THE IMPACT OF MOTIVATIONAL MESSAGES ON
STUDENT PERFORMANCE IN COMMUNITY COLLEGE ONLINE COURSES

BY

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DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Education in Educational Organization and Leadership
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2010

Urbana, Illinois

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Abstract

The purpose of this experimental study was to determine whether motivational emails sent from an instructor to student had an impact on performance in an online course, with student performance measured by course completion and course performance as evidenced by final course grade. The sample for the study was students enrolled in 12 online classes offered by one community college during the spring 2009 semester. These students were randomly assigned to two groups, a control group and an experimental group, and both groups were sent five motivational email messages from the faculty member teaching the course. Keller’s (2006b) Course Interest Survey (CIS) was administered electronically to measure student motivation. The CIS instrument was modified so that the experimental group received six open-ended questions concerning the impact of the motivational messages on their course performance.

Principal components analysis was used to determine whether the constructs originally associated with the CIS, specifically Attention, Relevance, Confidence, and Satisfaction (ARCS) model (Keller, 1983), were confirmed, and results showed that the constructs were not confirmed. Consequently, a new Feedback, Instructor Techniques, Goals, and Interest (FIGI) model emerged that represented the constructs of motivation for students enrolled in the community college online course. The FIGI model, unlike the ARCS model, represented both extrinsic and intrinsic student motivation.

Chi-square and t-tests were used to determine whether there were significant associations or significant differences between the experimental and control groups on: background variables used to describe the students and control for differences, the intervening variable as measured by the mean CIS score and sub-scores, and the two
dependent variables of mean final grade, and proportion of completers. A multiple regression was conducted to assess the extent to which the FIGI subscales predicted final grade, and a logistic regression was conducted to assess the extent to which the FIGI subscales predicted course completion, after controlling for demographic and educational variables.

The findings showed students participating in an online course benefited from the treatment. Results showed a higher proportion of the experimental group were successful completers of the online course than the control group. Results also showed a significant difference in final course grade and CIS scores for the experimental and control group, with final grades of the experimental group exceeding the control group. A multiple regression showed a significant effect for the Goals subscale on predicting final grade, controlling for demographic and educational variables.

This was the first empirical study to use emailed motivational messages and the CIS, supplemented with open-ended questions, at a community college. The results provide valuable insights into how email can be used in community college online classes to motivate students and enhance their course performance. An important development of the study is the identification of the FIGI motivation model showing intrinsic and extrinsic motivation in the context of students’ receiving motivational email messages. This study should be replicated at other community colleges that offer online courses to further explore the FIGI subscales and determine their impact on course completion and performance.
Dedicated to my son, Rylan Dae
Acknowledgments

I would like to thank my family for all the love and support during my doctoral studies; you have helped me achieve a great accomplishment! To my husband, Doug, thank you for all the hours listening to me talk through my dissertation study and for being such a good Dad while I was at class meetings or writing. I truly could not have accomplished this without your support. To my son, Rylan, I know that you are too young to remember all the nights and weekends that I have spent studying and writing to accomplish this degree, but I hope that I have set an example for you that through hard work and determination anything is possible.....always follow your dreams and never give up!

To my parents, Randy and Cathy Stennett, you have always encouraged me to finish what I start and to have a strong work ethic in life. That has carried me a long way in accomplishing my doctoral degree. Thank you for instilling those values in me and pushing me to succeed! You both have given me the confidence and courage to succeed at any challenge in life and I will be always grateful. Thank you also for all the Rylan “kid sitting” times for when I was at class.

To my sister, Carol, your words of encouragement were always exactly what I needed to stay focused. Your research advice was always valuable in helping me to move this project along. Thanks for being my sister and taking the time to talk or email, even when we were hundreds of miles apart. I will always cherish our friendship, Sas.

To my good friends, Patty and Darla, thanks for all the lunch meetings. I appreciate all of your support in helping me achieve this degree. To Darla, your help in locating articles and dissertations (especially the dissertation from the Netherlands) was
tremendous in helping me put chapter 2 together. Thanks for all your library researching assistance. To Dr. Patricia Owens (Patty), thank you for your guidance and all the email support. Your input was always greatly valued.

To Janet and Jervaise, thanks for all the support and camaraderie during this doctoral degree. As fellow students in the CCEL doctoral program, you were always there to help and listen. Not just anyone wants to have a discussion about data collection methods and theoretical frameworks. Thanks for all the weekends in studying and writing together – it really helped to stay motivated and focused. We started this doctoral program together as strangers and through these past few years have developed a friendship that I truly value! Thank you both for your encouragement in helping me to complete this dissertation.

To Dr. Bragg, my advisor and dissertation director, thank you for your guidance and patience in helping me achieve my doctoral degree. I appreciate all the hours you invested in providing feedback through track changes, email, and even phone calls so that I could accomplish this degree from a distance!

To all faculty members that participated in this research study, thank you! This dissertation is completed because you were willing to participate in the study and allowed the data to be collected from your online courses.

To everyone that has supported me during the past six years while working on this doctoral degree, I want to express my sincere appreciation. Thank you all for helping me accomplish earning the Dr. title!
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Chapter 1

Introduction

Like many educational institutions, community colleges are adapting their programs and offerings to meet the changing needs of the communities they serve. “External pressures exerted on the traditional educational systems are forcing change on time honored scholastic practices” (Glahn & Gen, 2002, p. 778). Over a decade ago, Drucker (1992, p. 97) anticipated the need for change and predicted that in the next 50 years “schools and universities will change more drastically than they have since they assumed their present form 300 years ago when they organized around the printed book” (p. 97). New technologies are an important contributor to the changing environment, and as society changes, community colleges respond by implementing new technological developments in the curriculum and in course delivery. For community colleges to remain competitive and to honor their mission of serving their communities, they need to be thoughtful in their adoption of new technologies to better meet the needs of students, to motivate and retain them in courses and support their learning.

Community colleges are challenged to serve more students with fewer resources, as state support has decreased while student enrollment has increased, which contributes to their growing interest in using technology to deliver online instruction (Evelyn, 2004). Offering online courses removes the burden of maintaining facilities, allowing community colleges to expand course availability without having to manage physical classrooms. Online classes are implemented by many community colleges as a way to compete with other higher education institutions, public and private, by expanding their enrollment base, purportedly reaching students who might not otherwise have access to
higher education (Rovai, 2002). Rovai contends that there is an increasing acceptance that educating students beyond the traditional campus environment is a major element of a college’s mission. The profile of the typical community college online student is someone who is non-traditional in age compared to the traditional college student and also employed with dependents at home. They are often students who enroll part-time after having interrupted previous college studies ("American Association of Community Colleges," 2006; Carr, 2000; Cohen & Brawer, 2003; Diaz, 2002; Dutton, Dutton, & Perry, 2005; Levine & Sun, 2003). “This influx of adults taking distance education courses has occurred in part because of the proliferating demands of our technological society and in part because of the complexity of modern life” (Parker, 2003, p. 1).

Addressing the complexity of adult lives and learning, Milliron discussed the concept of how a traditional student is becoming harder to define today and how more and more students are in a “learning swirl”, where students swirl in and out of education (Mooney, 2008, p. B9). Increasingly students come through an educational institution to obtain their primary degree and then return to upgrade or refresh their skills. Milliron describes community college enrollment trends as, “students swirling through the community-college system again and again, so you have to structure planning and services differently” (Mooney, 2008, p. B9). Society today calls for life-long learning in order for students to stay employable in the workforce and yet many adults are unable to participate in traditional, face-to-face courses because of employment and family responsibilities. Using technology for online learning may open geographic boundaries by offering educational opportunities to students who are physically removed from the institution and help to facilitate the learning swirl.
Statement of the Problem

Community colleges have expanded their mission to provide higher education opportunities via the Internet. For the past several years online enrollments have grown faster than overall higher education enrollments. Online enrollments grew by 9.7% from fall 2005 to fall 2006, which exceeds the 1.5% growth rate of the overall higher education student population (Allen & Seaman, 2007). Almost 3.5 million students in U.S. higher education were taking at least one online course during the fall 2006 semester. Nearly 20% of all U.S. higher education students were taking at least one online course in the fall of 2006. All institution types experienced growth in online courses, but two-year associate’s degree institutions reported the highest growth, accounting for over one-half of all online enrollments between 2002 and 2006 (Allen & Seaman, 2007).

Illinois colleges and universities experienced a substantial increase in online enrollments over the past eight years. Fall 1999 Internet-based distance education enrollments were reported at 5,887 for Illinois colleges and universities, growing to 145,740 by Spring 2007 ("Illinois Virtual Campus," 2007). For the 2006-08 academic year (Fall 2006, Spring 2007, and Summer 2007) Illinois colleges and universities reported online course enrollments totaling 385,269, which is an increase of 63,431 online enrollments or 20% from the prior academic year of 2005-2006. Community colleges have consistently had the highest number of online enrollments and course offerings as compared to other public higher education institutions in Illinois ("Illinois Virtual Campus," 2007).

With the growth of online learning, as a form of distance education, comes a problem of non-completion, where students withdraw from a class before the ending date.
Numerous studies have shown non-completion is higher for online than traditional college classes including community colleges and universities (Carr, 2000; Diaz, 2002; Parker, 2003; L. Visser, 2002). Simpson (2003) showed that approximately 38% of registered online students at the United Kingdom Open University did not submit their first assignment, showing the seriousness as well as the universality of the problems of non-completion with online learning in that non-completion has been observed in the U.S and other nations. Carr (2000) reported dropout rates 10 to 20% higher in online courses than traditional classes and noted significant variations among institutions in reporting online course completion rates ranging from more than 80% to fewer than 50% of students finishing their coursework. Dropout rates in public, higher education online classes are generally higher than their face-to-face counterpart classes (Diaz, 2002; Johnson, 2003).

Despite the successes of many students in online courses, including grades earned and satisfaction (see, for example, Diaz, 2002, Dutton et al., 2005; Lorenzetti, 2005), non-completion of online courses is a concern, particularly because of the complexity of understanding the diverse factors that contribute to non-completion. (Diaz, 2002; Dupin-Bryant, 2004; Lim, 2001; Osborn, 2001) have shown that variables associated with taking previous online learning courses, education level, grade point average (GPA), and computer experience such as orientation and training in the use of distance education technologies increase online course completion. Looking beyond the classroom, Carr (2000) suggested online learners leave their courses for the same reasons as face-to-face students but they do so more frequently due to having more responsibilities in juggling family, work, and school.
Other variables have been shown to be significant contributors to understanding student performance in online classes. Mathes (2003) showed age, marital status, and academic intent to pursue a degree such as the associate of arts (A.A.), the associate of science (A.S.) or the associate of applied science (A.A.S), or certificate, as being statistically significant variables towards predicting student success in online courses. She also reported on gender, number of dependents, employment status, and full-time versus part-time student status as other demographic and personal variables. Halsne and Gatta (2002) showed significant relationships between demographic variables (gender, age, marital status, dependents, and family income) and students who enrolled in online courses as compared to those of the traditional on-campus students at the community college level. Johnson (2003) found gender and GPA to be statistically significant variables that distinguished completers from non-completers in an online class.

