>F = 7.490 p = .009</td>
</tr>
</tbody>
</table>
Table 6.8: Comparison of In-Class Interaction Sections to Online Interaction Sections using Final Exam Grade as the Measure of Academic Achievement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Student Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-Class</td>
</tr>
<tr>
<td>All Relevant Sections</td>
<td>F = 3.111</td>
</tr>
<tr>
<td>Sections with Required Instructor Meetings</td>
<td>F = 10.116</td>
</tr>
<tr>
<td>Sections without Required Instructor Meetings</td>
<td>No Significant Effect</td>
</tr>
</tbody>
</table>

As noted above, Academic Achievement can be conceived as either academic task completion or the knowledge students acquire through study. The latter is a product of learning and is thus cognitively-focused. In EPL 259, the comprehensive final exam is the only true examination administered to assess what students have learned in the course. It is a true examination because students complete it alone, in class, in a prescribed timeframe, without outside resource materials. As such, in this experiment, the knowledge students acquired through study was measured as a function of their final exam grade. As the above tables indicate, significant treatment effects were observed for Student-Student Interaction in several comparisons that utilized final exam grade as the measure of Academic Achievement. It is notable that no significant main effects were observed for any of the comparisons between either “in-class interaction” or “online interaction” and “no interaction” (see Table 6.7). However, significant effects were
observed when comparisons were made between sections that were similar with regard to instructor meeting requirements.

For sections with required instructor meetings, significant treatment effects were observed for “no interaction” over “online interaction” \( (F = 16.891, p = .000; \text{see Table 6.7}) \) and for “in-class interaction” over “online interaction” \( (F = 10.116, p = .003; \text{see Table 6.8}) \). No significant differences between “in-class interaction” and “no interaction” were observed. Conversely, for sections without required instructor meetings, significant treatment effects were observed for “online interaction” over “no interaction” \( (F = 6.867, p = .014; \text{see Table 6.7}) \) and for “in-class interaction” over “no interaction” \( (F = 4.161, p = .051; \text{see Table 6.7}) \). No significant differences between “in-class interaction” and “online interaction” were observed. As such, based on the statistical analysis, it appears reasonable to conclude that Student-Instructor Interaction mediates the effect of Student-Student Interaction on Academic Achievement, defined in terms of students’ acquired knowledge. For sections with required instructor meetings, in-class interaction has no impact on Academic Achievement, while online interaction has a negative impact. However, for sections without required instructor meetings, in-class and online interaction both have a positive impact on Academic Achievement.

**Summary of Conclusions for Student-Student Interaction**

In terms of the hypotheses posed, the above analyses support several conclusions about the impact of Student-Student Interaction in the undergraduate blended learning classroom. The first hypothesis, that Student-Student Interaction increases Academic
Engagement, and the addendum to this hypothesis, that in-class interaction increases Academic Engagement to a greater extent than online interaction, were both partially confirmed. They were confirmed because students in sections of EPL 259 that utilized in-class interaction (i.e. cooperative learning) displayed significantly higher scores on the multifactor survey measure of Academic Engagement than those in either the online interaction sections or no interaction sections. They were only partially confirmed, however, because similar significant differences were not observed for any of the comparisons that used the behavioral measure of Academic Engagement.

The second hypothesis, that Student-Student Interaction increases Academic Achievement, and the addendum to this hypothesis, that in-class interaction increases Academic Achievement to a greater extent than online interaction, were also both partially confirmed. The second hypothesis was confirmed because students in sections of EPL 259 with some form of Student-Student Interaction but no Student-Instructor Interaction (i.e. required instructor meetings) earned significantly higher scores on the final exam than students in sections with neither Student-Student Interaction nor Student-Instructor Interaction. Its addendum was confirmed because students in the section of EPL 259 with in-class interaction and required instructor meetings earned significantly higher scores on the final exam than students in the section with online interaction and required instructor meetings. Both were only partially confirmed, however, because no significant differences were observed for any of the comparisons that used total assignment score as the measure of Academic Achievement.
Apart from hypothesis confirmation, three conclusions about the impact of 
Student-Student Interaction on Academic Engagement and Academic Achievement 
emerged from the statistical analysis. First, the opportunity for either in-class or online 
interaction with classmates has no obvious impact on course-related behaviors outside 
that interaction. Specifically, students’ involvement in structured, course-related 
interaction with their peers through either in-class cooperative learning activities or 
online message board activities does not appear to be a correlate of, or impetus for, 
increased effort toward the completion of other, non-interaction based course tasks. 
Significant treatment effects were not observed for either form of Student-Student 
Interaction on either the behavioral measure of Academic Engagement, predicated on 
attendance, tardiness, submission of assignments, and late submission of papers, or the 
effort-based measure of Academic Achievement, predicated on total assignment score 
(i.e. points acquired on ten online Modules and ten Portfolio papers).

Second, Student-Student Interaction, offered in-class through structured, goal- 
oriented cooperative learning activities, appears to have a positive impact on students’ 
Academic Engagement, when conceived as a multi-faceted construct with cognitive, 
emotional, social, and behavioral dimensions. As noted, the Student Course Engagement 
Questionnaire (SCEQ; Handelsman, Briggs, Sullivan, & Towler, 2005) was employed as 
the multifactor survey in the measurement process. Considering the lack of an observed 
effect for in-class Student-Student Interaction on the behavioral measure of Academic 
Engagement (see preceding paragraph), it appears reasonable to speculate that one or 
more of the cognitive, emotional, and social dimensions of the construct are impacted by
the in-class interaction. In every comparison between “in-class interaction” and either “online interaction” or “no interaction”, a significant treatment effect for “in-class interaction” was observed. Similar comparisons between the “online interaction” and “no interaction” sections did not produce the same effect, suggesting limitations in the asynchronous, online medium for engaging students in their coursework. Based on the results of this study, increases in Academic Engagement appear to result specifically from opportunities for Student-Student Interaction in a synchronous, face-to-face format.

Finally, opportunities for regular, one-on-one, Student-Instructor Interaction appear to mediate the impact of Student-Student Interaction on Academic Achievement, when measured through students’ scores on a comprehensive final examination. Measured in this manner, Academic Achievement is conceived as the knowledge students acquire through their coursework, rather than the extent to which they successfully complete required course tasks. In sections where students are not required to meet with their instructor on a weekly basis, in-class and online interaction both appear to have a positive influence on Academic Achievement. This suggests that, in the absence of regular interaction with their instructors, either form of interaction with classmates is productive for helping students better understand course material.

Conversely, in sections where students are obliged to meet with their instructor on a weekly basis, the requirement for online Student-Student Interaction appears to have a detrimental effect on students’ Academic Achievement. A similar negative impact on Academic Achievement was not observed for students who experienced required in-class Student-Student Interaction. With the information available, it is difficult to speculate
why the combination of online Student-Student Interaction and required instructor meetings produces an undesirable effect. However, it is conceivable that the source of the problem lies in the “mismatch” between mediums (i.e. online, asynchronous Student-Student Interaction and face-to-face, synchronous Student-Instructor Interaction). Some aspect of this mismatch may introduce confusion or ambiguity into the learning process. However, further research is needed to support this or any other conclusion about this unanticipated effect.

**Effect of Student-Instructor Interaction on Academic Engagement**

The following tables (see Tables 6.9 and 6.10 below) summarize significant treatment effects for the experiment, illustrating the impact of different forms of Student-Instructor Interaction on students’ Academic Engagement. The first table summarizes treatment effects measured by the behavioral measure of Academic Engagement. The second table summarizes treatment effects measured by the multifactor survey measure of Academic Engagement.
Table 6.9: Comparison of Treatment Sections with Student-Instructor Interaction to those without Student-Instructor Interaction using Behavioral Measure of Academic Engagement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Instructor Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required Meeting</td>
</tr>
<tr>
<td>All Sections</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with In-Class Interaction</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with Online Interaction</td>
<td>F = 3.089</td>
</tr>
<tr>
<td>Sections with No Interaction</td>
<td>No Significant Effect</td>
</tr>
</tbody>
</table>

As the above table indicates, a significant main treatment effect was not observed for Student-Instructor Interaction on the behavioral measure of Academic Engagement. A notable effect was observed, however, for one of the three comparisons between sections with similar Student-Student Interaction requirements. This effect was for “required instructor meeting” over “no required instructor meeting” for the sections that required online Student-Student Interaction. This suggests that, in classrooms where students are required to interact with one another in an online format, weekly face-to-face meetings with their instructor can encourage them to adopt behaviors that reflect engagement in their coursework. Statistical evidence does not exist to support the same conclusion for classrooms where either in-class interaction or no interaction between students is required.
Table 6.10: Comparison of Treatment Sections with Student-Instructor Interaction to those without Student-Instructor Interaction using Multifactor Survey Measure of Academic Engagement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Instructor Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required Meeting</td>
</tr>
<tr>
<td>All Sections</td>
<td>F = 7.157</td>
</tr>
<tr>
<td>Sections with In-Class Interaction</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with Online Interaction</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with No Interaction</td>
<td>No Significant Effect</td>
</tr>
</tbody>
</table>

According to the above table, a significant main effect for Student-Instructor Interaction was observed for the multifactor survey measure of Academic Engagement. The statistical analysis thus supports the conclusion that, across all treatment sections, required one-on-one meetings with the course instructor have a positive impact on students’ Academic Engagement, when it is conceived as a broad, multi-faceted construct. It is noteworthy that significant effects were not observed for any of the individual comparisons between treatment sections with similar levels of the other independent variable (i.e. Student-Student Interaction). Notable, but not significant, effects were observed for the individual comparisons between the sections with required online Student-Student Interaction (F = 2.146, p = .150) and between those with no required Student-Student Interaction (F = 2.363, p = .133). This appears to have been the result of inadequate power due to the smaller sample sizes involved in each of these
comparisons. However, additional statistical analysis would be required to either support or refute this notion.

**Effect of Student-Instructor Interaction on Academic Achievement**

The following tables (see Tables 6.11 and 6.12 below) summarize significant treatment effects for the experiment, illustrating the impact of different forms of Student-Instructor Interaction on students’ Academic Achievement. The first table summarizes treatment effects for total assignment score as the measure of Academic Achievement. The second table summarizes treatment effects for final exam grade as the measure of Academic Achievement.

Table 6.11: Comparison of Treatment Sections with Student-Instructor Interaction to those without Student-Instructor Interaction using Total Assignment Score as the Measure of Academic Achievement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Instructor Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required Meeting</td>
</tr>
<tr>
<td>All Sections</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with In-Class Interaction</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with Online Interaction</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with No Interaction</td>
<td>No Significant Effect</td>
</tr>
</tbody>
</table>
As the above table indicates, no significant treatment effects were observed for Student-Instructor Interaction in any of the comparisons that utilized total assignment score as the measure of Academic Achievement. A notable effect for “required instructor meeting” over “no required instructor meeting” (F = 2.760, p = .104) was observed for the sections that required online Student-Student Interaction, but it was not statistically significant. As a result, based on the statistical analysis, it is reasonable to conclude that Student-Instructor Interaction has no observable influence on Academic Achievement, when measured as total score on graded assignments. It is noteworthy, however, that the non-significant treatment effect described above corresponds with a similar, significant treatment effect for the online Student-Student Interaction sections on the behavioral measure of Academic Engagement (F = 3.089, p = .086). These comparable results support a more general conclusion: students who are only required to interact with one another in an online format can be encouraged to adopt productive course-related behaviors through weekly, face-to-face meetings with their instructor.
Table 6.12: Comparison of Treatment Sections with Student-Instructor Interaction to those without Student-Instructor Interaction using Final Exam Grade as the Measure of Academic Achievement

<table>
<thead>
<tr>
<th>Treatment Sections in the Comparison</th>
<th>Student-Instructor Interaction Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Student-Instructor Interaction Comparison</td>
</tr>
<tr>
<td></td>
<td>Required Meeting</td>
</tr>
<tr>
<td>All Sections</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with In-Class Interaction</td>
<td>No Significant Effect</td>
</tr>
<tr>
<td>Sections with Online Interaction</td>
<td>F = 10.038</td>
</tr>
<tr>
<td>Sections with No Interaction</td>
<td>F = 12.076</td>
</tr>
</tbody>
</table>

According to the table above, a significant main effect was not observed for Student-Instructor Interaction with final exam grade as the measure of Academic Achievement. However, when comparisons were made between individual sections with similar levels of Student-Student Interaction, significant effects were observed. For the sections with required online Student-Student Interaction, a significant treatment effect was observed for “no required instructor meeting” over “required instructor meeting” (F = 10.038, p = .003). Conversely, for the sections with no required Student-Student Interaction, a significant treatment effect was observed for “required instructor meeting” over “no required instructor meeting” (F = 12.076, p = .001). No significant effect was observed for the comparison between sections with in-class Student-Student Interaction. As such, based on the statistical analysis, it appears reasonable to conclude that Student-Student Interaction mediates the effect of Student-Instructor Interaction on Academic
Achievement, when measured by final exam grade. Students who are not required to interact with their peers appear to benefit from required interaction with their instructor. However, students who are required to interact with their peers online appear to suffer a deleterious effect from the requirement for weekly instructor interaction. While the former effect is logical and anticipated, the latter is unanticipated and contrary to what would be expected based on the other observed results for Student-Instructor Interaction in the “online interaction” sections. As previously noted, one could speculate that the differing mediums for interaction conflict with one another in some manner that detracts from student learning. However, more research is necessary to obtain a clearer understanding of the nature of this conflict.