These studies have shown how prior demographic and personal characteristics impact online completion, but they do not identify ways the technology impacts the student’s motivation to learn within the context of the course, theorizing that motivation to learn can be an important contributor to course completion and performance. Zvacek (1991) observed that the role of motivation in the distance education process cannot be overstated. Prior research has indicated that the lack of motivation is an important contributor to dropout when students study at a distance (L. Visser, 2002). Since motivating elements found in a traditional class, such as group pressure and a familiar learning environment, are often absent in online settings, motivational strategies should be purposefully integrated into the course to enhance learner motivation (Zvacek, 1991).
L. Visser (1998, 2002) conducted research using motivational messages with the goal of contributing to solving the problem of high drop-out rates in distance education. She provided compelling quantitative, empirical evidence that motivational messages with words of encouragement and reminders of due dates for assignments can improve the motivational level and completion of students taking online courses. Visser conducted a pilot study in 1996 sending eight motivational messages to nineteen students. Her main research was then conducted in 1997 at a university in England where she included eighty-one distance education Master’s degree students receiving eight motivational messages. The motivational messages were delivered via regular mail due to the lack of email access at the time. In writing since then, Visser has recommended that research be conducted in using motivational messages in an online environment, observing that many distance education students lose their motivation and do not finish their courses. Since motivational problems of distance learning students may go undetected, student completion rates may be positively influenced with motivational messages that are short, simple, and affordable.

Student motivation is particularly necessary in an environment where technology may be perceived as a replacement for human presence in instruction (Glahn & Gen, 2002). Representing a perspective that is spreading among community college educators, Milliron envisions that technology will play a crucial role at community colleges, observing the “human touch isn’t necessarily about not using technology – it’s about leveraging it in a way where the human touch can be improved” (Mooney, 2008, p. B9). Chickering and Ehrmann (1996) reviewed best practices from an instructional perspective in teaching with technology. One best practice that they described was frequent student-
instructor interaction to enhance motivation, encourage persistence and success, and develop a strong academic support system. Workman and Stenard (1996) identified self-esteem as a specialized need of the online learner based on open-ended interviews with 60 distance learning students. Through interviews many students stated that they needed personal support when coping with stressful setbacks during their course. “Faculty must be encouraged to provide positive feedback to the students whenever possible and appropriate. A periodic note of encouragement or a telephone call to the student can have monumental impact on a student’s self-confidence and motivation” (Workman & Stenard, 1996, p. 7).

Faculty-student interaction is an essential element for many students in reaching their educational goals. Faculty-student interactions, which include formal and informal experiences whether it is inside or outside of the classroom, are crucial to the academic continuation and course completion of students. This study proposed to use motivational-based messages to determine whether a human touch incorporated into an online course would positively impact course completion and performance.

**Purpose Statement**

The purpose of this study was to investigate the impact of motivational messages on student performance, specifically, course completion and grade earned, in a community college course offered in an online format during the spring 2009 semester, controlling for demographic and educational variables known to impact completion. Situated at one community college, this study used an experimental design. Students enrolled in 12 online liberal arts and science (LAS) and business classes were randomly
assigned to a treatment group or a control group within each class. Students in the treatment group received five emailed motivational messages sent from the instructor at key points during a semester-long online course.

The theoretical framework for this study was the Attention, Relevance, Confidence, and Satisfaction (ARCS) model developed by Keller (1987). The ARCS model is a problem solving approach that is intended to enhance the learning environment to stimulate and sustain students’ motivation to learn and therefore improve course completion and final grade. This model offers four constructs that represent the components of motivation: Attention, Relevance, Confidence and Satisfaction. The Course Interest Survey (CIS) developed by Keller has been used in prior empirical studies to measure student motivation through the four ARCS elements. Gabrielle (2003) using the web-based CIS instrument in her study, showed scores that resulted in a .81 Cronbach’s total reliability alpha. Huett (2006) also used the web-based CIS instrument and his scores were found to have a total Cronbach’s alpha of .93.

According to Keller (1983), motivation consists of the amount of effort a person is willing to exert towards a goal. The motivational model associated with ARCS is focused on connecting instruction to the goals of the learner by providing stimulation and appropriate levels of challenge and by influencing how the learners will feel following successful goal achievement or following failure (Keller, 2006a). To provide the motivational stimulation in an online class, this study drew on the work of L. Visser (2002) who used the ARCS model to develop the Motivational Messages Support System (MMSS). The MMSS is a series of short motivational messages sent from the instructor to students, timed to arrive at critical moments during a course. Motivational messages
are communications that touch upon a student’s sense of belonging to a class whereby the instructor expresses an understanding of a student’s difficulties and shows confidence and interest in them (Simpson, 2003).

The ARCS model focuses on using motivational messages that are intended to enhance faculty-student interaction, which leads to enhancing student motivation. L. Visser’s (1998) MMSS study was shown to increase completion rates in distant learners from 34% to 61%. Although the ARCS model has had limited association with online research, it has been shown to influence student motivation positively in other learning environments (Gabrielle, 2003; Huett, 2006; J. Visser, 1990).

Research Hypotheses

The main focus for this study was: What impact do motivational messages have on student motivation and performance (course completion and grades) in a community college online course? Three research hypotheses addressed course completion and course performance for students who were randomly assigned to a treatment or a control group, with both groups receiving content-based online instruction and the treatment group also receiving five motivational email messages.

1. Students in the experimental group showed a significant difference from the control group in successful course completion, defined as students receiving a final grade of A, B, or C.

2. Students in the experimental group showed a significant difference from the control group on final course grade.

3. Students in the experimental group were significantly different from the control group on motivation.
a. For students in the experimental group, higher levels of motivation predicted final course grade.

b. For students in the experimental group, higher levels of motivation predicted successful course completion.

**Significance of the Study**

This study proposed to assess the impact of motivational messages as a method of improving student performance in online courses. The study was accomplished by using motivational messages as a means of enhancing instructional support, specifically support provided by an instructor to individual students participating in an online course. Results gave community college faculty and administration insights into the problem of non-completion in online courses and provided new knowledge on the effectiveness of instructor-student e-mail communication as a means of encouraging course completion and enhancing academic performance. Although this study was conducted at one community college, many institutions in higher education experience similar problems with online student non-completion and look for low-cost, non-time-taxing solutions towards improving student performance in these classes. This study was seen as an exploratory investigation that should be repeated in additional classrooms to determine how motivational messages apply to other subject areas at community colleges.

This study was important to the field because the explosion in online education is expected to continue for at least the next 10 years (Carnevale, 2004). As students continue to pursue life-long learning through community colleges, course delivery via technology will enable students to access higher education opportunities regardless of geographic, family, and career obstacles. Due to the increased use of the Internet to
deliver courses, high dropout rates in online classes is a problem that needs to be addressed. Online student dropout is heavily front-loaded with almost 30% of students not getting as far as the first assignment and unsuccessful online students lacking an effective support system (Simpson, 2002). Successful online students have been shown to have more effective support networks both informally – from friends, fellow students, or a spouse – and formal – from faculty and the institution. The more networks a student can gain support from, will result in a better chance of successfully reaching their educational goals.

Dropping out of a distance education course may have long-term effect on the student, as they may experience a sense of failure and not return to distance education again (L. Visser, 1998). More students today are in a “learning swirl” (Mooney, 2008, p. B9), where students are returning to educational institutions to upgrade or refresh their skills. In a time when careers are no longer for life and life-long learning is a vital part of success in the workplace, dropping out of an online course may limit a student’s options for future educational opportunities. Online education provides a level of access to those who would not otherwise be able to attend college on campus due to employment, family or geographic barriers (Allen & Seaman, 2006).

Finally, the unique importance of this study is evident in the fact that an exhaustive review of the literature confirmed that, despite the proliferation of online education in community colleges, no empirical studies used the ARCS model for research at the community college level. Chapter 2 cites studies using the ARCS model to improve student motivation, but these studies were situated in universities in the United States and other countries. Applying the ARCS model to community colleges aided in improving
student performance in online courses in community colleges, recognizing that the comprehensive mission of community colleges creates a uniquely important context for online teaching and learning that deserves further examination.

**Definition of Terms**

For the purpose of this study the specific terms used to define key concepts follow:

**Attitude.** Attitude was defined as the act of acquiring and sustaining learner curiosity and interest (Keller, 1983).

**Confidence.** Confidence was defined as the student’s belief or feeling that they will succeed and control their success in the course (Keller, 1987).

**Distance learning.** Distance learning was defined by the United States Distance Learning Association ("United States Distance Learning Association," 2006, p. 1) as an, “education program whereby students may complete all or part of an educational program in a geographical location apart from the institution hosting the program; the final award given is equivalent in standard and content to an award program completed on campus” (p. 1).

**Faculty-student interaction.** Faculty-student interaction was defined as faculty initiated communication via email which then will result in prompting a student reply and encouraging online dialog between the student and the faculty member.

**Final grade earned.** Final grade earned was defined as the final course grade as reflected by a student’s transcript at the end of the spring 2009 semester.
**Motivation.** Motivation was defined by Keller (1983, p. 389) as, “the choices people make as to what to what experiences or goals they will approach or avoid and the degree of effort they will exert in that respect.” For the purpose of this study, student motivation will be analyzed by using Keller’s ARCS model elements of Attention, Relevance, Confidence and Satisfaction.

**Motivational messages.** Motivational messages was defined as communications that touch upon a student’s sense of belonging to a class whereby the instructor expresses an understanding of a student’s difficulties and shows confidence and interest in them (Simpson, 2003).

**Online learning or Internet-based learning.** This was defined as learning that is conducted via the Web. Course information is available 24 hours per day, 7 days per week for access on the Internet as compared to meeting at a set time and place for traditional learning.

**Relevance.** Relevance was defined as things which are viewed as instrumental in meeting needs and satisfying personal desires, including goal achievement. Relevance makes the connection between the subject matter being taught and the learner’s need to find the material personally meaningful (Keller, 1987).

**Satisfaction.** Satisfaction was defined as the student feeling good about their accomplishments (Keller, 1987).

**Student performance.** Student performance was defined as a student’s overall result from enrolling in an online class, which relates to student persistence in completing the course or not, and, if the student persists then final course grade.
**Successful completers.** Successful completers were defined as students continuing in a course until the end; they may receive final grades of A, B, or C.