**Summary of Conclusions for Student-Instructor Interaction**

In terms of the hypotheses posed, the above analyses support several conclusions about the impact of Student-Instructor Interaction in the undergraduate blended learning classroom. The third hypothesis, that Student-Instructor Interaction increases Academic Engagement, was partially confirmed. It was confirmed because students in sections of EPL 259 with required, weekly, one-on-one instructor meetings displayed significantly higher scores on the multifactor survey measure of Academic Engagement than those in sections without these required meetings. It was only partially confirmed, however, because similar significant differences were not observed for any of the comparisons that used the behavioral measure of Academic Engagement.
The fourth hypothesis, that Student-Instructor Interaction increases Academic Achievement, was also partially confirmed. It was confirmed because students in the section of EPL 259 with required Student-Instructor Interaction (i.e. one-on-one instructor meetings), but without either form of Student-Student Interaction, earned significantly higher scores on the final exam than students in the section with neither Student-Instructor Interaction nor Student-Student Interaction. It was only partially confirmed, however, because no significant differences were observed for any of the comparisons that used total assignment score as the measure of Academic Achievement.

Apart from hypothesis confirmation, three conclusions about the impact of Student-Instructor Interaction on Academic Engagement and Academic Achievement emerged from the statistical analysis. First, the opportunity for face-to-face, one-on-one, Student-Instructor Interaction can have an impact on course-related behaviors outside that interaction, but only for students who’s only required interaction with one another exists in an online format. Evidence exists to support the notion that, for these students, a required weekly instructor meeting is a correlate of, or perhaps an impetus for, increased effort toward the completion of other non-interaction based course tasks. Significant treatment effects were observed for Student-Instructor Interaction on the behavioral measure of Academic Engagement, predicated on attendance, tardiness, submission of assignments, and late submission of papers, and notable treatments effects were observed on the effort-based measure of Academic Achievement, predicated on total score for assignments (i.e. ten online Modules and ten Portfolio papers). This suggests the possibility that the added personal dimension of the instructor meeting motivates “online
interaction” students, who might otherwise feel alienated by the impersonal nature of the online medium, to adopt behaviors identified by the instructor as positive or desirable.

Second, Student-Instructor Interaction in the form of weekly one-on-one instructor meetings appears to have a positive effect on students’ Academic Engagement, when conceived as a multi-faceted construct with cognitive, emotional, social, and behavioral dimensions. As noted, the Student Course Engagement Questionnaire (SCEQ; Handelsman, Briggs, Sullivan, & Towler, 2005) was employed as the multifactor survey in the measurement process. Interestingly, a significant treatment effect for “required instructor meeting” over “no required instructor meeting” was only observed for the overall comparison. However, notable effects were also observed for the individual comparisons between the sections with required online Student-Student Interaction (F = 2.146, p = .150) and between those with no required Student-Student Interaction (F = 2.363, p = .133). This supports the notion that an overall effect exists and that it is most likely present in sections where students have no required, face-to-face, “in-class interaction” with their classmates. That is, the opportunity for a one-on-one relationship with the instructor appears to positively impact students who have not been given structured opportunities to create similar relationships with other students. In this case, the interaction affects the way students think and/or feel about the course and the material to which they are being exposed.

Finally, opportunities for Student-Student Interaction appear to mediate the impact of Student-Instructor Interaction on Academic Achievement, when measured through students’ scores on a comprehensive final examination. Measured in this
manner, Academic Achievement is conceived as the knowledge students acquire through their coursework, rather than the extent to which they successfully complete required course tasks. In sections where students experience no required interaction with one another, regular Student-Instructor Interaction appears to have a positive influence on Academic Achievement. Conversely, in sections where students experience required “online interaction” with each other, regular Student-Instructor Interaction appears to have a negative influence on Academic Achievement. The former result is expected. It suggests that students who have no structured manner for interacting with their classmates will find it useful to meet regularly with their instructor as a means for gaining useful information and insights about course material.

The latter result is quite confusing. As discussed previously, it is difficult to speculate why the combination of online Student-Student Interaction and required instructor meetings appears to have an undesirable effect on students’ Academic Achievement. The effect is particularly puzzling in light of the results for the other three measures in this study. All three suggested that “online interaction” students could gain productive course behaviors as well as positive thoughts and feelings about the course as a result of regular Student-Instructor Interaction. As such, it is counterintuitive for Academic Achievement, observable through students’ final examination grade, to suffer a negative impact from this same interaction. As noted, the source of the effect could lie in the differing and conflicting interaction mediums, though additional research would be required to confirm or refute this notion.
Considerations and Limitations

There were several limitations in the design and facilitation of this study that have implications for its results. The first limitation relates to the manner in which the treatment sections were populated. As discussed at length in the Methodology section of this dissertation (see Chapter 3), the researcher was unable to randomly assign students to treatment sections. Like the majority of undergraduate courses, students registered for the particular section of EPL 259 that best fit their schedule. This limitation relegated the study to quasi-experiment status. To account for this limitation, three covariates – Prior Cumulative GPA, Conscientiousness, and Extraversion - were measured and employed in the statistical analysis. Evidence that all three covariates contributed to the validity of the results is provided in the paragraphs that follow. This evidence lends support to the proposition that the results of the quasi-experiment are generalizable to blended learning classrooms in other higher educational contexts.

Prior Cumulative GPA was selected as a covariate in the study on the basis of its presumed correlation with Academic Achievement. Logic dictates that students who have achieved high GPAs as a result of prior coursework are more likely than their classmates with lower GPAs to achieve success in their current and future classes. In this study, the course registration process created the potential for a confluence of students with high GPAs to exist within a given treatment section. If unaccounted for, this situation could have led to inflated measures of Academic Achievement for the section in question and, thus, false treatment effects. Of the thirty-two ANCOVAs carried out to measure Academic Achievement, Prior Cumulative GPA was a significant predictor (p <
1) of Academic Achievement in twenty-seven of them, which confirms the appropriateness of its choice as a covariate.

Conscientiousness was selected as a covariate for its presumed correlation with both Academic Engagement and Academic Achievement. Conscientious students are thought to expend more energy and effort on their studies, to involve themselves both physically and mentally in classroom activities, and to achieve greater academic success as a result. As such, an excessively large number of conscientious students within a given treatment section could produce false treatment effects as measured on both dependent variables. Of the thirty-two ANCOVAs carried out to measure Academic Engagement, Conscientiousness was a significant predictor (p < .1) of Academic Engagement in seventeen of them. Similarly, of the thirty-two ANCOVAs carried out to measure Academic Achievement, Conscientiousness was a significant predictor (p < .1) of Academic Achievement in sixteen of them. This confirms the appropriateness of its choice as a covariate in the study.

Extraversion was deemed suitable as a covariate not for a presumed correlation with either of the dependent variables, but as a function of its potential influence on treatment facilitation and, thus, treatment impact. A confluence of extroverted individuals in a section treated with “in-class interaction”, or introverted individuals in a section treated with “online interaction”, could result in enhanced receptiveness to the treatment in question (i.e. receptiveness beyond what would be expected of the average class) and, therefore, a false treatment effect. Conversely, a class-wide mismatch between Extraversion and treatment could impair administration of that treatment and
mask an effect that actually exists. It should be noted that of the thirty-two ANCOVAs carried out to measure Academic Engagement, Extraversion was only a significant predictor (p < .1) of Academic Engagement in ten of them. Similarly, of the thirty-two ANCOVAs carried out to measure Academic Achievement, Extraversion was only a significant predictor (p < .1) of Academic Achievement in three of them. These results are neither surprising nor disconcerting, however, because Extraversion was never presumed to be a predictor of either dependent variable.

A second limitation of this study, accounted for in its design (see Chapter 3: Methodology), relates to the necessity of using different instructors for different treatment sections. The researcher acknowledged the need to address issues related to this necessity in order to increase, as much as possible, the validity and generalizability of the results. To this end, actions were taken to meet three distinct goals: (a) consistent administration of similar treatments across treatment sections, (b) consistent administration of all “non-treatment” aspects of the course across all treatment sections, and (c) consistent measurement of all covariates and dependent variables across all treatment sections. Actions taken to meet the first goal included a pre-term training session for all instructors, ongoing planning meetings with the two “in-class interaction” instructors, and one-on-one conversations with all instructors on a weekly basis. This consistent communication with instructors, coupled with frequent observations of treatment administration, gives the researcher reason to believe that the first goal was achieved as desired.
Actions taken to meet the second goal relate primarily to the pre-term training session and the detailed delineation of acceptable instructor activities that occurred at this time. All instructors were told to deliver a brief Powerpoint lecture of no more than twenty minutes at the beginning of the first class meeting of the week. In this lecture, they were told to address the key concepts related to the textbook chapter in question. They were told to do nothing that would purposely generate Student-Student Interaction, but that they were welcome to ask general questions, field students’ responses, and then respond as appropriate. In sum, the goal for the lecture was the provision of information, not the facilitation of discussion. Instructors were told that they were welcome to address students for no more than five minutes at the beginning of the second class meeting of the week, doing no more than reminding students of due dates and clarifying assignment expectations. Beyond this, they were told that no further instruction was necessary. Even with these clear and rigid instructional requirements, it was apparent that certain instructors were much more engaging and charismatic than others. Independent of the treatment(s) in their section, these instructors appeared capable of connecting with their students, influencing them to ask questions, and building supportive relationships with them as the quarter progressed. As such, in future studies, it is recommended that a covariate related to instructors’ personality and/or classroom presence (e.g. Instructor Charisma) be utilized to account for its potential impact on students’ Academic Engagement and possibly Academic Achievement.

Actions taken to meet the third goal also relate primarily to the pre-term training session and to the clear, mutually agreed upon guidelines for measurement that were
articulated. Instructors played an integral role in three of the four measurement processes. The first of these instructor-driven measurement processes was the behavioral measurement of Academic Engagement. All instructors were made aware of the parameters for assessing absences, tardiness, missed assignments, and late papers in order to accurately record these behaviors on the Excel spreadsheets everyone received for this purpose. Instructions were also provided on the bottom of these spreadsheets to clarify the point systems used in the recording process.

A second instructor-driven measurement process was the measurement of Academic Achievement based on total assignment score. As discussed in Chapter 3 of this dissertation, the process for grading assignments has a subjective dimension. However, no online Module activity was worth more than five points out of six hundred and sixteen total points. As such, the potential for large differences in assigned points for similar work on a given activity was very low. Beyond this, all Portfolio papers came with grading rubrics that students used to guide their writing and instructors used to guide their grading. These rubrics provided increased objectivity in the grading process and greatly reduced the potential for large differences in assigned points for similar work.

The final instructor-driven measurement process was the measurement of Academic Achievement based on final exam grade. Like the rubrics used for the grading of Portfolio papers, grading guidelines also existed for the final examination. A common final exam review sheet and review process was also agreed upon. Obviously, unlike the Portfolio rubrics, the final exam grading guidelines were only available to the instructors
as a means for ensuring that similar points were deducted for similar errors and that similar grades were awarded for similar performance.

Taken as a whole, these various precautions provide support for the researcher’s belief that the measurement process was carried out consistently across the six treatment sections. Of course, it would be unreasonable to believe that the measurement process was immune to subjectivity in instructors’ grading behaviors and to negligence in instructors’ record-keeping behaviors. As such, it is expected that some measurement errors occurred and that the researcher was unable to identify and correct them. However, the researcher’s clear guidelines and consistent communication of expectations with his instructors should have kept these errors to a minimum.

A third limitation of this study relates to the differing rates of student participation between treatment sections. Ideally, every student who registered for one of the six treatment sections would have: (a) agreed to participate in the study (i.e. gave informed consent), and (b) completed all the tasks (i.e. surveys, coursework, and final examination) necessary for inclusion in the statistical analysis. This was not the case. Participation rates varied across the six treatment sections from forty-five percent to ninety-seven percent. The researcher’s inability to include every student’s data in the statistical analysis is a source of genuine concern regarding the accuracy of the experimental results. Indeed, for many measurements, lower participation rates necessarily equate to lower confidence in measured results. In this study, for example, some students who would have attained a low score for the behavioral measure of Academic Engagement (as a result of poor attendance, etc.) either dropped the course late in the term or elected not
to take the final examination. As a result, their data set was incomplete and could not be used in the statistical analysis. The result was a skewed measurement of Academic Engagement for their treatment section.

Another issue of concern relates to self-selection bias, a product of voluntary participation that can compromise the data within treatment sections where only a relatively small percentage of students agree to participate. In these sections, including the control group in this experiment, students who agreed to participate could have possessed common characteristics (e.g. conscientiousness, extraversion, helpfulness) which could have skewed the collected data (i.e. the measurements of the dependent variables) if not controlled for. Fortunately, the impact of self-selection bias on this experiment was tempered by the researcher’s use of covariates. Covariates are used to control for potentially confounding variables, based on the recognition that profound differences could exist between treatment sections with respect to these variables. In this experiment, conscientiousness and extraversion were selected as covariates and thus controlled for. While helpfulness was not selected as a covariate, and thus not controlled for, its potential impact on the collected data should have been minimal as a result of its low correlation with Academic Engagement and Academic Achievement. As a result, self-selection bias should have had a minimal impact on the validity of the experimental results.

A final limitation of this study relates to the manner in which each of the dependent variables was measured. By using attendance and tardiness rates as key indicators of Academic Engagement, the behavioral measure of Academic Engagement
had an inherent flaw. One of the researcher’s principle hypotheses was that the various
treatments (e.g. in-class interaction, instructor meetings, etc.), if implemented in
particular sections of the course, could cultivate increased Academic Engagement in the
students who experience them. However, when students fail to attend class or arrive late,
they often miss the opportunity to be exposed to these treatments. As a result, treatment
effects can be masked by the fact that certain students are not receiving the potential
benefits of their section’s treatment(s). A second issue related to the behavioral measure
of Academic Engagement is that the majority of students in any section of a given
college-level course will complete most of the assigned work and attend most of the class
meetings. EPL 259 is no different. As such, all six treatment sections had mean scores
on this measure that rested in the top ten percent of the scale, making it very difficult to
detect significant differences between sections, particularly in light of the relatively small
sample sizes. The measure of Academic Achievement based on total assignment score
appeared to suffer a similar fate for similar reasons. Most students completed the
majority of assigned work, leading to a proliferation of scores near the top of the scale
and, consequently, difficulty in detecting significant differences between treatment
sections on this measure.

Issues related to the multifactor survey measure of Academic Engagement pertain
mainly to the manner in which it was administered. Students completed the survey
online at a time convenient to them within a one-week timeframe. As with any survey,
the validity of the acquired data is relative to the degree to which students responded in
both an honest and conscientious manner. In spite of calls for honesty from the
researcher, some students might have elected to submit answers that they believed would be viewed as favorable by their instructor. Moreover, in an attempt to complete the survey as quickly as possible, some students might have elected to respond capriciously, without due consideration to what was being asked. A different issue affects final exam grade as the measure of Academic Achievement. This issue pertains to the fact that the final exam is the only test administered in the entire course. As a result, various factors unrelated to students’ knowledge of course content can impact their performance on the exam. Test anxiety, method of exam preparation, competing pressures from other final exams, and overall mindset for finals week (i.e. diligence versus apathy) can have a pronounced impact on students’ performance, independent of their actual understanding of the course material.

Implications for Future Research

The results of this study support several conclusions about the impact of interpersonal interaction on engagement and achievement in undergraduate courses with blended learning instructional models. However, further research is necessary to enhance understanding in several areas. First, the nature of the relationship between Academic Engagement and Academic Achievement is still unclear. Very few comparisons of treatment sections in this study resulted in significant effects for both Academic Engagement and Academic Achievement. The most common occurrences were for in-class Student-Student Interaction over either no Student-Student Interaction or online Student-Student Interaction. These results were not consistent, however, as an interaction
effect with the second independent variable, Student-Instructor Interaction, was observed with respect to Academic Achievement. Because logic dictates that Academic Engagement should promote Academic Achievement in a more consistent manner, additional research is required in this area.

A second area for further research lies in the multitude of student and instructor characteristics that could potentially impact both Academic Engagement and Academic Achievement, but were not controlled for in this quasi-experiment. As discussed previously, various instructor traits, including charisma, warmth, preparedness, diligence, and speaking ability, have the potential for impacting both engagement and achievement in specific coursework. Moreover, a wide range of student characteristics, including motivation, goal orientation, learning style, identity development, and various aspects of personality, have the same potential for impacting the above dependent variables. The nature of the relationship between these characteristics and interpersonal interaction (i.e. Student-Student Interaction and Student-Instructor Interaction), as well as the consequent impact of this interaction on Academic Engagement and Academic Achievement, merits further study to clarify when each of the various forms of interaction are most appropriate for implementation.

A final area for further research relates specifically to the unexpected negative consequences observed for the combination of online Student-Student Interaction and required Student-Instructor Interaction. In this study, two different comparisons unearthed similar negative effects for this combination. First, a significant treatment effect for Academic Achievement was observed for no Student-Student Interaction over
online Student-Student Interaction for the sections that required Student-Instructor Interaction. Then, quite similarly, a significant treatment effect for Academic Achievement was observed for no required Student-Instructor Interaction over required Student-Instructor Interaction for the sections that included online Student-Student Interaction. No obvious explanation exists to support the observed results, which suggest that the combination of online discussions between students and face-to-face meetings between students and instructors is counterproductive to students’ understanding of course content. As such, further research is recommended in this area. This research could be qualitative in nature and include one-on-one interviews and focus groups with the students and the instructor from the treatment section in question. Additional insights could be gleaned from an analysis of students’ responses on the sixty-six question, end-of-term course evaluation.
LIST OF REFERENCES


Svanum, S., & Bigatti, S. M. (2009). Academic course engagement during one semester forecasts college success: Engaged students are more likely to earn a degree, do it faster, and do it better. *Journal of College Student Development, 50*(1), 120-132.


Cooperative Learning - Activity #1
LMS Chapter 1

Class: 2

Title: Group Formation
Type: Icebreaker
Time: 38 minutes

Objectives:
-- Understand the benefits and general characteristics of Cooperative Learning
-- Get to know the members of one’s group and gain some comfort interacting with them

Procedure:
1) The instructor explains to the class that various activities will be done in small groups over the course of the quarter so that students can support each other in the learning process. {1 minute}

2) The instructor calls out the names of the members of each group. Each group will have four students. One or two groups can have either three or five students, but only as necessary. Research will have been done by the instructor to create heterogeneous groups (e.g. by academic year and major). {2 minutes}

3) After all names have been called, students will be asked to convene with their groups in specific locations around the room. {1 minute}

4) Students are given 4 minutes to converse with each member in their group, with the goal of obtaining the following information: (1) Full name, (2) Nickname (if one exists), (3) Hometown, (4) High School, (5) Year at OSU, (6) Other colleges/campuses attended (if any), (7) Academic Major, (8) Possible career interest, (9) Favorite Hobby/Sport/Extracurricular Activity, and (10) One interesting fact about the person. Students are told that they will be asked to introduce one of their fellow group members to the rest of the class, but that they won’t know in advance which group member it will be. {12 minutes}

5) Students are now told that it’s their responsibility to introduce the rest of the class to the student in their group who’s sitting across from them (if a group of 3 or 5, then the student to the left of them). The instructor calls each student until everyone has been introduced. {20 minutes}

6) Before breaking up the groups, each group is informed that they have 2 minutes to come up with a group name. After two minutes, each group picks a spokesperson to announce that name to the class. {2 minutes}
Ensuring Five Elements for Effectiveness (Johnson, Johnson, & Holubec, 1984):

1) Positive Interdependence
Positive interdependence is achieved through mutual goals. Each student is forced to obtain and share information with every other student in his or her group. Students are not told who they’ll have to introduce to the class, so they have to collect comprehensive information on everyone.

2) Face-to-Face Promotive Interaction
The timeframe is relatively short, but the goals are clear. Students will recognize that the information they share with their group members will be announced to the class as a whole, so they will work diligently to help each other get clear accurate information about themselves.

3) Individual Accountability
Each student is forced to participate equally, answering the same questions about themselves, collecting the same information about others, and taking part in the introduction of a classmate.

4) Interpersonal and Small Group Skills
Since most students won’t know one another when the class begins, they’ll have to introduce themselves to their fellow group members immediately and quickly orient themselves to the idea that to accomplish specific goals they’ll have to work together and support each other. For this exercise, each group member must collaborate with every other group member in a short time period. As such, from the beginning, students must arrive at a plan to ensure that everyone gets to speak with everyone.

5) Group Processing
The instructor will circulate around the room, asking each group questions about their activities to ensure that everyone is aware of the interactions that must take place. In particular, each group will be asked, “Have you arrived at a means for ensuring that everyone will have the opportunity to interview everyone else?” This will encourage reflection on the need for a specific, agreed upon method for interaction for the given activity.

Cooperative Learning - Activity #2
LMS Chapter 2

Class: 4

Title: The Strategies for Achievement
Type: Modified Jigsaw Procedure (Aronson, 1978)
Time: 37 minutes
Materials: Paper

Objectives:
-- Identify and define the four Strategies for Achievement and their Substrategies.
-- Provide an example of the application of each in the college environment.

Procedure:
1) Students are instructed to get into the groups they formed during the first class and, within these groups, to pair up (or form a group of 3, if necessary). {1 minute}

2) Students are told to consult the table on page 20 of the LMS textbook, which provides information on the four Strategies for Achievement (StAch) and their substrategies. Each StAch has two substrategies: one labeled “A” and one labeled “B”. {1 minute}

3) Within each group, one pair of students is told to examine all four of the “A” substrategies and the other pair is asked to examine all four of the “B” substrategies. The goal for each pair of students is to gain a comprehension of each substrategy and to think of at least two examples of how each substrategy can be successfully applied to a problem or situation a college student might face. When possible, students should describe problems and situations that they either faced or anticipate facing in the future. Students should write down their examples on a piece of paper so they can share them with their fellow group members. {8 minutes}

4) Within each group, each pair splits up and forms a different pair. In this way, each new pair should consist of a student who analyzed the four “A” substrategies and a student who analyzed the four “B” substrategies. Students will have been informed that this re-pairing would happen to ensure diligent work during the initial pairing. In their new pairs, students take turns explaining their substrategies to each other and sharing the examples they thought up in their previous pairs. If a student thinks a given explanation or example seems inappropriate or inaccurate, he or she communicates this to his or her partner and shares the reasoning for the concern. {6 minutes}

5) Groups reconvene. The instructor selects students to offer the rest of the class explanations and examples of each substrategy. To do so, the instructor attends to each substrategy one at a time, requiring the first called upon student to offer an explanation of the given substrategy and at least two other students to offer examples of its application. {18 minutes}

6) In their groups, students are asked to reflect on what they learned and to share with their fellow group members their thoughts on how the small group process (including the pairing and re-pairing procedure) made learning easier, if this was the case. {3 minutes}
Ensuring Five Elements for Effectiveness:

1) Positive Interdependence
Positive interdependence is achieved through mutual goals. The re-pairing process is instituted to ensure that each student works diligently to gain an understanding of his or her substrategies during original pair work. All students will know that they will be required to explain their substrategies to their new partner and, later, to the class as a whole.