**Limitations**

This study was conducted at one community college in Illinois and the college was selected based on its offering a substantial number of online courses in spring 2009. A community college offering several online courses in the liberal arts and sciences and business areas were needed for this study. Because of the importance of controlling variability that could be construed as treatment effects, an institution that offered many online courses in the same academic department was selected. While the use of a limited number of courses offering similar liberal arts and sciences and business content enhances internal validity, there was the possibility of increasing threats to external validity. The external validity threat arises from the inability to generalize from the setting (college, classroom) where the experiment took place to another setting.

During this study there was potential for internal validity threats related to treatment, such as diffusion, rivalry, resentful demoralization, and compensatory equalization, which are all possibilities in between-group experimental designs (Creswell, 2005). Because this experimental design was completed using online courses, there was no way to predict the relationship among participants, and there was no guarantee that the populations would not communicate with each other and share information regarding their course in social or academic settings, which is the diffusion of treatments. While attempts were made to select courses where minimal interaction was anticipated between students because of the way the courses were designed (with limited interaction between
students), it was not possible to eliminate student-to-student interaction that might be prompted by students acting on their own. For example, if student A was in the control group (not receiving the motivational messages) and student B was in the experimental group (receiving the motivational messages), it was not possible to eliminate the possibility that student B might ask student A for their opinion of email messages sent by the instructor.

Students entered online courses with differing levels of experience or expertise with technical, computer-related skills which could have impacted their confidence and performance in the online class. However, the experimental design and random assignment of the subjects to treatment helped to control this form of selection bias in this study.

With online delivery of a class there are no guarantees that students complete their own work. Individual logins and passwords are utilized by students to help ensure the integrity of the class, but it does not prevent students from sharing information with others or acquiring information unknowingly. Electronic files can be easily copied and shared, which allows for one student to complete the work and then another student to copy the file and then post that same work as their own. If logins and passwords are not stored in a secure location or if they are willingly shared with a friend, then posted, completed work can be accessed and copied, which allows another student to submit work that is not their own. For the purpose of this study, academic honesty was assumed to be practiced by the students and the institution’s academic honesty policy was included on the instructor’s course syllabus for the online class.
Chapter 2

Review of Literature

This review is focused on literature covering topics related to community college student performance in online courses. This review of literature utilized on-campus and online library databases of ERIC, Webcat and EBSCO, to locate books and journals related to the topic. Library resources at the University of Illinois were used extensively, as well as, the researcher’s own community college library sources. Websites were also used and cited to locate current information on online student retention. Proquest digital dissertations proved to be a valuable resource in reviewing other dissertations that relate to the topic. Bibliographies and reference sections of books and articles lead the researcher to other valuable sources.

The review of literature begins with a discussion of the relationship between community colleges and distance education, since community colleges have been a leader in these offerings for a number of years ("Illinois Virtual Campus," 2007). Demographics of community college online students are discussed along with reasons for rising enrollment in these online courses. The next section is on motivation to learn including an explanation of what motivation is and why it is important to study. Popular motivation theories are described to provide a context for the specific motivational model used as the conceptual basis for this study.

This chapter then moves into the relationship between motivation and online learning. Motivational messages are incorporated in this section to show how motivation can be improved in an online atmosphere. In building student motivation to learn, the main theory supporting this study ARCS model by Keller (1983, 1987) is discussed. The
model identifies four major conditions of Attention, Relevance, Confidence, and Satisfaction that need to be met for people to become and remain motivated to learn. This ARCS model provides a conceptual framework for analyzing the impact of motivation on student performance, with performance being defined as course completion and grade earned. Research on faculty-student interaction is then discussed in this chapter as they have been shown to foster student motivation. Another theory that adds support for this study is Rendon’s (1994) validation concept, which places the focus of student success on the active, supporting role of the institution and specifically the instructor. Current research related to online community college students is included at the end of this chapter with emphasis placed on L. Visser (1998) who conducted research using the ARCS model strategies on building student motivation in distance education courses.

**Community Colleges and Distance Education**

The American higher education system has evolved from one that primarily served elite and wealthy white adolescent males to one that provides opportunities for a variety of socioeconomically, ethnically, and intellectually diverse groups (Bower & Hardy, 2004; Rendon, 1994; Rudolph, 1990). Today higher education is not just for traditional college age students, but also for students who are older, working and may have family commitments. Many of these students cannot afford to quit their jobs to attend school full time, which makes distance education a viable option. Society today calls for lifelong learning, but employment and family responsibilities interfere with traditional education (Parker, 2003). This is why adults are seeking other forms of education outside of the face-to-face classroom setting.
The United States Distance Learning Association ("United States Distance Learning Association," 2006, p. 1) defines distance education as an, “education program whereby students may complete all or part of an educational program in a geographical location apart from the institution hosting the program; the final award given is equivalent in standard and content to an award program completed on campus.”

Community colleges in higher education have taken the lead in applying technology to teaching and learning (Bower & Hardy, 2004). There has been a surge in new technologies to accommodate students who want to complete courses outside the physical constraints of a classroom (Cohen & Brawer, 2003). Community colleges have reached out to provide opportunities for working adults to attend college on a part- or full-time basis. Distance learning offered by community colleges has offered working adults an opportunity to fulfill their educational goals by allowing them to complete courses that are more adaptable to their lives. Community colleges also have partnered with business and industry to bring classroom training to the workplace and to customize courses for specific workforce needs. Online education provides a level of access to those who would not otherwise be able to attend college on campus (Allen & Seaman, 2006).

Throughout its history higher education in America has always responded to the needs of a changing population (Duderstadt, 2000). The Morrill Land Grant Acts aided the development of higher education as America expanded to the new frontier and these Acts stressed applied fields of agriculture and engineering (Rudolph, 1990; Thelin, 2004). With the GI Bill of 1944 higher education expanded its mission to serve returning veterans coming home from World War II. These veterans brought a new type of student to colleges who were older and some were married with families (Cohen & Brawer,

Today, the college population is changing once again and this is driving a redefinition of the college student. Only 17% of students enrolled in college today are in the 18 to 22 year old group that is generally thought of as being traditional college student (Duderstadt, 2000). The college students that are of ages 18 to 22, who attend college full-time, who don’t work, and who had few, if any, family responsibilities are a population of students that no longer dominates American postsecondary education (Pascarella & Terenzini, 1998). Today’s college student is becoming more typical of a working adult with a family who participates in courses through the Internet and is seeking an education to improve his or her career. Community colleges report a new enrollment phenomenon in the growing number of students with bachelor’s and other degrees who choose to come back to the community college for re-training to keep job skills current ("American Association of Community Colleges," 2006).

These characteristics of today’s college students are even more prevalent in online learners. The National Survey of Student Engagement (NSSE) ("National Survey of Student Engagement," 2006) Web survey reflected the following differences in characteristics of distance education students from their on-campus counterparts: 70% of distance education students were caring for dependents, half of distance education students worked at jobs more than 30 hours per week, distance education students were older on average, 63% of distance education students were first generation college students compared with 42% of traditional students, and distance education students
generally chose this format for reasons of convenience and being able to work at their own pace.

Online students are more likely to be studying at an associate’s degree institution than their face-to-face counterparts (Allen & Seaman, 2006). “For most students in two-year institutions, the choice is not between the community college and a senior residential institution; it is between the community college and nothing” (Cohen & Brawer, 2003). The profile of the majority of community college online students is of a non-traditional nature suggesting that they are older, employed, attend part-time, experience longer commutes to campus, have dependents at home, and have interrupted their education ("American Association of Community Colleges," 2006; Carr, 2000; Cohen & Brawer, 2003; Diaz, 2002; Dutton et al., 2005; Levine & Sun, 2003). These various factors contribute to reasons that many community college students leave school. Although many factors are beyond the college’s control, some institutional interventions might be helpful in the form of supporting the student during these difficult challenges. According to Cohen and Brawer (2003), the open access policy of community colleges, whereby the institution is always available, may contribute to student withdrawal. Why not leave when the pressures of life intervene? You can always return.

The demands of work and a family make taking on-campus course offerings extremely difficult. Online courses offer students the opportunity to complete courses on their own schedules. This flexibility in learning and submitting assignments from the office or home promotes higher education opportunities (Bickle & Carroll, 2003; Halsne & Gatta, 2002; Lorenzetti, 2005).
Community colleges have been referred to as the people’s college and are known for their commitment to providing access to higher education (Bower & Hardy, 2004). The use of information technology in education contributes to equalizing access to information, education and research, whereby access is no longer restricted to the privileged few. Online education provides a level of access to those who would not otherwise be able to attend college on campus (Allen & Seaman, 2006). “The most significant advantage of computer-mediated learning is access, the degree to which it frees learning opportunities from the constraints of space and time” (Duderstadt, Atkins, & Houweling, 2002, p. 58). Computer-mediated learning as referred to in the previous quote is referencing online learning and is stressing the convenience of anytime-anyplace learning, which is especially important to adult learners with work or family obligations. An increasing number of on-campus students are also using online learning to supplement their traditional classroom experiences by adding the convenience that the online environment provides (Duderstadt et al., 2002).

As students utilize the online learning medium, they will require frequent, effective contact with faculty as their learning develops during the course (Dede, 2000). As Glahn and Gen (2002) explains, this is necessary in an environment where technology is perceived to be a replacement for human presence in instruction and attention must be placed on the better utilization of a different product design so that we can facilitate student achievement. The challenge is not to incorporate learning technologies into current institutional approaches, but rather to change our fundamental views about effective teaching and learning and to use technology to do so (Hanna & Associates., 2000).
Motivation to Learn

Motivation has been defined in many different ways, but one way to conceptualize motivation in the context of learning is to recognize that it is a state that arouses, directs, and sustains human behavior in such a way that it plays a fundamental role in learning (Glynn, Aultman, & Owens, 2005). If two students of identical ability are matched and they are given identical opportunities and conditions to succeed, the motivated person will surpass the unmotivated person in performance and outcome, thus emphasizing the importance of motivation as a critical factor in student success. Difficult to measure because of the intangible nature of the phenomenon, the concept of motivation represents an important aspect of learning that deserves further research.

College environments being more flexibly structured than many high school settings add to the challenge of motivating students to achieve their learning goals and of measuring student motivation. Colleges offer classes during the day and night, off-campus and on-campus, and using a variety of delivery methods. The 100% online environment is now available to students, as well as, the blended or hybrid class format, which includes a mix of some face-to-face meetings with a portion of the work, anywhere between 30% to 79%, being completed online (Allen & Seaman, 2007). This flexibility in completing college classes adds the ease of fitting higher education into busy student lives, but also increases the responsibility that students may feel towards making time for assignments and can wear on their motivation level. Student motivation is an area of discussion in education because societal factors that play a role in motivation are constantly changing. In order to effectively impact student motivation it is essential to understand the factors involved that impact their motivation levels.
When instructors ask questions such as, what can I do to help students successfully complete a course?, or what can I do to encourage students to put more effort into their learning?, they are raising fundamental questions about motivation. Motivation explains why people do what they do, but understanding motivation is much more complex partly because we can neither see it nor touch it (Wlodkowski, 1999a). “Motivation is the natural human capacity to direct energy in the pursuit of a goal” (Wlodkowski, 1999b, p. 7). Since motivation cannot be directly observed or measured, motivation levels must be inferred from what people do. In the educational context, persistence and completion are signals of student motivation to learn (Wlodkowski, 1999b).