2) Face-to-Face Promotive Interaction
Both pairing processes are instituted to help students work together and support each other’s learning.

3) Individual Accountability
Students are chosen at random to explain substrategies and provide examples to the class.

4) Interpersonal and Small Group Skills
Students learn collaboration skills in their first pairing and communication skills in their second pairing.

5) Group Processing
Reflection on group processing will occur at the end of the process to help students gain perspective on the pairing and re-pairing process and its benefits.

Cooperative Learning - Activity #3
LMS Chapter 3

Class: 6

Title: Procrastination
Type: Consensus Building Activity
Time: 31 minutes

Materials: 17 sets of Rationalization Cards

Objectives:
-- Gain familiarity with the eight rationalizations for procrastinating.
-- Offer means for combating the most common rationalizations (from a class-constructed list).

Procedure:
1) Students are instructed to get into their groups and, within these groups, to pair up (or form a group of 3, if necessary). {1 minute}
2) Students are told to consult Self-Survey 3.2 on page 33 of the LMS text book, which provides information on the fifteen frequently used rationalizations for procrastinating. Each pair of students is also given eight cards, each containing the name of a broad category of rationalization (i.e. Ignorance, Skill Deficiency, Apathy, Fixed Habits, Inertia, Frail Memory, Physical Problems, and Appropriate Delays) and its related statement(s). {2 minutes}

3) Each pair of students is asked to rank order their eight rationalization cards in terms of the frequency with which they believe college students, like themselves, use the rationalization [1 = highest, 8 = lowest]. Students should work together to arrive at their rank order, sharing reasoning with each other for each decision they make and using examples from their own life as appropriate. {6 minutes}

4) Groups reconvene. Each pair of students shares their rank order with the other pair in their group. All group members contribute their thoughts toward combining the two lists into one that represents the group’s consensus. Similar to the previous step, students are encouraged to share their reasoning for each decision they make and to use examples as appropriate. {6 minutes}

5) The instructor randomly selects a representative from each group to share the top three items from his or her group’s list with the entire class. The instructor makes note on the whiteboard of the top three from each group, pointing out similarities and differences as he or she hears them. {4 minutes}

6) The instructor examines all the input and comes up with an overall top three (or top four, if appropriate) for the class, looking for confirmation from students that it seems appropriate. {1 minute}

7) The instructor selects students to offer their own thoughts on: (a) situations when a given rationalization from the class list is most likely to occur (or an example from their own life when it did occur) and (b) productive ways to combat it. At least two students are called upon for each of the three or four rationalizations on the list. {8 minutes}

8) Students are asked to reflect on the collaboration process (pairing off and then reconvening) and the role it played in helping the group arrive at a consensus. {3 minutes}

Ensuring Five Elements for Effectiveness:

1) Positive Interdependence
Positive interdependence is achieved through the interdependence of materials and through mutual goals. The former is useful during the original pairing off process to help students work together towards the ranking of rationalizations. The latter pertains to the
reconvening of the group, since all group members will recognize that any one could be called upon to present the group’s list to the class and to offer personal insights into combating rationalizations.

2) Face-to-Face Promotive Interaction
Both the original pairing process and the reconvening that follows are designed to help students work together and support each other’s learning.

3) Individual Accountability
Students are chosen at random to present their group’s top three list and, thereafter, to offer insights into means for combating specific rationalizations.

4) Interpersonal and Small Group Skills
Students learn collaboration skills in both their pairing and their group work thereafter.

5) Group Processing
Reflection on group processing will occur at the end of the process to help students gain perspective on the pairing and reconvening process and its role in consensus building.

Cooperative Learning - Activity #4
LMS Chapter 4

Class: 8

Title: Self-Confidence
Type: Jigsaw Procedure (Aronson, 1978)
Time: 34 minutes

Materials: 35 blank index cards

Objectives:
-- Gain an understanding of four techniques for building self-confidence
-- Consider examples for how these techniques can be applied to challenging academic situations

Procedure:
1) Students are instructed to get into their cooperative learning groups. {1 minute}

2) Students are told to consult pages 64-73 of the LMS text book, which provide information on four techniques for building self-confidence (Regulate Your Emotional Level, Seek Affirmation, Pick the Right Models, and Just Do It). Each student is told that he or she must use the next fifteen minutes to become an expert on one of these four techniques. {1 minute}
3) Each group is allowed to decide which member will become the expert on each technique. Each student’s goal is to gain the understanding of his or her technique necessary to teach it to the rest of his or her group. To do so, students are told that they must summarize the important aspects of their technique in an organized fashion. To this end, students have several minutes to study their technique and to write down a few notes on it to share with their fellow group members when groups reconvene. {10 minutes}

4) Groups are told to reconvene. In order, students are told to teach their technique to the rest of their group. In its simplest form, this involves: (a) stating their technique by name, and (b) reading their notes on the technique out loud. Group members are welcome to ask each other for clarification on a given technique when something seems confusing or unclear. {8 minutes}

5) Students are told that they must work together with their fellow group members to come up with the following: (a) an example of how each technique can be applied to help a college student build confidence towards meeting a particular academic challenge, (b) a person (or persons) who serves as a model for finding the confidence to overcome difficult or challenging situations… and an example (or examples) of how that person applies one of the four techniques in his or her life, and (c) an example of how Cedric Jennings applied one of the four techniques in his life. {8 minutes}

6) Starting with the first technique, the instructor selects students to begin sharing their examples of how the techniques can be applied to meeting challenges with confidence. The instructor goes through this process until all four techniques have been attended to. The instructor then moves on to students’ role models and then to Cedric Jennings in similar fashion. {4 minutes}

7) The instructor asks each group to reflect on the jigsaw procedure and to share their thoughts within their groups on how it affected the learning process. {2 minutes}

**Ensuring Five Elements for Effectiveness:**

1) Positive Interdependence
Positive interdependence is achieved through mutual goals. Both the inter-group pairing process and the reconvening process are instituted to ensure that each student works diligently to gain an understanding of his or her technique. All students will know that they will be required to explain their technique to their pairing partner, their fellow group members and, potentially, to the class as a whole.

2) Face-to-Face Promotive Interaction
Both the inter-group pairing process and the reconvening process are instituted to help students work together and support each other’s learning.
3) Individual Accountability
Students are chosen at random to explain their technique and provide examples to the class.

4) Interpersonal and Small Group Skills
Students learn collaboration skills in their pairing and communication skills in their reconvened group.

5) Group Processing
Reflection on group processing will occur at the end of the process to help students gain perspective on the jigsaw process and its benefits.

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**Cooperative Learning - Activity #5**

**LMS Chapter 5**

Class: 10

Title: Taking Responsibility
Type: Writing and Sharing
Time: 37 minutes

Materials: Paper

Objectives:
-- Recognize the differences between various causal explanations
-- Recognize that effort is the only explanation over which we have control and thus responsibility

Procedure:
1) The instructor begins with a short lecture to help students understand the following facts {8 minutes}:

   - A causal explanation is the reasoning we give to support a given outcome; an explanation of what caused something to happen.
   - There are five common causal explanations. Two are internal (ability and effort; located within the individual) and three are external (task difficulty, luck, and help; located within the environment).
   - When an undesirable outcome occurs (e.g. failing a math test), the causal explanations above might be as follows:
     - Ability: “I’m just dumb when it comes to math.”
     - Effort: “I didn’t study hard enough.”
     - Task Difficulty: “That test was just too hard.”
     - Luck: “I knew this stuff, but wasn’t ready for the questions he chose.”
     - Help: “That professor didn’t give enough examples in class.”
• Effort is the only causal explanation that a person can control. As such, it’s the only one for which a person can be held responsible. Note that effort relates not only to how hard a person works, but to everything he or she does to attain the goal in question. As such, effort can be attributed to working harder as well as “working smarter” (i.e. making decisions or using strategies that help make attainment of the goal more likely).

• By blaming undesirable outcomes on something other than the effort one puts into the activity, a person is failing to take responsibility for him or herself and thus unlikely to achieve more desirable outcomes in the future. In other words, if a person consistently blames failure on lack of ability, task difficulty, or luck (i.e. something outside of his or her control), it’s unlikely he or she will ever make the changes in his or her behavior necessary for achieving the desirable outcomes he or she seeks.

2) Students are told to get into their groups and split into pairs. {1 minute}

3) Each student is told that he or she must recall a challenging academic situation in the recent past that resulted in an undesired outcome (in college, if possible) and write about it so it can be shared with his or her group. Students are told to discuss the various challenging situations they’ve faced with their partners, so that they can help one another decide upon a situation fitting for the assignment. {5 minutes}

4) The writing process is done individually, though students are welcome to ask their partners for advice and insights along the way. Each student’s paper should contain: (1) a detailed description of the challenging situation in question, (2) a discussion of the causal explanation that the student attributed to the undesired outcome, (3) a description of the impact that this causal explanation had on the way the student approached a similar challenging situation that came afterward, and (4) the results of that situation. In other words, if the causal explanation cited in #2 was “lack of effort”, the student must describe how recognition of this fact impacted the effort he or she put forth when facing a similar challenge in the future. However, if the explanation in #2 was something other than “lack of effort”, the student must describe what type of impact the given causal explanation had and in what ways a focus on personal effort could have been more beneficial. {10 minutes}

5) Groups are told to reconvene. One at a time, students are told to share their stories with their fellow group members. Group members are told to respond with comments on how effort was (or could have been) the catalyst for success. {8 minutes}

6) The instructor randomly selects students to share their stories with the class as a whole. {6 minutes}

7) Students are asked to reflect on this exercise and share with one another what they learned about themselves in the process. {2 minutes}
Ensuring Five Elements for Effectiveness:

1) Positive Interdependence
Positive interdependence is achieved through mutual goals. This is observed during the pairing off process to help students work together to decide upon topics and write their papers. It is also seen during the reconvening of the group, when students are asked to offer one another their thoughts on how effort can lead to success.

2) Face-to-Face Promotive Interaction
Both the original pairing process and the reconvening that follows are designed to help students work together and support each other’s learning.

3) Individual Accountability
All students must present their own story to their group. In addition, students are chosen at random to present their story to the class as a whole.

4) Interpersonal and Small Group Skills
Students learn collaboration skills in the pairing process and communication skills in their group work thereafter.

5) Group Processing
Reflection on group processing will occur at the end of the process to help students gain perspective on the pairing and reconvening process and its role in enhancing learning for everyone.

Cooperative Learning - Activity #6
LMS Chapters 6 & 7

Class: 12

Title: Active Listening and Reading
Type: Consensus Building
Time: 36 minutes

Materials: Paper

Objectives:
-- Recognize how expectations and study behaviors differ between high school and college
-- Evaluate the effectiveness of specific study behaviors for achieving academic success

Procedure:
1) Students are told to get into their groups and split into pairs. {1 minute}
2) In their pairs, students are told to think back to their experiences in high school. Based on their recollections, students are asked to discuss with their partners the differences between these experiences and their experiences at OSU. Students are told to focus on their experiences in the classroom, the nature of their assignments, their study habits and behaviors, and their professors’ expectations for their performance. {5 minutes}

3) Students are asked to take a piece of paper and to divide it into two columns (high school and college). Using the two columns, students are told to write down the differences in their behaviors between high school and college in the following areas: (1) preparation for class / before-class reading, (2) in-class behavior, including note taking, and (3) preparation for exams. Students are told to use examples as necessary to help illustrate the differences. {8 minutes}

4) Students are told to reconvene their groups. For each of the three areas, each student is asked to share with his or her group what he or she wrote in each column. The discussion should thus begin with “preparation for class”, with each student sharing his or her thoughts, and then move on to each of the other two areas in succession. {6 minutes}

5) Independent of their actual behaviors, each group is asked to outline the behaviors in each area that are most likely to help students attain academic success in college (i.e. “good study behaviors”). At least three bullet points are required for each of the three areas. {6 minutes}

6) At random, the instructor selects representatives from different groups to share their group’s bullet points. The instructor selects at least two representatives to share their bullet points for a given area. The instructor then asks if any other groups have behaviors on their lists that haven’t yet been verbalized or, conversely, if any groups disagree with a behavior that has been listed. This process is repeated until all three areas have been analyzed. {8 minutes}

7) Each group is asked to reflect on the process, including both the pair work and group work that followed. {2 minutes}

Ensuring Five Elements for Effectiveness:

1) Positive Interdependence
Positive interdependence is achieved through mutual goals. This is observed during the pairing off process to help students work together to reflect on their experiences and distinguish between their behaviors. It is also seen during the reconvening of the group, when students are asked to share their experiences and collaborate on a plan for successful study behaviors.