Motivation to learn is defined as a person’s tendency to find learning activities meaningful and to benefit from them (Wlodkowski, 1999a). There is substantial evidence that motivation is positively related to educational achievement. People must be motivated to some degree to formally learn anything, however, human variables such as needs, emotions, values, beliefs, expectations, and attitudes interfere with and complicate learning (Wlodkowski, 1999a). Instructors may find it easy to lay the responsibility for lack of motivation on the students. Some instructors have the perspective that students have the right to fail (Wlodkowski, 1999a). Recognition by instructors of the variability in students’ cultures, interests, and perspectives and acceptance of the notion that motivation occurs when learning makes sense or is important to students may be the key to motivating all learners (Wlodkowski, 1999a).

Theories of motivation help explain, predict and influence behavior. If an understanding is created of why students behave the way they do, it may be possible to
change (engage and enhance) their behavior. Numerous motivational theories have been applied to educational contexts and each presents unique and important conceptions of how motivation relates to student learning.

The Attention, Relevance, Confidence, and Satisfaction or ARCS model (Keller, 1983) of motivational design is grounded in expectancy-value theory (Vroom, 1964). In expectancy-value theory effort is identified as the major measurable motivational outcome. For effort to occur the learner must value the task and must believe that he or she can succeed at accomplishing it. Value can be viewed as pride in success or the avoidance of shame in failure or it might also be attributed to the usefulness of the achievement in people’s lives (Stipek, 2002). This theory assumes that people are motivated to engage in an activity if it is perceived to be connected to the satisfaction of personal needs (the value aspect), and if there is a positive expectation for success (the expectancy aspect). Therefore, the learning task needs to be presented in way that is engaging and meaningful to the student and in a way that promotes positive expectations for successful achievement. Motivation is derived by multiplying the value of the learning and the expectancy as evidenced by the extent to which the student expects success. For example, if a student gives a class an expectancy score of zero then motivation will be zero no matter how large a score is assigned for the value. This theory suggests that individuals choose behaviors based on the outcomes they expect and the values they attach to those expected outcomes. The level of one’s willingness to perform a particular behavior is dependent on: (a) the extent to which the individual believes a consequence will follow and (b) the value the individual places on the consequence (Mazis, Ahtola, & Kippel, 1975). The more attractive an outcome is to a person, the more
likely that person will engage in behavior to accomplish that goal. Similarly, as the number of positive outcomes increase, the motivation to engage in the behavior will increase. Keller’s ARCS theory of approaches motivation by making a task more interesting, whereby a person’s effort (which is a direct indicator of motivation) is increased and as a result their performance or actual accomplishment is improved (Keller, 1983).

Researchers with a behavioral orientation to motivation focus on reinforcement theory, which dominated educational literature until the early 1960s. Reinforcement theory views motivation entirely from observable behaviors (Stipek, 1997). This theory is not concerned with beliefs, feelings or aspirations that cannot be directly observed. It utilizes rewards or praise to get students to accomplish goals. Praise serves as reinforcement for most students and includes more than just giving a student the correct answer. These are words of encouragement. It is important to praise students for both effort as well as success (Glynn et al., 2005). Well-administered praise can have positive effects on students’ motivation even when administered by a computer (Stipek, 1997).

Based on an experimental design, Hancock’s (2002) study showed that graduate students exposed to well-administered verbal praise by a professor performed significantly better on exams, spent significantly more time doing homework and exhibited higher motivation to learn in the classroom then did student who received no verbal praise.

Many colleges are using a system of extrinsic reinforcement through assigning grades for work and cumulating grade point averages (GPAs) for a degree or program. This practice is based on the assumption that students strive to learn when they are
externally rewarded for learning or punished for lack of it (Wlodkowski, 1999b). With an extrinsic motivation system the students learn because they want to earn good grades or get a job. One potential problem associated with this system is that students may not develop intrinsic motivation to learn; they may not experience a personal commitment to learning that encourages them to strive to achieve.

The American Psychological Association’s Task Force on Psychology in Education support an intrinsic motivation system to support student learning (Wlodkowski, 1999b). Intrinsic motivation is founded in the natural human tendency to pursue interests and exercise capabilities (Deci, 1996). Motivation that is considered internal focuses on performance of an activity for its own sake rather than for a direct reward. Intrinsic motivation theory is based on the assumption that humans are inherently motivated to develop their intellectual and other competencies, and that they take pleasure in their accomplishments (Stipek, 2002). People accomplish a task because they want to rather than because they have to. Stipek supports this from White’s (1959) defense of intrinsic competence motive suggesting that humans have an intrinsic need to feel competent and that behaviors such as exploration and mastery attempts are best explained by this innate motivational force. As a result, this task can be more motivating and pleasurable when one chooses to engage in it than when it is done for some external reward or purpose. Students are most motivated when they are given choices and have some control over their academic work (Stipek, 2002). Faculty can offer student choices about who they may work with to complete a teamed class assignment, or offer choices about how to complete a certain assignment (whether to develop a table in Word or use a
spreadsheet design in Excel), or even flexibility in what materials they use to complete a task.

Cognitive motivation theorists do not rule out external reinforcements, but they claim that cognitions or beliefs mediate the effect of the rewards (Stipek, 2002). For example, student work hard in a class because their past experience leads them to believe that hard work will be rewarded in the future. A motivated person has beliefs that influence their behavior towards exerting effort or persisting during difficulty. Cognitive theorists want to measure how competent the students believe themselves to be or whether they expect to succeed in a particular situation (Stipek, 2002). A particular form of cognitive theory called social cognitive theory claims that people’s beliefs are filtered through personal memory, interpretation, and biases which impact how they interpret events and develop expectations (Stipek, 2002). This focus of social cognitive theory is on people’s expectations about the consequences of their behavior. For example, a student might not expect to get a good grade for working on a task, even if one was received in the past, if the student thought that the teacher did not like him or her or if the instructor was a hard grader. As a result, the student’s bias about the teacher liking him or her impacts the expectation of the grade to be assigned.

Another focus for educational researchers is the humanistic orientation towards motivation. This idea emphasizes students’ capacities for personal growth, their freedom to choose, and their desires to achieve and excel. This human need is described by Maslow as self-actualization. Building upon Maslow’s theory, humanists explore students’ self-determination, which is their ability to make choices and have control over what we do and how we do it (Glynn et al., 2005). Deci’s (1996) theory of self-
determination, suggests that college students need to feel competent and independent. Encouragement of these feelings is particularly important during a student’s early college experience. Deci explains that intrinsically motivating activities promote feelings of competence and independence. These are factors that help lead to student success in an online class environment.

For reinforcement theorists, motivation is not in the person, but a result of the environment. Other theorists conceptualize achievement motivation as a set of beliefs and values, influenced by experiences and variables in the environment, such as the difficulty of the task. Students often do perform tasks for reasons that are both intrinsically and extrinsically motivated. Most theories allow for changes in motivational behavior and recognize that the context is important (Stipek, 2002). Regardless of the motivational theory adopted, the ultimate goal is to improve student motivation by affecting behavior, which then results in improved learning and performance in the class.

**Motivation in Online Learning**

Students perform better when they are valued as individuals and made to feel they are members of the college community. According to Anderson (1985), taking a personal interest is taken in students can promote persistence. This can be accomplished by helping students manage self-defeat or anxiety, affirming students in terms of their potential, abilities, talents, and skills, and by assisting students with identifying and clarifying their purposes for attending college. Motivation to persist is related to the meaning a student associates with the college experience and how it relates to their future goals and careers (Anderson, 1985).
In today’s Internet-based world, technologies are increasingly becoming part of the learning environment, however human beings continue to have the same motivational requirements in today’s technological world as was present in the past (L. Visser, 2002). Human needs have stayed the same, but the manner in which students are motivated to engage in higher education is changing. Student goals of obtaining an education are conflicted by increasingly demanding and time-intensive life priorities such as work and family. Student motivation is an “increasingly scarce resource desperately sought by faculty and student affairs administrators nationwide, a trait that fuels academic success, engagement, and learning” (Crone & MacKay, 2007, p. 18).

“The element of motivation is the backbone of effective instruction” (Bohlin, 1987, p. 11). Because many of the face-to-face interactions are lost in an online environment, motivating students presents new challenges to faculty. The standard motivation forces found in face-to-face classrooms are absent online (Zvacek, 1991). In face-to-face classes students have a familiar learning environment with an instructor in front of a class teaching, which they have been accustomed to since entering grade school. Online learning is a delivery format which is very different from what students have been used to in education. Social factors of being physically present in a class and group pressure to participate or to achieve in a classroom are harder things to accomplish in an online environment. Online student motivation can vary because of difficulty with course content, challenges with access to technology, difficulties with using technology, feelings of isolation, and poor communication with instructors (Beffa-Negrini, Cohen, & Miller, 2002). Issues with student motivation can fluctuate during the semester too; motivation levels can rise and fall throughout a semester-long course. To increase student
motivation, faculty can foster conditions that increase student engagement in the learning process although recognition of an instructor’s role in encouraging student engagement is not always present in college-level courses. “Higher education seems reluctant to admit that classroom culture plays a critical role in student satisfaction, retention, and learning” (Quay & Quaglia, 2004, p. 1). And yet, if students do not feel comfortable in a class, they are less likely to attend, participate, or seek help. Quay and Quaglia identified eight conditions to increase student motivation. One of those conditions is the importance of creating a sense of belonging in the classroom. Students who feel part of the class community are more connected to the course. Another condition identified to increase student motivation is for faculty to recognize that students look up to and admire their professors. What is said to students – either positive or negative – has an impact on their performance. Palloff and Pratt (2003) contend the virtual student, referring to students who are learning in an online format, need very clear communication and feedback, interactivity and a sense of community, and adequate direction to carry out the tasks required for the course.

Although motivation plays a critical role in distance learning, there is a lack of attention to this topic in the literature on distance education (L. Visser, 2002). Keller (1983) states that the goal of instructional technology is to design effective and efficient instruction, but these criteria exclude a specific concern for motivation. Affective domain considerations, such as learner motivation and communication patterns are often ignored or viewed as afterthoughts (Zvacek, 1991). Quality instruction does not adequately account for motivation. One factor of motivation is the intensity of performance at a task. “People tend to persist longer, or more intensely for a shorter period, at tasks when they
are motivated than when they are not” (Keller, 1983, p. 388). High-quality instructional programs have been found to result in large numbers of students who drop out or procrastinate excessively. Keller’s (1983) discussion emphasizes the importance of motivation as a separate variable in instructional design. He points out that classes can be of high quality and still lack student motivation because many assume that motivation will take care of itself if a class is of good quality.

One method that can be incorporated to foster a supportive learning environment and enhance student motivation in a course is the use of motivational messages. Motivational messages are communications that touch upon a student’s sense of belonging to a class and expresses understanding of a student’s difficulties and shows confidence and interest in them (Simpson, 2003). In distance education classes student motivation problems can go unnoticed and students lack the personal contact experienced by traditional students. As a result, online learners may not receive help to bring about higher levels of motivation when it is needed the most (L. Visser, 2002). Zvacek (1991) stated that the role of motivation in the distance education process cannot be overstated and that prior research has indicated that the lack of motivation is an important cause of dropout when students study at a distance. Motivation as seen by Keller is the “neglected heart of our understanding of how to design instruction” (1983, p. 390).

**ARCS Model of Motivation**

According to Levitz and Noel (1985), retention research at a higher education institution should identify critical interventions and follow students who receive the service, noting whether the intervention has an impact. In an effort to improve student
retention in online courses, L. Visser (1998) developed the Motivational Messages Support System (MMSS). This system offers a series of short motivational messages to students, timed to arrive at critical moments during a course. These messages were based on the Keller’s ARCS model, which defines the four major conditions of Attention, Relevance, Confidence and Satisfaction that need to be met for people to become and remain motivated (Keller, 1987). Keller introduced the ARCS model in the early 80’s to address the question of how to create instruction that will lead to stimulating motivation for students to learn. It is one thing to design learner motivation techniques in a classroom setting where instructors can respond to changes as they happen, but it is a greater challenge to make online learning environments responsive to the motivational requirements of learners (Keller, 1999). According to Bohlin (1987), the ARCS model developed by Keller is “probably the best-known and most complete motivation-based instructional design model in the United States” (1987, p. 11). The ARCS Model of motivation was designed to explore ways of understanding the major influences on student motivation to learn and to develop systematic ways of identifying and solving problems with learning motivation (Keller, 1987). Motivation, according to Keller, refers to “the choices people make as to what experiences or goals they will approach or avoid, and the degree of effort they will exert in that respect” (Keller, 1983, p. 389). Motivation generally refers to what a person will do, whereas, ability refers to what a person can do. People’s ability is a much more stable factor in success at a given task than their motivation. The variability of personal choices and the degree of effort exerted are reflected in motivation levels (Keller, 1983). Motivation is viewed as highly unpredictable and changeable, being subject to many influences (Keller, 1987). No matter
how motivated students are when they begin a course, their motivation to complete the class may diminish due to a variety of factors. “People tend to persist longer, or more intensely for a shorter period, at tasks when they are motivated than when they are not” (Keller, 1983, p. 388). The ARCS Model is a method of improving student motivation and possibly stimulate or even inspire the students’ desire to achieve (Keller, 1987).

As Keller (1999) explains, the ARCS model is a method for improving the motivational appeal of instructional materials and is based on four dimensions of motivation. These dimensions were derived from a synthesis of research on human motivation and are known as attention (A), relevance (R), confidence (C), and satisfaction (S), or ARCS. The ARCS model is an approach that is intended to enhance the learning environment to stimulate and sustain students’ motivation to learn therefore improving retention and course grade. See Figure 1 below which illustrates how the four ARCS elements of Attention, Relevance, Confidence, and Satisfaction relate to building motivation.

![Figure 1. ARCS Model.](image-url)
Each of these four dimensions has its own set of strategies that can be implemented to achieve one of the ARCS’s conditions. See Table 1 (J. Visser & Keller, 1990) for each category with subcategories and process questions.

Table 1

**Motivational Categories of the ARCS Model**

<table>
<thead>
<tr>
<th>Categories and subcategories</th>
<th>Process questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attention</strong></td>
<td></td>
</tr>
<tr>
<td>A.1 Perceptual arousal</td>
<td>What can I do to capture the learner’s interest?</td>
</tr>
<tr>
<td>A.2 Inquiry arousal</td>
<td>How can I stimulate an attitude of inquiry?</td>
</tr>
<tr>
<td>A.3 Variability</td>
<td>How can I maintain the learner’s attention?</td>
</tr>
<tr>
<td><strong>Relevance</strong></td>
<td></td>
</tr>
<tr>
<td>R.1 Goal orientation</td>
<td>How can I best meet my learners’ needs?</td>
</tr>
<tr>
<td>R.2 Motive matching</td>
<td>How and when can I provide learners with appropriate choices, responsibilities and influences?</td>
</tr>
<tr>
<td>R.3 Familiarity</td>
<td>How can I tie the instruction to the learner’s experiences?</td>
</tr>
<tr>
<td><strong>Confidence</strong></td>
<td></td>
</tr>
<tr>
<td>C.1 Learning requirements</td>
<td>How can I assist a positive expectation for success?</td>
</tr>
<tr>
<td>C.2 Success opportunities</td>
<td>How will the learning experience support or enhance the students’ beliefs in their competence?</td>
</tr>
<tr>
<td>C.3 Personal control</td>
<td>How will the learners clearly know their success is based on their efforts and abilities?</td>
</tr>
</tbody>
</table>

(continued)
Table 1 (continued)

<table>
<thead>
<tr>
<th>Categories and subcategories</th>
<th>Process questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction</td>
<td></td>
</tr>
<tr>
<td>S.1 Natural consequences</td>
<td>How can I provide meaningful opportunities for learners to use their newly acquired knowledge/skills?</td>
</tr>
<tr>
<td>S.2 Positive consequences</td>
<td>What will provide reinforcement to the learner’s successes?</td>
</tr>
<tr>
<td>S.3 Equity</td>
<td>How can I assist the students in anchoring a positive feeling about their accomplishments?</td>
</tr>
</tbody>
</table>

Attention is the first condition as an element of motivation and is a prerequisite for learning. A student has to at least be paying attention to a stimulus for learning to occur. Attention is necessary for the learner to focus on the task and this can be maintained by using unexpected or inconsistent event. Attention is aroused when there is a change in the status quo. Three strategies for gaining the student’s attention are: (a) perceptual arousal where attention is gained by the use of novel, surprising or uncertain events, (b) inquiry arousal where information seeking behavior is stimulated by posing questions or having the learner generate questions, and (c) variability which maintains the student interest by varying the elements of instruction (Keller & Suzuki, 1988).

The second category of Relevance addresses the question of, “Why do I have to study this?” After the student’s attention is gained, a student may wonder how the material relates to their interests and goals. If the content is perceived to be helpful in accomplishing one’s goals, then they are more likely to be motivated. Relevance
addresses the connection between the subject matter being taught and the learner’s need to find that material personally meaningful. Familiarity can be used to accomplish this by using examples and concepts that are related to the learner’s experience and values. Another strategy here is goal orientation where the student’s present or future goals are related to the instruction (Keller & Suzuki, 1988).

Confidence, which is the third factor in the ARCS model, can influence a student’s persistence and accomplishment. Especially for distance learners, the fear of failure or inadequacy may be high due to the online learning environment (L. Visser, 2002). Success is not guaranteed in any course, but students need to feel somewhat confident so that the challenges of the course aren’t too difficult (Keller & Suzuki, 1988). To counter these feelings, confidence building strategies can include providing opportunities for students to experience success. Direct intervention by the instructor providing encouragement supports the conclusion that positive expectancies can lead to improved performance and success rates (Keller, 1983).

Satisfaction is the last element in the model. If the learners’ feelings about their accomplishments are good or positive, then they will be more motivated to complete the course (Keller & Suzuki, 1988). This can be in the form of reinforcements or informative feedback on their work. To sustain student motivation, satisfaction must be present and distance learners may need frequent evidence of success. Providing timely, encouraging feedback is an important satisfaction strategy (L. Visser, 2002).

The ARCS model includes a systematic motivational design process which consists of four steps: define, design, develop, and evaluate (Keller, 1987). The define step includes analyzing the problem, analyzing audience motivation and preparing
motivational objectives. Motivational challenges may differ from situation to situation, however the assumption is that the group as a whole will be responsive if an effective set of motivational strategies are employed. The first step in applying the ARCS Model is to classify the motivational problem to be solved. If the problem is one of improving the motivation appeal for a given audience then it is appropriate to use the model. The model is not designed as a behavioral change model for use in solving individual personality problems or in teaching students how to be self-motivated.

The second part of the define step is to complete an audience analysis to identify motivational gaps. In some classes students will be highly motivated for a course due to their interest in the topic or due to external factors that make the course important to them. In other situations, the students’ motivation will need to be stimulated after they enroll in the course. This analysis includes using each of the four ARCS categories to examine potential learner characteristics, for example learner attitudes toward the course and attitudes toward the medium of instruction and instructional materials.

The last part of the define phase is to prepare motivational objectives. The audience analysis should reveal the specific areas of Attention, Relevance, Confidence, or Satisfaction that are most likely to require special attention. It is possible that a balanced focus will be most appropriate when there is no acute problem area. Motivational objectives should identify the behavior, conditions, and criteria that apply. For example a motivational objective might be that by the end of the first chapter all of the students will express confidence that they can finish the class successfully if they work hard.

The design phase generates strategies for accomplishing the objectives and to critically review the strategies to select the best ones to be implemented. Five guidelines
that help accomplish this are that the motivational strategies should: (a) not take up too much instructional time, (b) not detract from the instruction objectives, (c) fall within the time and money constraints of the instruction, (d) be acceptable to the audience, and (e) be compatible with the delivery system (Keller, 1987). “Motivational strategies should stimulate the motivation to learn and not detract from the learning process” (Keller, 1987, p. 7).

The development phase comprises of creating special materials that are required to accomplish the motivational strategies and integrating them into the course. This usually requires revising instructional materials or developing new materials to support the motivational design.

The last step, evaluate, is to assess the motivational outcomes. It is important to base the evaluation of the materials on motivational outcomes, as well as, learning outcomes. Too often decisions about the effectiveness of motivational strategies are based on achievement scores or measures. This is not a good practice, because achievement is affected by many factors, not just motivation. To judge motivational consequences, it is best to use direct measures of persistence, intensity of effort, emotion, and attitude (Keller, 1987).