2) Face-to-Face Promotive Interaction
Both the original pairing process and the reconvening that follows are designed to help students work together and support each other’s learning.

3) Individual Accountability
All students must present their own experiences to their group. In addition, students are chosen at random to present their group’s success plan to the class as a whole.

4) Interpersonal and Small Group Skills
Students learn collaboration skills in the pairing process and communication skills in their group work thereafter.

5) Group Processing
Reflection on group processing will occur at the end of the process to help students gain perspective on the pairing and reconvening process and its role in enhancing learning for everyone.

Cooperative Learning - Activity #7
A Hope in the Unseen – ABC Nightline Video #1

Class: 14

Title: Strategies for Achievement in Action
Type: Video and Small Group Discussion
Time: 41 minutes

Materials: Paper

Objectives:
-- Recognize instances where the application of a Strategy for Achievement led to positive outcome
-- Recognize instances where failure to apply a Strategy for Achievement led to an undesirable situation

Procedure:
1) Students watch Part 1 of a two-part ABC Nightline presentation on Cedric Jennings, the young African American man chronicled in *A Hope in the Unseen* by Ron Suskind. The video introduces students to Cedric, describes his life in urban Washington, D.C., and follows him to a summer program at MIT for gifted minority students interested in engineering and the sciences. {20 minutes}

2) Students are asked for their initial reactions to the video, including their impressions of Cedric and/or any of the other “characters” they’d read about. {4 minutes}

3) Students are told to get into their groups. {1 minute}
4) In their groups, students are asked to consider the various things Cedric said and did in the video. Students are told that they must collaborate to think of two specific instances where Cedric’s words or actions could be classified as *productive* for achieving positive outcomes in his life. Note that students are also welcome to cite other people’s (e.g. the narrator’s, Ron Suskind’s) descriptions of Cedric’s words or actions as appropriate. Conversely, students must also think of two specific instances where Cedric’s words or actions appeared to be *counterproductive* for achieving positive outcomes in his life. {4 minutes}

5) For each of these four instances, group members must cite a suitable Strategy for Achievement (and/or substrategy) and use it to explain why the instance is either productive or counterproductive; that is, how Cedric did or didn’t apply the StAch. {4 minutes}

6) At random, members of each group are called upon to share either a productive or counterproductive behavior and the Strategy or substrategy that explains it. The instructor tries to solicit at least four productive behaviors and four counterproductive behaviors. {6 minutes}

7) Each group is asked to reflect on the collaboration process and how it affected their learning. {2 minutes}

**Ensuring Five Elements for Effectiveness:**

1) Positive Interdependence
Positive interdependence is achieved through mutual goals. This is observed during the group, when students are asked to collaborate in identifying instances of Cedric’s productive and counterproductive behaviors and the Strategies for Achievement associated with them.

2) Face-to-Face Promotive Interaction
The group collaboration process is designed to help students work together and support each other’s learning.

3) Individual Accountability
Students do not know who will be called upon to offer something to the class as a whole.

4) Interpersonal and Small Group Skills
Students learn collaboration and communication skills in their group work.

5) Group Processing
Reflection on group processing will occur at the end of the process to help students gain perspective on how group discussions enhance learning in the aftermath of a video presentation.

Cooperative Learning - Activity #8
LMS Chapters 8 & 9

Class: 16

Title: Organizing Information
Type: Collaborative Mnemonic Devices and Mind Sketches
Time: 31 minutes

Materials: 8 Large Pieces of Paper, Various Colored Markers

Objectives:
-- Appreciate the value of organizational tools for making connections between information
-- Utilize two organizational tools to summarize and display information on a given topic

Procedure:
1) Students are told to get into their groups and refer to page 129 of their textbook, which introduces the concept of the mnemonic (pronounced *ni-mon-ik*) device. Examples include Roy G. Biv (the colors of the spectrum) and Please Excuse My Dear Aunt Sally (the order of operations in mathematics). {2 minutes}

2) Students are told to split into pairs and collaborate with their partner to come up with a mnemonic device (or devices) for the four Strategies for Achievement and the eight Substrategies from Chapter 2 in their textbook. {6 minutes}

3) Students are told to reconvene with their groups and to refer to page 140 in their LMS textbooks. The page introduces the concept of the Mind Sketch and includes an example of this organizational tool (Figure 8.1). {2 minutes}

4) Each group is given a large (poster-size) piece of Post-It paper and various colored markers. {1 minute}

5) Students are informed that they will be collaborating in the creation of a Mind Sketch on the OSU undergraduate experience. They’re told to begin by working together to determine the overall layout (e.g. What is the main concept that goes in the middle? What are the key concepts linked to this concept?). They’re then told to include as much pertinent information and as many linkages as appropriate to help expand the Sketch. Everyone should be actively contributing to the creation of their group’s Sketch. {8 minutes}
6) Student groups are asked to share their collaborative Mind Sketches with the class as a whole by posting them on the wall of the classroom. {2 minutes}

7) At least one representative from each group will be asked to either: (a) share the Mnemonic Device they created with the rest of the class, or (b) explain how their group constructed their Mind Sketch and why they selected its main components. {8 minutes}

8) Each group is asked to reflect on the collaboration process and how it affected their learning. {2 minutes}

**Ensuring Five Elements for Effectiveness:**

1) Positive Interdependence
Positive interdependence is achieved through interdependence of materials and mutual goals. Both are observed during the reconvening of the group, when students are asked to offer their independent input to the creation of the group’s Mind Sketch.

2) Face-to-Face Promotive Interaction
The independent work followed by the reconvening of the group is designed to show students that they can work together to support each other’s learning and create something they can all benefit from.

3) Individual Accountability
All students must develop and contribute their own piece for the group’s Mind Sketch. Also, no one knows whether he or she will be called upon to describe his or her group’s Mind Sketch to the class as a whole.

4) Interpersonal and Small Group Skills
Students learn collaboration and communication skills in their group work as they’re completing their Mind Sketch.

5) Group Processing
Reflection on group processing will occur at the end of the process to help students gain perspective on the collaboration process and its role in enhancing learning for everyone.

**Cooperative Learning - Activity #9**

**A Hope in the Unseen – ABC Nightline Video #2**

**Class:** 18

**Title:** Strategies for Achievement in Action II

**Type:** Video and Small Group Discussion
Time: 41 minutes

Materials: Paper

Objectives:
-- Recognize instances where the application of a Strategy for Achievement led to positive outcome
-- Recognize instances where failure to apply a Strategy for Achievement led to an undesirable situation

Procedure:
1) Students watch Part 2 of a two-part ABC Nightline presentation on Cedric Jennings, the young African American man chronicled in *A Hope in the Unseen* by Ron Suskind. The video finds Cedric several years later as a junior at Brown University and includes footage of Cedric on his Ivy League campus, making public appearances during a book tour, and returning to Washington, D.C. to revisit his not-too-distant past. {20 minutes}

2) Students are asked for their initial reactions to the video (e.g. Have any of the main “characters” changed over the 3 years since the first video was made? Who? In what ways did the changes occur?). They’re also asked if anything from the video really resonated with them. {4 minutes}

3) Students are told to get into their groups and split into pairs. {1 minute}

4) With their partner, students are asked to consider the various things Cedric said and did in the video. Students are told that they must collaborate to think of one specific instance where Cedric’s words or actions could be classified as *productive* for achieving positive outcomes in his life. Note that students are also welcome to cite other people’s (e.g. the narrator’s, Ron Suskind’s) descriptions of Cedric’s words or actions as appropriate. Conversely, students must also think of one specific instance where Cedric’s words or actions appeared to be *counterproductive* for achieving positive outcomes in his life. {3 minutes}

5) For each of these two instances, students must cite a suitable Strategy for Achievement (and/or substrategy) and use it to explain why the instance is either productive or counterproductive; that is, how Cedric did or didn’t apply the StAch. {3 minutes}

6) Groups reconvene. Each pair of students should share the productive and counterproductive thoughts and behaviors they identified with the other members of their group. Based on this information, each group should collaborate to come up with at least one good piece of advice for Cedric as he completes his undergraduate career and moves forward with his professional life. In addition, each group should identify one specific Strategy or Substrategy that it appears Cedric really needs to focus on if he wishes to continue to achieve successful outcomes in college and thereafter. {4 minutes}
7) At random, a member of each group is called upon to share: (a) his or her group’s piece(s) of advice for Cedric, and (b) the Strategy or Substrategy that they believe Cedric really needs to focus on in the future. Students must be sure to explain why their group selected the particular Strategy or Substrategy it did. {4 minutes}

8) Each group is asked to reflect on the collaboration process and how it affected their learning. {2 minutes}

**Ensuring Five Elements for Effectiveness:**

1) Positive Interdependence
   Positive interdependence is achieved through mutual goals. This is observed during the group, when students are asked to collaborate in identifying instances of Cedric’s productive and counterproductive behaviors and the Strategies for Achievement associated with them.

2) Face-to-Face Promotive Interaction
   The group collaboration process is designed to help students work together and support each other’s learning.

3) Individual Accountability
   Students do not know who will be called upon to offer something to the class as a whole.

4) Interpersonal and Small Group Skills
   Students learn collaboration and communication skills in their group work.

5) Group Processing
   Reflection on group processing will occur at the end of the process to help students gain perspective on how group discussions enhance learning in the aftermath of a video presentation.

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**Cooperative Learning - Activity #10**

LMS Chapter 10

**Class:** 20

**Title:** Managing Life in College

**Type:** Modified Jigsaw Procedure

**Time:** 34 minutes

**Materials:** None

**Objectives:**
-- Recognize the specific behaviors that limit one’s ability to succeed in an academic environment
-- Identify specific techniques that can allow a person to avoid these behaviors in the future

**Procedure:**
1) Students are told to get into their groups and form pairs.  {1 minute}

2) In their pairs, students are told to discuss the things that interfere with their ability to achieve their academic goals as they go about their everyday lives as college students. Students are encouraged to share stories with their partners as a means for helping them understand the nature of the counterproductive situations, activities, and behaviors they’re encountering. These situations, activities, and behaviors can be strictly academic or they can be related to college life in a much broader sense. However, all should relate in some way to the student’s ability to succeed academically. Each student’s goal for this discussion is to isolate at least one, and preferably two, problems they face in their everyday life that they’d like to resolve.  {6 minutes}

3) Groups reconvene. Each student must offer his or her fellow group members some insight into the problem or problems he or she just isolated with his or her discussion partner. No one is required to share anything he or she finds too personal or embarrassing. However, everyone must do his or her best to share something of substance.  {4 minutes}

4) Students are told to consult Chapter 10 in their textbook, which describes Ten Techniques for Managing Your Life (summarized in the chapter outline on pg. 177).  {1 minute}

5) Students are told to work together as a group to identify a specific technique or techniques from the list that would appear to be helpful for addressing each of the problems mentioned by a group member.  {4 minutes}

6) Each group must select one of the problems they just discussed and create a short, one-to-two minute role play about it. This role play must: (a) depict how the problem manifests itself in college, (b) illustrate its negative impact on academic achievement, and (c) offer a means for addressing it using one or more of the Ten Techniques. At least two, and ideally all, members of each group must be prepared to play the roles on behalf of their group.  {8 minutes}

7) Each group, in turn, must volunteer to perform their role play for the rest of the class.  {8 minutes}

8) Each group is asked to reflect on the process, including both the pair work and group work that followed.  {2 minutes}
Ensuring Five Elements for Effectiveness:

1) Positive Interdependence
Positive interdependence is achieved through mutual goals. This is observed during the pairing off process to help students work together to identify their counterproductive behaviors. It is also seen during the reconvening of the group, when students work together to identify techniques for combating these behaviors in the future.