These four steps support the design of this doctoral dissertation in that this study attempts to use the ARCS model to improve student motivation and performance in an online class. The define step looks at defining the problem where in this study the problem is the potentially high non-completion rate of online students as compared to their face-to-face counterparts. Online students may feel isolated or frustrated and lose their motivation to finish the course. The design phase is applied to this study by
selecting the motivational messages to be delivered five times during the course. This is a strategy to improve online course performance without over-burdening the faculty or adding costs to the course. With only one mailing and the rest of the messages being emailed, the costs are reduced and mass email messages are being sent to the entire class, which saves time for the instructor. During the development step the actual content of the motivational messages are developed so the same message will go out to all students in the experimental group. Then at the final evaluate step the results of sending out the motivational messages to the experimental group will be compared to the control group to determine if there was any impact on improving student performance.

**L. Visser’s ARCS model study with motivational messages.** A study that adds support for this dissertation was conducted by L. Visser (1998) and was based on Keller’s ARCS model. L. Visser looked at to what extent motivational messages are effective in distance education courses. Her motivational study using the ARCS model forms the basic concept of a motivational intervention in the form of short written messages, which are sent to the learner during the course with the goal of maintaining or adjusting the learner’s motivation. The goal of L. Visser’s MMSS study was to enhance the motivation of distance education students to learn, through improving student support. This enriches student support with motivational support in an attempt to decrease drop-out rates.

L. Visser’s (1998) research first began in March 1996 with a pilot study and ended in November to answer the question of whether it was possible to influence the motivation of learners in such a way that they would complete their course(s) successfully. This pilot study was conducted at a well-known university in England using a foundation course (referred to as Course C) for Diploma/MA in Distance Education.
This graduate program consisted of five compulsory or foundation courses and four electives. The foundation Course C consisted of 19 students, which ranged in ages from 28 to 51 with 40 being the average. Eight students were newly registered and 11 had been enrolled before. Learners represented 13 different countries in five continents, with 11 females and 8 males. During the nine month pilot study, five of the 19 students in the course never reacted to the motivational messages nor did these five students submit any work and were considered non-participating students. Eight motivational messages were delivered for this pilot study via regular mail due to the lack of email availability in 1996 in various countries.

The design of L. Visser’s study included: The first motivation communication, as a welcome letter, that was mailed in March. In accordance with the college’s rules, all instructors must send a welcome letter to the learners when they start a course. The content of the letter for this motivational messages study was designed specifically to emphasize gaining the students’ attention and building their confidence, based on the ARCS model. This letter gave details on the instructor’s academic and professional background, provided initial advice on how to tackle the course and invited the course participants to establish contact. The second motivational communication was delivered in April. This too was a letter focusing on encouraging students to plan their course work well and it contained some information about their colleagues in the course. This letter was aimed at gaining attention and building confidence and satisfaction using the ARCS model. The next motivational communication was sent in May to only those students who had not sent any reaction during the first two months of the course. It specifically asked the student to get in touch and was the first communication in the form of a greeting card,
but did not have graphics. This greeting card was designed based on the attention and confidence building concepts of ARCS. In June the fourth communication was mailed in the form of a greeting card with graphics. This was sent reminding students that their first assignment is due now. It also encouraged students to work hard, stressed eventual success, and promised speedy feedback. Based on the ARCS model this card was designed to increase student attention, confidence, and satisfaction in the course. The fifth communication delivered in July was also a graphic based greeting card with text, but was sent only to students who had not submitted work. This card urged students to submit their work and offered help if the students were encountering problems. The message stressed that students should give themselves a chance to succeed. The ARCS based goal here was to gain student attention and satisfaction. The August communication was again a text and graphics greeting card that was mailed to all students indicating that they are well on their way to completing the course. This card also reminded students to submit their next assignment and explained the exam procedure. This message focused on the ARCS components of attention, confidence, and satisfaction. The September greeting card with graphics was sent as a reminder to only students that had not submitted assignments. Students were congratulated in coming so far in the course and the message was aimed at gaining attention and confidence so that students would complete the course. The eighth and last motivational communication was delivered in November as a greeting card. This was a congratulations message to student on completing the exam for the course and focused on building student confidence and satisfaction based on the ARCS model.
At the end of the course, but before the exam results were made public, a questionnaire was sent to the learners to get their opinion on the MMSS pilot study. Ten students sent the questionnaire back and in summary the survey confirmed that motivational messages helped the students to stay in the course. The completion rates for Course C in 1996 with the MMSS pilot study showed that 53% of the students completed as compared to Course C in 1995 wherein 32% of the students completed. A total of 19 students were enrolled in Course C in both years.

This pilot study provided evidence that the use of motivational messages in distance education favorably influenced course completion and that students appreciated the messages. The use of a greeting card design, in which text was reinforced by graphics, was preferred by the students, according to their comments from the end of the course survey. Messages that emphasized that the learners could complete the course successfully and that they belonged to a group that was working towards the same goal was more appreciated than messages that focused the students’ attention to the course.

L. Visser’s (1998) main research was based on results of her pilot study and then expanded to include four courses involving 81 students who received either personalized, collective, or no motivational messages. This research was conducted in 1997 and involved one course with no motivational messages being delivered, thus being used as a control group. Two different courses were used to deliver collective messages and two different courses that were used to deliver personalized messages. One course, Course B, having the largest number of students (27) was divided into two groups, in which one group was sent collective messages and the other group was sent personalized messages.
For the main study a final questionnaire was delivered to the students and two telephone interviews were conducted to see if the messages were appreciated and if so why.

At the end of the research the instructor for Course D had not implemented the personalized messages. As a result only one class in the study used personalized messages and, while the number is small, the results did show a higher completion rate than that of the collective messages. However, with only one class of 14 students receiving the personalized messages more research should be done to verify these results. L. Visser noted in her research that the collective messages are more instructor-friendly since they are prepared and ready to send out thus increasing the chance of successful implementation.

For the MMSS main study, 1997 completion rates were found to increase to 61% (n=64) using the motivational messages as compared to an average completion rate of 34% (n=62) for 1995 and 1996 with no MMSS. This is a statistical significant difference based on the Fisher Exact Test p=.03. For Course B and C, the p-values from the Fisher Exact Test are respectively .015 and .094, which means that when a critical alpha of .05 is applied, the difference is significant for Course B only, and L. Visser concluded that we still can be quite confident that the difference for Course C is not due to chance fluctuations.

L. Visser’s (1998) research also showed that there was an overall improvement in completion rates in first time enrollment as well as in second time enrollment in courses using the MMSS. It was also noted that in courses where the MMSS was not used the overall completion rates were 39% for both courses including the first time enrolled students and the repeaters combined. Evidence showed that MMSS intervention was
effective in increasing completion rates. Students reported in both the final questionnaire and during the course year that the MMSS was important to completion of the course. This researcher recommended additional studies of motivational messages, but with the delivery media being email. L. Visser’s study was conducted using regular mail due to the lack of access to email in developing countries around the world. As access to email is rapidly increasing, she recommended the research be done using e-mail to investigate the use of motivational communications in a virtual environment where rapid feedback is possible. The focus of this proposed dissertation is to extend L. Visser’s (1998) work by using email as the primary delivery medium of the motivational communications in a community college environment.

**ARCS model studies with motivational messages.** Other studies have been done in a variety of educational settings utilizing Keller’s (1987) ARCS model with motivational messages. The following research shows that applying the ARCS strategies to student motivation can have a positive effect on student performance or it could have no effect. Four studies are reviewed here which reflect the ARCS model with motivational messages being implemented have a significant positive influence on student motivation, but two studies that are reviewed show no effect. Reasons for the lack of a positive effect are explained in the review.

J. Visser (1990) used a case study design to study the impact of motivational messages based on Keller’s ARCS model that were delivered to 32 adult learners during a training workshop in the systematic design of instructional materials at a ministry in Mozambique. This instructional material design training course consisted of an eleven and a half weeks, with a total of 20 course sessions that was required with the expectation
of at least 10 hours per week devoted to out-of-class assignments. J. Visser’s study employed motivational messages as a strategy which consists of using messages such that their content has a desirable effect on the learner’s disposition to engage in learning tasks. The format these messages were taking was a letter size sheet of paper folded twice. The messages were typically distributed outside of class between the various class sessions, when the instructor would not be able to influence the learner. The content and the timing of the messages were determined based on the following factors: (a) the student’s progress towards different tasks required, (b) the student’s response to weekly, open-ended questionnaires asking questions like what most severely damaged your motivation while carrying out your assignments, what factors had the most positive influence on your motivation, and what would most urgently require attention at this moment in order to improve the quality of the course?, and (c) evaluation results regarding the student’s performance. This analysis was carried out at least once a week, following the collection of questionnaire data. Some of the messages were designed to be sent out to everyone to reinforce different aspects of the course. Other messages were more personalized based on the student’s circumstances as reflected from the weekly questionnaires. For example, one personal message was directed at a student whose participation in the course was put in jeopardy because of an excessive work load, not related to the class. The student later reported, “It brought tears to my eyes.” The message included a graphic and the following text: “A special message for you. When you are required to do the impossible, you can’t be but frustrated. However, be satisfied with the try you gave it, and with what you know could have been the quality of your work, had you been given proper conditions.” (p. 384).
Content analysis was used for the open-ended responses to the weekly questionnaires and to the open-ended sections of the end-of-course questionnaires. Three end-of-course questionnaires were completed. The use of motivational messages was identified on the questionnaire by using terminology that would not reveal the intended nature of the messages. They were identified as “little notes”, “cards”, or “mail.” The first one asked the participants to rate on a 5-point scale the perceived importance of 16 instructional strategies used in the course. The second end-of-course questionnaire was hidden in an exercise. During the week preceding the last class session students as a home work assignment were asked to think about what media in the course they had been participating in, and how appropriate these media had been from an instructional and motivational point of view. Students were given a list of nine media items to consider in completing this assignment. The third questionnaire was administered anonymously during the last class session and participants were asked to list the five most important things they had learned in this course. An open-ended discussion about the course during the last class session was conducted as a round-table discussion. J. Visser’s research found motivational messages enhanced learning by motivating students to undertake self-directed learning outside of the classroom. This was supported by the feedback from the various questionnaires and the discussion at the end of the course.

J. Visser and Keller (1990) continued the study of motivational messages with 15 adult learners enrolled in a course conducted at the Mozambique Ministry of Education with a field based exploratory case study. All participants were staff members of the Research and Development department within the Ministry of Education. This study was modeled after J. Visser’s (1990) study, which is reviewed above. This was a 10-week
course with 20 class sessions where participants were expected to engage in outside of class activities between class meetings. Written messages were distributed to learners when they were most likely to need an extra impulse to keep going with the class. The content and timing of the messages followed similar criteria used in J. Visser’s (1990) study: (a) the student’s progress towards different tasks required, (b) the student’s response to weekly, open-ended questionnaires asking questions, (c) evaluation results regarding the student’s performance, (d) spontaneous reactions of the student concerning progress, and (e) comments solicited by the instructor in follow-up contacts with the students. These various inputs were analyzed at least once a week using the ARCS model to identity learners’ motivational requirements. Data pertaining to the various inputs were considered collectively, so that whenever possible the motivational messages would respond in a balanced way to the entire range of factors that required attention at that point in the course. This process resulted in messages being distributed on an average of at least two messages per week and timed to coincide with moments when the learner most needed them.