2) Face-to-Face Promotive Interaction
Both the original pairing process and the reconvening that follows are designed to help students work together and support each other’s learning.

3) Individual Accountability
All students must contribute their own counterproductive behaviors to their group. In addition, students are chosen at random to discuss a given counterproductive behavior and the technique or techniques for addressing it with the class as a whole.

4) Interpersonal and Small Group Skills
Students learn collaboration skills in the pairing process and communication skills in their group work thereafter.

5) Group Processing
Reflection on group processing will occur at the end of the process to help students gain perspective on the pairing and reconvening process and its role in enhancing learning for everyone.
APPENDIX B

ONLINE INTERACTION ACTIVITY GUIDE
Online Discussions

Tutorial/Orientation for First Class Meeting

Objectives:
-- Understand the benefits of online discussions
-- Understand how to use the online discussion board used in the course
-- Understand posting expectations and due dates

Procedure:
1) The instructor explains to the class that ten online discussions will be completed throughout the quarter through the use of online discussion boards in Carmen. Each student will be part of an online discussion group that will remain intact throughout the quarter so that students can support each other in the learning process.

2) The instructor directs all students to the appropriate page in Carmen where students can see the names of the other students in their group.

3) The instructor directs all students to the page in Carmen that contains links to each of the ten online discussions. He or she inform the class that, for each discussion, each student must post one original message in response to the discussion topic or question and then at least one response to the other three members of his or her group. All four of these postings must be at least one paragraph of at least five sentences. The instructor also reminds the class that there are two due dates for each discussion: the due date for the original post and the due date for the responses to one’s fellow group members. All due dates appear on the online course calendar.

4) The instructor brings up the first discussion topic on the large screen in the front of the classroom. He or she reads the discussion topic/question and asks of there is any confusion as to what is required. He or she reiterates that each student must write, at minimum, a one-paragraph response to the question (due by the first due date) and then at least three one-paragraph responses to the content posted by each of the other three members of his or her group (due by the second due date).

Activity #1
LMS Chapter 1
Week 1

In any learning environment, it helps to know the other members of your community.

In your original post, please introduce yourself to the other members of your group and, in doing so, include the following information: (1) Your full name, (2) nickname (if you
have one), (3) home town, (4) high school, (5) year at OSU (and, if you’re a transfer student, where you came from), (6) academic major (or major of interest), (7) possible career interest, (8) favorite hobby or sport, or OSU extracurricular activity, (9) favorite food, and (10) an interesting fact about you.

In your responses, try to find some similarities between yourself and each of your group members and begin a discussion about them. Also, if you see some differences worth discussing, consider doing that as well. Perhaps you’re a Browns fan and a fellow group member is a Steelers fan… that’s fuel for a good discussion! These postings are simply an opportunity for you to get to know one another, so have fun!

Activity #2
LMS Chapter 2
Week 2

In this chapter, we’re introduced to four Strategies for Achievement (Take Reasonable Risk, Take Responsibility for your Outcomes, Search the Environment for Information, and Use Feedback) and their substrategies.

Original Post: Consult the table on page 20 of the LMS text, which displays the four Strategies for Achievement (StAch). Notice, in the table, that each StAch has two substrategies: one labeled “A” and one labeled “B”. If you are one of the first two members in your group (alphabetically by last name), your job is to provide an example of how each of the four “A” substrategies can be successfully applied to a problem or situation a college student might face. Similarly, if you are the third or fourth member of your group (alphabetically by last name), your job is to provide an example of how each of the four “B” substrategies can be successfully applied to a problem or situation a college student might face.

Responses: Comment on at least one of the examples each of your fellow group members provided. Have you been in a situation or faced a problem like the one described? If not, perhaps you anticipate facing a problem like that… or possibly know someone else who has? How would (or did) you handle it? Would you use the substrategy your group member recommended? Would you use a different substrategy? Share your thoughts!

Activity #3
LMS Chapter 3
Week 3

In this chapter, we’re learning about the rationalizations people commonly use to justify procrastinating.
**Original Post:** Examine Self-Survey 3.2 on page 33 of the LMS text. It contains eight broad categories of rationalizations: Ignorance, Skill Deficiency, Apathy, Fixed Habits, Inertia, Frail Memory, Physical Problems, and Appropriate Delays. Which three of these do you use most commonly when you procrastinate on your schoolwork? Explain, using examples as necessary.

**Responses:** Comment on at least one of the explanations each of your group mates provided for using a given rationalization. Have you done the same thing in a similar situation? How would (or did) you combat it?

**Activity #4**  
**LMS Chapter 4**  
**Week 4**

In this chapter, we’re learning four useful techniques for building self-confidence.

**Original Post:** Consult pages 64-73 of the LMS text, which provide information on the four techniques: Regulate Your Emotional Level, Seek Affirmation, Pick the Right Models, and Just Do It! Each group member will write five bullet points that summarize one of the techniques as well as an example of how the technique can be applied to a challenging academic situation. Techniques are assigned alphabetically by last name: First student - Regulate Your Emotional Level, Second student - Seek Affirmation, Third student - Pick the Right Models, Fourth student - Just Do It!

**Responses:** For each of your fellow group members, come up with at least one example of how their technique can be used in a challenging academic situation. Describe the challenging situation(s) in adequate detail and then discuss how the technique can be applied to build confidence towards meeting the challenge.

**Activity #5**  
**LMS Chapter 5**  
**Week 5**

In this chapter, we’re learning about the different causal explanations we use to help explain why things happen to us. They include: Ability, Effort, Task Difficulty, Luck, and Help. Of these, effort is the only one we can control and, as such, it’s the most productive for helping us take responsibility for our outcomes.

**Original Post:** Recall a challenging academic situation in the recent past that resulted in an undesired outcome (in college, if possible). In your post, be sure to include: (1) a detailed description of the challenging situation in question, (2) a discussion of the causal explanation you attributed to the undesired outcome, (3) a description of the impact this
causal explanation had on the way you approached a similar challenging situation that came afterward, and (4) the results of that situation.

**Responses:** Comment on the challenging situations your fellow group members described. Did they choose productive causal explanations or counterproductive ones? Why? Have you been in any situations or faced any problems like the ones they described? What causal explanations did you use? Were they effective or ineffective in helping you handle similar challenges in the future?

**Activity #6**  
**LMS Chapters 6 & 7**  
**Week 6**

In these chapters, we’re learning strategies and techniques for being more productive students, before, during, and after class.

**Original Post:** What are some of the key differences between your “study behaviors” in high school and in college? Consider the following three areas: (1) before-class reading / preparation for class, (2) in-class note taking, and (3) preparation for exams. Feel free to use examples as appropriate to help illustrate the differences.

**Responses:** Comment on the differences your fellow group members have described. Did you notice any similarities between your differences and your group members’ differences in any of the three areas? For each group member, select at least one area where you saw similarities and offer your thoughts on how you adapted (or plan to adapt) in the college environment. Are there certain behaviors that are definitely preferable over others (i.e. behaviors that could be identified as “good study behaviors”)?

**Activity #7**  
**A Hope in the Unseen- ABC Nightline Video #1**  
**Week 7**

In the first ABC Nightline video, we observed Cedric Jennings as a high school student and got a glimpse of his experience as a student in the MITES program at the Massachusetts Institute of Technology (MIT).

**Original Post:** Consider the things Cedric said and did in the video, as well as the things we were told he said and did (e.g. by the narrator or Ron Suskind). Identify one instance of something Cedric said or did that could be described as *productive* for achieving positive outcomes and explain why it was productive using a Strategy of Achievement (and/or its substrategy). In addition, identify one instance of something Cedric said or did that could be described as *counterproductive* for achieving positive outcomes and
explain why it was counterproductive using a Strategy for Achievement (and/or its substrategy).

**Responses:** Comment on at least one thing each of your fellow group members noticed. Do you agree or disagree with anything they said? Why? When offering any sort of critique, be sure to cite a Strategy for Achievement (and/or its substrategy) to support it.

**Activity #8**
**LMS Chapters 8 & 9**
**Week 8**

In these chapters, we’re learning how to organize information, an essential element for exam preparation and paper writing.

**Original Post:** Refer to page 140 in the LMS text, which includes information on an organizational tool called a Mind Sketch. Imagine that your group is assigned to create a Mind Sketch on the four Strategies for Achievement. In this post, each member of your group will be assigned one of the four Strategies. For your assigned Strategy, you must: (a) indicate which information related to that Strategy belongs in the Mind Sketch, and (b) describe what that section of the Mind Sketch would look like. Strategies are distributed alphabetically by last name: First student – Take Reasonable Risk, Second student – Take Responsibility, Third Student – Search the Environment, Fourth student – Use Feedback.

**Responses:** How did each of your group members’ descriptions compare to yours? Did you include comparable information that any of them didn’t? Consider how the four Strategies fit together into one cohesive Mind Sketch. Provide each of your group members with comments on the positive aspects of their descriptions as well as suggestions for improvements in terms of the specific things they might be missing. Be sure to provide a rationale to support any comments or suggestions you make.

**Activity #9**
**A Hope in the Unseen- ABC Nightline Video #2**
**Week 9**

In the second ABC Nightline video, we observed Cedric Jennings as a college student at Brown University and got a glimpse of his life in the camera’s eye (during a book tour and then returning home to Washington, D.C.).

**Original Post:** Consider the things Cedric said and did in the video, as well as the things we were told he said and did (e.g. by the narrator or Ron Suskind). Identify one instance of something Cedric said or did that could be described as *productive* for achieving
positive outcomes and explain why it was productive using a Strategy of Achievement (and/or its substrategy). In addition, identify one instance of something Cedric said or did that could be described as counterproductive for achieving positive outcomes and explain why it was counterproductive using a Strategy for Achievement (and/or its substrategy).

**Responses:** Comment on at least one thing each of your fellow group members noticed. Do you agree or disagree with anything they said? Why? When offering any sort of critique, be sure to cite a Strategy for Achievement (and/or its substrategy) to support it.

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**Activity #10**  
LMS Chapter 10  
Week 10

In this chapter, we’re learning ten effective techniques for managing our life as college students.

**Original Post:** Consider your life as a college student thus far. What are two problems you face in your everyday collegiate life that you’d like to resolve? These problems can be strictly academic or they can be related to college life in a much broader sense. Be sure to provide enough detail so your fellow group members can gain a clear understanding of the situation you’re facing and why you need help with it.

**Responses:** For each of your group members, select one of the two problems he or she described and offer a reasonable and practical means for addressing it. Your proposed means for addressing the problem must be based on at least one (and possibly several) of the ten techniques for managing your life in Chapter 10. Be sure to make it clear that the advice you’re giving is derived directly from these techniques.
APPENDIX C

INSTRUCTOR MEETING DISCUSSION GUIDE
**Student-Instructor Interaction**  
**Weekly One-on-One Discussions**

The following discussion questions are designed to focus the discussion on pertinent academic topics and reduce the potential for a discussion to meander to non-productive areas. However, as the instructor gets to know each of his or her students, it is advisable to ask questions (and thus address topics) that are not necessarily included on a given week’s list. If a student is observed missing class, arriving late, “goofing off” in class, submitting work after its due date, or failing to turn in entire assignments, the instructor is advised to address it during the discussion (and perhaps to arrange an additional meeting during office hours). The main goal of the meeting is to help develop a relationship between instructor and student in which the student recognizes that the instructor cares about his or her performance in the course as well as his or her overall academic/collegiate success. As such, the instructor cannot ignore opportunities to address issues that are obviously detrimental to course performance and college success when they become apparent.

**Week 1 – Introduction**

Discussion Topics:
-- No discussion this week due to time constraints.

**Week 2 – Strategies for Achievement**

Discussion Topics:
-- Do you understand the course requirements and how to meet them?
-- Is there a particular reason why you took this course?
-- Do you have specific academic issues or concerns about study behaviors that you’re hoping to address?

**Week 3 – Procrastination**

Discussion Topics:
-- Are you someone who tends to procrastinate when it comes to your academics?
-- How do you handle it? Do you have techniques for combating it?
-- Have you been able to get off on the right track this quarter in terms of doing your work and keeping up with your assignments?