Multiple sources of evidence were used in collecting data about the effect of the ARCS based motivational messages: (a) weekly questionnaires, (b) three end-of-course questionnaires (similar to format used in J. Visser’s (1990) study), (c) open-ended round table discussion lasting 65 minutes in which all subjects participated in, and (d) spontaneous and solicited remarks made by the students. Participants were also observed to determine their reactions to the messages. For example, did they read the messages, would they discuss them with their colleagues, would they indicate they were looking forward to any following messages?
On the basis of observations and on evidence documented from the participants the motivational intervention is considered to have been successful. On one of the end-of-course questionnaires a 5-point scale was used to evaluate the perceived importance of the messages. The scale included the following choices: 1-no or almost no importance, 2-moderate influence on course result, 3-important; not having it would significantly influence the result of the course, 4-very important; not having it would have a dramatic influence on the course results, and 5-extremely important; without it the major course objectives would be impossible. The average mean for the participants was 3.82 (SD = .68), however there was an observation made where the qualitative comments deviated from their numerical ratings. For example, remarks made by participants who rated their perceived importance of the motivational messages as a 2: “They were quite motivating and served to call my attention at every moment of my learning.” “They had a decisive influence.” “Sometimes I felt frustrated, but some of them raised my morale.” One student rated the messages as a 3 and then wrote that the “messages were quite useful. At one moment I had lost courage and wanted to leave the course because of the difficulties I had.”

These messages were designed based on the Keller’s ARCS model of motivational design and upon examination of quantitative and qualitative data the messages were shown to have positive effects on student attitude and performance. Contrary to previous experiences with this course, all participants participated actively in all sessions. J. Visser and Keller (1990) discussed the need for further research on the use of these messages due to the sociocultural differences from Mozambique with other countries. The high emphasis placed on the interest of the individual in counties like the
USA is very different from the social interaction model in Mozambique and other parts of the world. This impacts the ARCS model elements in an environment where these concepts are derived from feelings related to a person’s incorporation in a group, communal, or societal efforts to reach common goals. Also, the researchers point out that research regarding delivery of the motivational messages through different media formats should be explored.

In a more recent investigation, Gabrielle (2003) conducted a study to examine motivation, performance and self-directed learning of undergraduate students using technology to deliver instructional strategies based on Keller’s (1987) ARCS model and L. Visser’s (1998) motivational message support system (MMSS). The ARCS and MMSS serves as the basis for instruction and mass messages designed to improve learner motivation and performance. The study’s sample included 784 randomly selected undergraduate students from 12 courses in a tuition-free, public military school in the Northeast United States where treatment and control groups were randomly assigned. Treatment group students received TMIS (technology-mediated instructional strategy) by email. Each TMIS included motivational messages, a link to supplementary instructional content and a link for completing a survey. A mixed method approach was used to college data, including surveys that were analyzed to measure motivation and self-directed learning. Gabrielle used the CIS (Course Interest Survey) and the IMMS (Instructional Materials Motivation Survey) both developed by Keller, to measure the ARCS model for motivation. All students were asked to complete the CIS to assess motivation as it related to the course and all students were asked to complete the IMMS to measure the effectiveness of the TMIS.
Quantitative findings from Gabrielle (2003) were based on ANOVA tests to determine the effect of the treatment on academic performance. Significant differences (p=.0045) in academic performance were determined between students who accessed the technology-mediated instructional strategies and those who did not. Hotelling’s t-Squared Test and Multivariate Analysis of Variance, which produces four tests: Wilks’ lambda, Pillai’s trace, Hotelling-Lawley trace, and Roy’s greatest root were used for the IMMS and CIS. Differences in motivation were measured for students who received traditional instruction (control) versus those who received traditional instruction and the supplementary TMIS (treatment). On the CIS all four tests returned identical p-values. Univariate t-tests of the ARCS subscores show the greatest difference to be with attention (p=.0008). There is moderate evidence of differences with satisfaction (p=.076), and no differences with relevance or confidence. On the IMMS all four of the Multivariate Analysis of Variance tests returned identical p-values. The means for the IMMS total scores and each of the ARCS subscores reflect significant differences, supporting this study’s hypothesis that students in the treatment group would have greater levels of motivation, as measured by the IMMS.

Qualitative results from the study by Gabrielle (2003) in the form of open-ended survey questions showed that participants said that the TMIS benefited their learning experience. This study showed that Keller’s ARCS model, which was used to design the TMIS, is an effective method for developing strategies of addressing motivational needs of learners. The study also supported the use of systematically designed technology-mediated instructional strategies, indicating they can be an effective means for improving motivation, performance, and self-directed learning of students.
Huett (2006) conducted an experimental design to examine the confidence component of the Keller’s ARCS Model. The study examined the impact of applying confidence building tactics in a course on student performance. The study included undergraduate students enrolled in a for-credit, freshman-level computer course taught online at a Texas university. The researcher conducting this study describes the subjects as being enrolled in a class and makes no reference towards if this class had multiple sections or if this is one large online class. The study was conducted over 5.5 weeks and included 81 students who were randomly assigned to a treatment or control group, with 41 students assigned to the treatment group and 40 students to the control group. Students were assigned to either the control or treatment group using a table of random numbers matched to the last four digits of their student identification number.

The treatment group received confidence tactics through SAM 2003, a software program, where instructional materials involved training simulations of Microsoft Access software and through four confidence enhancing emails delivered on a weekly basis. The control group received none of the confidence building strategies. Huett used two quantitative surveys which were used to measure confidence and motivation: (a) the Course Interest Survey (CIS), which was designed by Keller and based on the ARCS Model to measure student motivation related to the course being taught, and (b) the IMMS to measure the motivational effect of instructional materials developed for a course. Both instruments using a Likert-type scale for responses, found favorable results for the CIS in that the treatment group showed statistically significant gains over the control group in learner confidence on the CIS, but not on the IMMS. For performance, the treatment group outperformed the control group on all eight of the posttest measures.
of the CIS and on the overall aggregate mean performance score of the CIS. Huett recommended more studies to analyze confidence to better understand its relationship to motivation. Also, further studies would determine the best strategies for improving confidence with a variety of delivery systems to choose from, such as paper or Web-based.

The ARCS model is a method for modifying content in a course in a way to increase learner motivation, which will then lead to better student performance in a class. For the ARCS model to be successful it requires the ways in which students and faculty interact to be revised to specifically accomplish the ARCS elements of the model. Interaction within online learning may serve many purposes, but faculty can best use interaction to improve student performance by applying the ARCS model.

Although several studies have been reviewed that show positive results from using the ARCS motivational model, the following two studies discussed have not shown any significant differences in utilizing this model to impact student motivation.

Naime-Diefenbach (1991) using a quasi-experimental design studied whether instructional materials enhanced by the ARCS design could result in higher levels of confidence and attention as measured by Keller’s IMMS and higher learning outcomes. Three sets of instructional materials were used to test for influences on attention and confidence. One set of materials enhanced attention, one set enhanced confidence and the third set was neutral in these respects. Three groups of subjects were used from intact classes, where each group received one of the three sets of materials. The sample was 111 students enrolled in three sections of the Classroom Applications of Educational Psychology class at Florida State University. The materials for the study were a lesson
about key concepts in measurement and testing and were given to the students during one class meeting. The researcher of this study does not identify if all three class sections had the same instructor, but the researcher does identify that the materials distributed to the classes were all self-instructional to aide in the replication of the study. At the beginning of the class students were given about 10 minutes to complete the pretest questions. Students were then randomly assigned to three groups: attention group (n=39), confidence group (n=38), and control group (n=34). All groups were given 45 minutes to read the self-instructional materials. Then the IMMS was administered to all groups. Once the IMMS were collected, the achievement posttest was given to the students.

In testing the hypotheses, Naime-Diefenbach (1991) used ANOVAs to compare treatment versus control groups on achievement and on the ARCS subscales. A hypothesis proposed in this study was that students who completed the revised lesson with enhanced confidence would have a higher total mean score on the confidence subscale of the IMMS, but instead all three groups had almost equal scores on the confidence subscale. A hypothesis that was supported by the study’s results was that students who completed the revised lesson with enhanced attention achieved a higher total mean score on the attention subscale of the IMMS. Another finding was that enhancing confidence and attention did not influence the subscales for relevance and satisfaction. “This is an important finding because it supports the discriminant validity of the IMMS and the categories of the ARCS Motivational Model” (Naime-Diefenbach, 1991, p. 42). The results did not indicate a significant difference of the achievement posttest scores between the two treatment groups and the control group as suggested by the study’s hypothesis.
A similar study was conducted by Moller (1993) to determine if instructional materials enhanced by the ARCS design could result in higher learner confidence and would then be accompanied by increased achievement. Moller only examined the one confidence component of the ARCS model in her quasi-experimental study design which incorporated a pretest and post-test design to measure change in achievement and a post-test only design to measure the confidence variable between the treatment and control groups. Sixty-six students participated wherein 35 students were graduate students at Purdue University and 31 subjects were undergraduate students at Ithaca College. All participants were volunteers and enrolled in either a communications class (undergraduate) or principles of adult education class (graduate). They were not randomly selected from the college population at large and they received minimal course credit for participation. Moller does not give any explanation as to why graduate and undergraduate students at different institutions were selected for this study.

Moller tested the ARCS confidence building strategy using printed, self-instructional materials. Printed materials were chosen because they are widely used as a medium and are reliable. The IMMS was used to measure confidence and then to see if confidence building had any unintended effect on the attention and relevance components. Simple random assignment was used to divide the students into treatment (n=36) or control (n=30) groups. A t-test was conducted for comparing the two groups and it showed no statistical significant difference between the group means. A t-test was also conducted to determine the relationship between achievement and confidence, with achievement being defined as the difference between the pre- and post-test. The results
which are consistent with Naime-Diefenbach’s (1991) study indicated no statistically significant differences between the treatment and control groups.

Moeller suggests several possible explanations for the results of the study. The first possible explanation is that the ARCS model is insufficient for improving learner confidence. It is possible that the strategies necessary for an effect are not included in the confidence component of the ARCS model. However, with several other research studies supporting this ARCS model this is unlikely. Another possibility concerns using college students in one short self-instructional lesson. This lesson ran either 20 minutes for the control group or slightly less than one hour for the treatment group. Since attitudes and beliefs are formed over time and assuming that the longer an attitude is held the stronger it becomes, then it may be unrealistic to assume that a measurable change in a new confidence-related attitude can be detected using a short-term experimental design. In this research another factor is that course grades were unaffected by the outcomes of this experiment. Using the assumption that college students have an overall motivation to complete assignments for a grade benefit, confidence, especially in a non-graded, short-term project may not play a significant role. Basically, the students had nothing to feel unconfident about.