**Week 4 – Self-Confidence**

Discussion Topics:
-- Have you ever felt like your own self-confidence was holding you back from succeeding academically?
-- Do you have any courses that are giving you trouble this quarter?
-- What are you doing to ensure you don’t fall behind or get overwhelmed by the content?
Week 5 – Taking Responsibility

Discussion Topics:
-- Has college life offered you more independence than you had previously experienced (e.g. during high school)? How have you handled it?
-- Have you found it difficult to regulate your behavior in the manner necessary to succeed academically? Are you able to avoid unhealthy and counterproductive behaviors?
-- Do you have midterm exams coming up? Do you have a study plan in place to ensure you do as well as possible?

Week 6 – Active Listening

Discussion Topics:
-- Have you found yourself in many large lecture-style classes at OSU?
-- Is it difficult to learn in this environment? What strategies have you employed to help handle it?
-- How did your mid-term exams go for you?

Week 7 – Active Reading

Discussion Topics:
-- Has the amount of reading required in your college courses been difficult to keep up with?
-- Do you employ any techniques or strategies when you read or do you simply read straight through as if you’re reading for pleasure?
-- How have you been doing keeping up with your coursework this quarter?

Week 8 – Test Preparation

Discussion Topics:
-- Have you done as well on your various exams at OSU as you would expect, given the amount of time you spend studying?
-- Do you spread out your studying or do you often wind up cramming for exams?
-- Do you study in groups or alone?

Week 9 – Writing Papers and Speeches

Discussion Topics:
-- Have you been required to write many papers as a student here at OSU? What’s the hardest part about writing a research paper?
-- Do you follow specific steps in the process of writing such a paper?
-- Do you have any papers due this quarter in the remaining weeks? Have you been working on them to ensure that they’ll be finished and meet your expectations?
Week 10 – Managing Your Life

Discussion Topics:
-- Has your collegiate experience been more challenging than you’d expected? In what ways?
-- Have you been able to find ways to be academically productive while keeping your stress levels at a reasonable level? Do you have healthy coping methods?
-- Have you begun preparing for final exams? Will you be preparing a study plan to ensure you do as well as possible?
APPENDIX D

INSTRUCTOR ORIENTATION GUIDE
Instructor Orientation
Training Session for Instructors of Treatment Sections

I. Overview
A. Six sections of EPL 259 will be involved in the experiment.
B. We’re studying the impact of Interpersonal Interaction on College Students’ Engagement and Achievement in the Blended Learning Classroom.
C. There are two different independent variables: Student-Student Interaction and Student-Instructor Interaction.
D. 3 x 2 factorial design
   1. Student-Student Interaction will have three levels: (1) In-Class Interaction (through Cooperative Learning), (2) Online Interaction (through Discussion Boards in Carmen), and (3) No Interaction (except that which occurs organically)
   2. Student-Instructor Interaction will have two levels: (1) Required, Weekly, One-on-One Meetings, and (2) No Meetings
E. Summary
   1. Two sections will have In-Class Interaction; one of these sections will have Weekly, One-on-One Meetings and the other will not
   2. Two sections will have Online Interaction; one of these sections will have Weekly, One-on-One Meetings and the other will not
   3. Two sections will have No Interaction; one of these sections will have Weekly, One-on-One Meetings and the other will not

II. Standardization
A. Standardization of Experimental Treatments
   1. Instructors administering the same treatment must administer it the same way.
   2. On four occasions this quarter, the two instructors facilitating In-Class Interaction (i.e. Cooperative Learning) will meet with me for in-depth discussions of upcoming treatments, helping to ensure standardization between sections. In addition, all six instructors will be expected to converse with me at minimum on a weekly basis to discuss their treatments.
   3. All instructors will never hesitate to contact me with any questions when they arise.
B. Standardization of Non-Experimental Content
   1. Everything unrelated to the experimental treatments (i.e. all other rules, procedures, assignments, grading policies, etc.) must be consistent among the six sections within the experiment.
   2. We must design, agree upon, and adhere to a standard syllabus that only differs from section to section as a result of the experimental treatments. Let’s discuss our policies for: tardiness, mid-class breaks, bottled water, music/headphones, and anything else you think pertinent.
3. Instructional (i.e. Lecturing) Time – You may lecture for no more than 20 minutes at the beginning of the first class session of the week and for no more than 5 minutes at the beginning of the second class session of the week. Your goal is only to provide information (e.g. key concepts, assignment requirements, due dates, etc.), not to encourage discussion.

C. General Note on Standardization
   1. In its current format, the course offers no structured means for encouraging or ensuring Interaction between students. At present, students only interact with one another organically (i.e. if they choose to do so).
   2. In its current format, the course offers only limited means for meaningful Interaction between students and their instructor. We lecture our students on course concepts, assignments, and due dates within a constrained timeframe at the beginning of class. We monitor our students’ activities and offer help when called upon to do so. We provide feedback on online modules and papers. We make ourselves available during prescribed office hours.
   3. As such, the baseline level of Interaction for non-treatment sections of the course MUST be as follows.
      a) Student-Student Interaction: We do nothing to encourage Interaction between students; all Interaction between students MUST remain organic. When educating students on course concepts at the beginning or end of a class meeting, we must stick strictly to a lecture-based pedagogical format.
      b) Instructor-Student Interaction: We institute NO structured means for interacting with our students. As instructors, we provide lecture-based information at the beginning of certain class meetings to educate students on course concepts and provide information on assignments and due dates. We respond to any and all student questions when they arise. We provide meaningful feedback on all online modules and papers. We make ourselves available, as always, to answer questions during office hours. This is the standard (non-treatment) model for the course that we MUST adhere to.

III. Student-Student Interaction
   A. In-Class Interaction
      1. Students will interact in small groups (of four members, ideally) that will remain intact throughout the quarter. You will create these groups before the quarter begins, focusing on heterogeneity with respect to gender, year-in-school, and academic major.
      2. Ten Cooperative Learning Activities have already been developed, one for each chapter.
      3. Each activity will include a MS Powerpoint presentation with clear instructions for students to help keep them on task.
4. Some activities will also require materials that I will provide for you.
5. Instructors for the In-Class Interaction sections will meet with me four separate times (schedule forthcoming) to discuss upcoming activities, ensuring that both instructors facilitate all activities in the same manner.
6. Grading should be participation-based. Students observed failing to participate should be warned that, if they don’t change their behavior, they’ll receive an appropriate point deduction for the activity. The amount of that deduction is at the discretion of the instructor.

B. Online Interaction
1. Students will interact in online discussion groups (of four members, ideally) that will remain intact throughout the quarter. You will create these groups before the quarter begins, focusing on heterogeneity with respect to gender, year-in-school, and academic major.
2. Ten Online Discussions have already been developed, one for each chapter.
3. These discussions stand on their own; they MUST NOT be complemented with any sort of in-class discussion.
4. Students can do these discussions at their discretion; they need NOT be done during class time.
5. For each discussion, students must make one original post that relates to the topic question and then two additional posts, each in response to the original post of a different fellow group member. The online course calendar will indicate two different due dates for each discussion: one for the original post and one for the two response-based posts.
6. Grading should be participation-based. Students who complete all their required posts and meet the requirements for the discussion should receive full credit. Those who fail to do so should receive an appropriate point deduction. The amount of that deduction is at the discretion of the instructor.

C. No Interaction
1. Instructors for the No Interaction sections must adhere strictly to the standard (non-treatment) model for the course. That is, instructors must do nothing to encourage interaction, either in class or online, between their students. However, if organic interaction occurs between students, there’s no reason to discourage it.

IV. Student-Instructor Interaction
A. Weekly, One-on-One Meetings
1. A list of discussion questions has already been designed to focus the discussion on pertinent academic topics and reduce the potential for a discussion to meander to non-productive areas.
2. However, as the instructor gets to know each of his or her students, it is advisable to ask questions (and thus address topics) that are not necessarily included on a given week’s list. If a student is observed
missing class, arriving late, “goofing off” in class, submitting work after its due date, or failing to turn in entire assignments, the instructor is advised to address it during the discussion (and perhaps to arrange an additional meeting during office hours).

3. The main goal of the meeting is to help develop a relationship between instructor and student in which the student recognizes that the instructor cares about his or her performance in the course as well as his or her overall academic/collegiate success. As such, the instructor cannot ignore opportunities to address issues that are obviously detrimental to course performance and college success when they become apparent.

4. Meetings should be no more than five minutes in length to ensure that all students have time for their meeting each week. Instructors can devise their own meeting schedules, but should recognize that a certain number of meetings must be held during each class to fit everyone in.

5. Due to time constraints, no meetings will be held during the first week of class.

6. In addition to facilitating meetings, the instructor is expected to carry out all of his or her other functions, including responding to students’ questions, as usual, when they arise during class time.

B. No Meetings
1. The instructor must never hold meetings of the type described above during class time. He or she can only respond to students’ questions when they arise during class time.

2. If students elect to come to office hours, the instructor must address their needs accordingly.

V. Dependent Variables (i.e. what we’re measuring)
A. Academic Engagement
1. This dependent variable will be measured on the basis of four specific categories of behavior: (1) Tardiness and Early Departure, (2) Unexcused Absence, (3) Late Submission of an Assignment, and (4) Failure to Complete and Submit an Assignment.

   a) Tardiness and Early Departure - The student either arrives late for class (more than ten minutes after the hour) or leaves class before dismissal by the instructor. The instructor keeps track of the number of times each student engages in either of these behaviors during the quarter.

   b) Unexcused Absence - The student misses class without a valid, documented excuse (i.e. hospitalization or illness worthy of medical attention, death or extreme illness in the family). Visits to the doctor that could have been scheduled to not conflict with class are not excused. The instructor keeps track of the number of unexcused absences for each student during the quarter.
c) Late Submission of an Assignment - The student submits a paper (i.e. Portfolio or Hope Paper) after the due date for partial or no credit. The instructor keeps track of the number of times each student submits a late paper during the quarter.

d) Failure to Complete/Submit an Assignment - The student fails to submit a paper (i.e. Portfolio or Hope Paper) or fails to complete/submit at least half of an online module. The instructor keeps separate track of missed papers and missed module activities for each student during the quarter.

2. Each instructor must keep accurate records of each category for each student throughout the quarter. To this end, MS Excel spreadsheets have been created for you with detailed instructions on the recording process for each category above.

B. Academic Achievement
1. This dependent variable will be measured on the basis of two specific aspects of performance: (1) Overall Grade on Assignments, and (2) Final Exam Grade.

a) Overall Grade on Assignments - The student would receive this grade as a result of his or her performance on ONLY the ten Online Modules and ten Portfolios. As always, the instructor assigns grades on these assignments, utilizing rubrics to reduce subjectivity in the grading of Portfolios.

b) Final Exam Grade - The student would receive this grade as a result of his or her performance on the course’s final examination. As always, the instructor assigns grades on the final exam, utilizing a rubric to reduce subjectivity in the grading process.

2. Unlike the recommended process for record keeping described above (for the Academic Engagement variable), no additional record keeping is necessary here. The researcher can access and download all grades from Carmen.

VI. Hope Nightline Videos
A. Contrary to the mandates above, instructors in the two No Interaction sections are welcome to encourage full class (i.e. non-small group) discussion after showing each of the two ABC Nightline Videos on Cedric Jennings (of A Hope in the Unseen).

B. These discussions can focus on any aspect of Cedric’s life and experiences, but cannot touch specifically upon any of the strategies or techniques discussed in the course. Suitable topics include: general aspects of Cedric and his behaviors, distinctions between the book and the videos, choices made by the author, poverty, educational funding, and race, among others.

VII. Attendance
A. As always, clear and accurate attendance records must be kept for each student.
B. In addition, it is essential that instructors keep clear and accurate records of students “attendance” in treatments. That is, if a student misses a given week’s Cooperative Learning Activity, Online Discussion, or Required Instructor Meeting, the instructor must make note of it in his or her records. MS Excel spreadsheets have already been created for this purpose.

VIII. Course Assignments and Point Totals

*Format for Student-Student Interaction: In-Class Interaction (2 sections)*

<table>
<thead>
<tr>
<th>Type of Activity</th>
<th>Number in Course</th>
<th>Points (Max Possible)</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Modules: Quickpractices, Self-Surveys, &amp; Self-Assessments</td>
<td>69</td>
<td>1 (Module 10 Self-Survey 5 is worth 3)</td>
<td>71</td>
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<tr>
<td>Online Modules: Assignments &amp; Applications</td>
<td>78</td>
<td>5 (Module 7 Assignment 1 is worth 10)</td>
<td>395</td>
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<tr>
<td>Online Modules: Spotquizzes</td>
<td>10</td>
<td>15</td>
<td>150</td>
</tr>
<tr>
<td>Portfolios</td>
<td>10</td>
<td>30</td>
<td>300</td>
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<tr>
<td>Hope Papers</td>
<td>5</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>LMS Discussions (In-Class)</td>
<td>10</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>WEDLC Research Permission</td>
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<td>1</td>
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<tr>
<td>EPL 259 Course Evaluation</td>
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<td>Attendance</td>
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<td>Final Exam</td>
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<td><strong>TOTAL</strong></td>
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</table>

*Extra Credit:* (Optional) Portfolio 12 to replace a maximum of 30 missed points.

*Format for Student-Student Interaction: Online Interaction (2 sections)*

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<td>Portfolios</td>
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<td>Hope Papers</td>
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<td>200</td>
<td>200</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1337</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Extra Credit:* (Optional) Portfolio 12 to replace a maximum of 30 missed points.
Format for Student-Student Interaction: No Interaction (2 sections)

<table>
<thead>
<tr>
<th>Type of Activity</th>
<th>Number in Course</th>
<th>Points (Max Possible)</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Modules: Quickpractices, Self-Surveys, &amp; Self-Assessments</td>
<td>69</td>
<td>1</td>
<td>71</td>
</tr>
<tr>
<td>(Module 10 Self-Survey 5 is worth 3)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Online Modules: Assignments &amp; Applications</td>
<td>78</td>
<td>5</td>
<td>395</td>
</tr>
<tr>
<td>(Module 7 Assignment 1 is worth 10)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online Modules: Spotquizzes</td>
<td>10</td>
<td>15</td>
<td>150</td>
</tr>
<tr>
<td>Portfolios</td>
<td>10</td>
<td>30</td>
<td>300</td>
</tr>
<tr>
<td>Hope Papers</td>
<td>5</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>WEDLC Research Permission</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>EPL 259 Course Evaluation</td>
<td>1</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Attendance</td>
<td>N/A</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Final Exam</td>
<td>1</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1287</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extra Credit: (Optional) Portfolio 12 to replace a maximum of 30 missed points.
APPENDIX E

DEMOGRAPHIC SURVEY
EPL 259 Demographic Survey

1. What is your gender? (Check only one)
   o Male
   o Female

2. What is your age? _______

3. With which racial/cultural group below do you most identify? (Check only one)
   o African American (i.e. Black)
   o Asian American
   o European American (i.e. White, Caucasian)
   o Hispanic American (i.e. Latino/a)
   o Native American
   o I’m a citizen of a country other than the United States of America.

4. What is your enrollment classification? (Check only one)
   o First year student
   o Sophomore
   o Junior
   o Senior
   o Continuing Education Student
   o Graduate Student
   o Professional Student

5. In which college or school are you enrolled? (Check only one)
   o School of Allied Medical Professions
   o Austin E. Knowlton School of Architecture
   o College of the Arts
   o College of Biological Sciences
   o Fisher College of Business
   o School of Communication
   o Continuing Education
   o Dental Hygiene
   o College of Education and Human Ecology
   o College of Engineering
   o School of Environment and Natural Resources
   o Exploration Program
   o College of Food, Agriculture, and Environmental Sciences
   o College of Humanities
   o College of Mathematical & Physical Sciences
   o College of Nursing
   o College of Pharmacy
6. What was your Cumulative GPA at the beginning of this quarter? \[\text{_______}\] [Include two decimal places (e.g. 3.45)]

7. Why did you decide to take EPL 259? (Check all that apply)
   - The course content sounded interesting.
   - I want to make the transition to college easier.
   - I want to be a better student.
   - I want to improve my motivation.
   - I want to learn specific strategies for studying.
   - It will help me be successful in all aspects of life.
   - I’m on academic probation and need to turn things around.
   - I want to raise my GPA.
   - I’m trying to get into a challenging major (e.g. nursing, business).
   - I’m trying to make dean’s list this quarter.
   - My advisor recommended it.
   - I’m in a program that expects me to take it.
   - My parent or guardian urged me to take it.
   - I was looking for an easy A.
   - I just needed to fill out my schedule.
   - Other (explain)
Five-Factor Personality Inventory

On the following two pages, you’ll find various statements describing people's behaviors. Please read each statement carefully and use the Rating Scale below to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same gender and roughly the same age. Your responses will be kept in absolute confidence, so please be completely honest.

Rating Scale:

<table>
<thead>
<tr>
<th>Very Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Neither Inaccurate nor Accurate</th>
<th>Moderately Accurate</th>
<th>Very Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. I get stressed out easily. _____
2. I am the life of the party. _____
3. I have difficulty understanding abstract ideas. _____
4. I am interested in people. _____
5. I pay attention to details. _____
6. I am relaxed most of the time. _____
7. I feel comfortable around people. _____
8. I do not have a good imagination. _____
9. I insult people. _____
10. I am always prepared. _____
11. I don’t worry about things. _____
12. I don't talk a lot. _____
13. I am full of ideas. _____
14. I feel little concern for others. _____
15. I leave my belongings around. _____
16. I often feel blue. _____
17. I start conversations. _____
18. I don’t use difficult words. _____
19. I have a soft heart. _____
20. I get chores done right away. _____
21. I am not easily disturbed. _____
22. I don't mind being the center of attention. _____
23. I don't spend time reflecting on things. _____
24. I am not interested in other people's problems. _____
25. I like order. _____
26. I don’t get upset easily. _____
27. I keep in the background. _____
28. I have excellent ideas. _____
29. I am not really interested in others. _____
30. I make a mess of things. _____
31. I change my mood a lot. _____
32. I talk to a lot of different people at parties. _____
33. I am quick to understand things. _____
34. I sympathize with others' feelings. _____
35. I follow a schedule. _____
36. I don’t get irritated easily. _____
37. I like to draw attention to myself. _____
38. I am not interested in abstract ideas. _____
39. I don’t take time out for others. _____
40. I am exacting in my work. _____
41. I seldom feel blue. _____
42. I have little to say. _____
43. I have a vivid imagination. _____
44. I don’t feel others' emotions. _____
45. I often forget to put things back in their proper place. _____
46. I have frequent mood swings. _____
47. I am not quiet around strangers. _____
48. I don’t have a rich vocabulary. _____
49. I make people feel at ease. _____
50. I don’t shirk my duties. _____
APPENDIX G

STUDENT COURSE ENGAGEMENT QUESTIONNAIRE

(ADAPTED FOR USE WITH EPL 259)
To what extent do the following behaviors, thoughts, and feelings describe you as a student in this course (EPL 259)? Consider your experience this quarter in EPL 259 and rate each phrase below on the following scale:

5 = Very characteristic of me
4 = Characteristic of me
3 = Moderately characteristic of me
2 = Not really characteristic of me
1 = Not at all characteristic of me

Your responses will have no impact whatsoever on your course grade, so please be completely honest.

1. _____ Raising my hand or seeking the instructor’s attention in class
2. _____ Participating actively in small-group discussions
3. _____ Asking questions when I don’t understand either the instructor or the material
4. _____ Doing all the online assignments (i.e. Modules)
5. _____ Coming to class every time it meets
6. _____ Going to the instructor’s office hours to review assignments or to ask questions
7. _____ Thinking about the course between class meetings
8. _____ Finding ways to make the course interesting to me
9. _____ Making good use of class time for completing coursework
10. _____ Looking over course material between classes to make sure I understand it
11. _____ Really desiring to learn the material
12. _____ Being confident that I can learn and do well in the class
13. _____ Putting forth effort
14. _____ Being organized
15. _____ Getting a good grade
16. _____ Doing well on the Portfolio papers
17. _____ Keeping up with the assigned reading
18. _____ Having fun in class
19. _____ Helping fellow students
20. _____ Making sure to complete coursework on a regular basis
21. _____ Finding ways to make the course material relevant to my life
22. _____ Applying course material to my life
23. _____ Listening carefully in class
APPENDIX H

RECRUITMENT SCRIPT / INFORMED CONSENT FORM
Good morning/afternoon. My name is Brent Mosser and I’m the Associate Director of the Walter E. Dennis Learning Center. However, I’m also a doctoral student in Higher Education and I’m currently doing the research associated with my dissertation. Not surprisingly, my research centers on EPL 259 and its impact on student success at OSU. As such, I’d like to talk to you a bit about this research and ask for your consent to participate in my study.

I would begin by saying that your participation in this research is completely voluntary. However, it will neither increase nor decrease the amount of work required of you as a student in this course, nor will it impact the grade you receive. Through your instructor, I’ll simply be collecting various forms of data from you to judge the impact of the different pedagogical techniques he/she will be using. Most of the data we collect will come as a result of your participation in EPL 259 course activities that you’d be completing regardless of your involvement in the research. In addition to these activities, we’ll have you complete three short surveys – demographics, personality, and course engagement. That’s it. The research and your participation in it are both quite simple.

There are just a few other things you should know. First, your participation in this study will only last through your completion of EPL 259 this quarter. Second, all the data we collect will be recorded in such a manner that you cannot be identified directly or through identifiers linked to you. This data will be kept completely private and confidential at all times unless disclosure is required by law. Finally, it’s important that you know that your participation will be of great benefit to me, since the removal of data for specific students would be highly damaging to the validity of the results. With this said, you can choose not to participate in this project and you will not be penalized for your decision. In addition, if you agree to participate, you can withdraw from the study at any time without penalty.

Finally, you should know that I will be preparing a final written analysis of the findings as part of my dissertation and that neither your name nor any other identifying information about you will be disclosed in the report. I will also be considering the possibility of submitting my final written analysis to a scholarly journal for publication. Again, no identifying information about you will be disclosed if this happens.

At this time, I am going to distribute the Informed Consent forms that require your signature if you agree to participate in the research. Please take the remainder of this class period to make your decision; I’ll return at the end of class to collect all the forms. If you have any further questions about the study and your participation, please feel free to visit me in my office right over there in room 250D any time. Thanks so much, everyone, for your time and consideration!
You are being asked to give consent for your participation in a research project being conducted by Brent Mosser, a doctoral candidate in the School of Educational Policy and Leadership within the Ohio State University. This project is being conducted by Mr. Mosser for the completion of his doctoral dissertation and, as such, it is being supervised by his faculty advisor, Dr. Leonard Baird. The overall purpose of the project is to gain a better understanding of how certain aspects of the EPL 259 instructional model benefit students in terms of specific success outcomes.

- I understand that my participation in the project will only last through the completion of EPL 259 this quarter.
- I understand that my participation in the project will neither increase nor decrease the amount of work required of me as a student in this course, nor will it impact the grade I receive.
- I understand that Mr. Mosser will acquire data from me by examining my participation in course activities and by analyzing information from my completion of three online surveys.
- I understand that this data will be recorded in such a manner that I cannot be identified directly or through identifiers linked to me.
- I understand that this data will be kept completely private and confidential at all times unless disclosure is required by law.
- I understand the benefits of my participation in the project and its contribution to the validity of the results.
- I understand that I can choose not to participate in this project and that I will not be penalized for my decision. If I agree to participate, I understand that I can withdraw from the study at any time without penalty.
- I understand that Mr. Mosser will prepare a final written analysis of his findings as part of his dissertation and that neither my name nor any other identifying information will be disclosed in this report.
- I understand that the final written analysis could be submitted to a scholarly journal for publication. Again, I recognize that identifying information about me will not be disclosed. I consent for dissemination of the written report and understand that I can withdraw my consent for dissemination at any time without penalty to me.
- I know I can contact Mr. Mosser at mosser.10@osu.edu or at (614) 688-3708 between 8 AM and 4 PM any weekday with any questions about the project throughout my involvement.

I have read the information above and understand it. I acknowledge that I was given the opportunity to ask questions about this project and to obtain answers to my questions. I am signing this form freely and voluntarily as an indication of my decision to participate.

Name (printed): ______________________________________
Signature: _________________________________________   Date: _______________