Faculty-Student Interaction

Colleges were originally designed by and for the privileged and some still favor traditional students who come from families where the precedent of attending college is well established (Thelin, 2004). Students not fitting into this classic profile may feel alienated and intimidated by today’s college culture (L. Visser, 1998). Rendon (1994)
claims educators fail to recognize that fear may be the greatest obstacle to student learning and growth. “For nontraditional students, it is important that from the very beginning of their college careers, professors express a sincere belief that students are capable of learning and can be taught” (Rendon, 1994, p. 37). Rendon contends students perform better when they are valued as individuals and made to feel they are members of a college community.

Rendon (1994) conducted a study that examined how new approaches to learning and student development validate minority and non-traditional college students and improve their achievement. Validation is defined as, “an enabling, confirming and supportive process initiated by in- and out-of-class agents that fosters academic and interpersonal development” (Rendon, 1994, p. 44). Rendon’s study involved face-to-face interviews with 132 first-year students at four different institutional settings involving community college and university students. The research showed that while traditional students expressed few concerns about succeeding at college and becoming involved in college life on their own, nontraditional students communicated some doubts about their ability to succeed. She observed that the nontraditional students expected outreach or an intervention to become involved. Rendon observed, “nontraditional students do not perceive involvement as them taking the initiative. They perceive it when someone takes an active role in assisting them” (1994, p. 44). The student focus-group interviews yielded the following conclusions: non-traditional students need active intervention; even the most vulnerable non-traditional student can be transformed into successful learners through validation. A key finding was that when faculty members take the
initiative to validate students academically or interpersonally, students begin to believe they can be successful.

Rendon (1994) found nontraditional students are more likely to succeed when they experience active efforts to validate them on the part of their educational institution. She explained that validation is a prerequisite for student development and is most effective when offered early in the student’s college experience. The institution plays an active role in fostering validation by taking the initiative to reach out to students in an effort to promote the students’ feeling of self worth and active learning. She reported what had transformed nontraditional students into “powerful learners” (p. 37) were incidents where some individual had validated them. These validating agents, such as faculty, took an active interest in students, providing encouragement and affirming them as being capable of doing academic work. Faculty, counselors, coaches, and administrators took an active role in fostering validation of students from their institution. Rendon emphasizes, “faculty need to understand that they are among the most crucial validating agents and that when they validate students they contribute to the transformation of students” (p. 44). Faculty can create a supportive, caring environment without lowering standards so that students can see themselves as capable, “powerful learners” (p. 37). “The idea [of validation] is to unleash the power of learning that is present in all human beings” (p. 48).

Rendon’s (1994) study found that validation, as opposed to involvement had positively impacted nontraditional students. Most White and traditional students can become involved on their own, but nontraditional students expected active outreach and intervention to become involved (Rendon, Jalomo, & Nora, 2002). Rendon (1994)
explained that what had transformed nontraditional students into persisters was that some individual most typically a faculty member had validated them. These validating agents took an active interest in the students and provided encouragement and affirmed them as being capable of doing the academic work. The role of the academic institution is not only to offer involvement opportunities, but to take an active role in fostering participation and validation (Rendon et al., 2002).

Barnett (2006) completed a doctoral dissertation study that examined the extent to which urban community college students' classroom learning experiences with validation predicted integration and whether this in turn predicted their intent to persist. A survey was administered to 333 students enrolled in introductory English courses at an urban Midwestern community college during the spring 2006 semester. Surveys were completed in the middle of the semester and were delivered in a face-to-face class using about 15 minutes of class time. The survey included a 7-point Likert scale where students could respond to a range of agree or disagree responses based on the statement. No previous instruments had been developed to measure students’ perceptions of faculty validation, where faculty provided validating experiences to the student. Barnett’s instrument provided a scale for this purpose measuring the following constructs: (a) faculty validation, (b) intent to persist in college, and (c) integration. The survey also gathered demographic information from the students. Her study also examined the extent to which the validation experiences and integration predicted students’ intent to persist in college.

Barnett’s hypotheses were tested using multiple linear regression involving the examination of possible relationships among faculty validation or its components,
integration and intent to persist. Barnett’s findings indicated that higher levels of faculty validation predicted higher levels of students’ sense of integration and higher levels of both faculty validation and integration then predicted higher levels of intent to persist. Four sub-constructs of faculty validation were important in terms of the degree to which they predicted student integration and intent to persist: (a) students known and valued, (b) good instruction, (c) appreciation for diversity, and (d) mentoring.

Barnett’s research suggests that actions taken by college faculty can make a difference in making students feel integrated and to then express the intent to continue their education. Student perceptions that they were known and valued by faculty was a significant predictor of integration and intent to persist in this study. The motivational messages that will be emailed in this study will be aimed at accomplishing the goal of faculty validation, especially at the sub-construct of students being known and valued.

**Online Research Studies**

The following research studies offer support for the variables chosen in this study. These studies focus on online learners and review variables that other researchers have found contribute to student performance in online learning.

A quantitative, quasi-experimental study by J. Dutton, M. Dutton, and Perry (2005) focused on two objectives: (a) how online students differ from traditional lecture students, and (b) what factors influence performance for online and lecture students. This study was conducted in the fall of 1999 at North Carolina State University using two class sections of CSC 114, Introduction to Programming in C++. The online and the lecture classes were virtually identical. Students used the same website, heard the same
lectures, and completed the same assignments. At the beginning of the semester a survey was administered to all students, which collected information on work and childcare, commuting distance, prior computer experience, attitudes towards various aspects of the course and various demographics. The online section contained 131 students and the lecture section had 152 students enrolled.

Dutton et al. (2005) showed how the two groups of students differed. Online students were older and less likely to be enrolled in a traditional undergraduate program. These students were more likely to be life-long learners, hold a job, and have childcare responsibilities. Online students showed more experience with computers and have longer commutes to campus. These students rate class conflict with work, reducing commuting time, and flexibility in studying as being more important to them as compared with traditional lecture students.

To determine if observed differences are meaningful, statistical analyses of t-tests and chi-square tests were used. The t-tests were used to evaluate differences between averages and chi-square tests were used for differences between proportions when the data is categorical. Any difference with a p-value of 0.05 or less was considered statistically significant and any value less than 0.10 were considered marginally significant. In comparing performance levels for the online and lecture students in Dutton et al. found the online students made significantly higher exam grades and higher course grades than lecture students. However, online status had a significant negative effect on the probability of course completion, dropping the percentage of course completers by 20 points. The academic load variable had a positive effect on probability of completing the course. Students taking more semester hours were significantly more likely to complete
the course, whether they were in a degree seeking program or not. Seemingly students with a light academic load were less motivated to complete the course. In reviewing the results of this study, this researcher has included many of the same variables used here to add further support for their use as control variables in this investigation of student motivation to student performance in online learning.

Lim (2001) conducted a study to develop a predictive model of satisfaction of adult learners enrolled in an online class. This study’s sample consisted of 235 adult learners who were taking a Web-based course at five institutions during the spring and summer semesters of 1999. Lim focused on adults because they constitute the largest group of online learners due to job and family responsibilities that make full-time, on-campus programs difficult.

These students in Lim’s study were given access to a survey, which contained four parts. The first part was designed to gather background information on the subjects, the second section used a portion of the Computer User Self-Efficacy Scale, the third part explored the learners’ overall satisfaction with their online class and the last section of the instrument used the General Academic Self-Concept Scale. Multiple regression statistics were used to test the hypotheses.

Lim’s study showed that the following variables were statistically significant in developing the predictive model: age, computer training, and computer self-efficacy (described as one’s belief in their ability to use computers and to learn new computer skills). According to the results of the multiple regression analysis, adults with higher computer self-efficacy scores were more likely to be satisfied with their Web-based distance education courses, and they were more likely to take future online courses.
Lim’s study shows the importance of computer self-efficacy to satisfaction, which is one of the ARCS model elements that this study will analyze through the use of motivational messages.

Halsne and Gatta (2002) conducted a quantitative descriptive, comparison study, which utilized frequencies and percentages, linear model tests, multivariate analyses of variance (MANOVA) and t-tests. Learning styles and various demographic variables of community college students taking an online class were compared with face-to-face students. This study was conducted at a community college in the Chicago suburbs during the spring 2001 semester. All students who enrolled in an online class were given by their instructor a web site address to access for participation in the study. Surveys were distributed to 1,302 traditional students, yielding a 100% response rate. These traditional students were taking courses on-campus in a face-to-face format. Online student survey response rate was a 57.9%, where 340 surveys were returned out of 587. Results showed that online students were mainly visual learners as compared to the traditional learners who were mainly auditory or kinesthetic learners. Also, the online learners were shown to spend on the average an hour more per week on classwork than the face-to-face students. There were more women than men in the online courses and the online learners were primarily married or divorced and had children living at home. The age range was 26 to 55 years of age for the Web based student with a total family income of over $40,000 a year, which was higher of the traditional learner. Online learners were typically full-time workers with more education that their face-to-face counterparts.

This study adds research to the body of literature on online learners regarding their characteristics, which in turn then aids in better understanding how community
colleges can help these students to be successful in online learning. This information is important because the better community college’s can identify who their students are, then community college’s can do a better job of having support services in place to help students succeed in online learning.

Muse (2003) conducted a study to predict which students are at-risk in Web-based classes at community colleges and to use that information for retention polices, advising, orientations, training, course activities, and instructional course design. Another goal of this study was to gather information on why students drop online classes at community colleges. Factor analysis produced seven factors that were combined with seven background variables for further analysis. Discriminant function analysis was used to analyze the influence of 14 variables on the dependent variable successful completion of community college online classes. Results of the analysis suggest that grade point average, study environment, age, time since last college class and background preparation were significant factors towards student online success. The technology-related variables like computer confidence, Web skills, and computer skills reflected only a weak explanation towards the success of online students.

The population for this study was 1028 nonduplicated online students at Montgomery College, Maryland, in the fall 2002 semester. Muse collected 276 Web-based surveys with usable data from online students. Also, 22 students who withdrew from an online class were interviewed about reasons for dropping the course. The reason given most often for dropping the class was the student could not obtain, access, or install all of the required learning materials in a timely manner at the beginning of the course. Results indicate that when students need to gather resources at the beginning on an online
class (download files, access software, and install software) they need to do this quickly and successfully to feel comfortable in continuing with the course. When this does not happen, students may drop the class while there is still time to register in another course or get a refund. An implication from this study is to heighten faculty’s awareness to not overwhelm students in obtaining resources at the start of the online class, but instead to recognize the importance of helping students in getting an online class started successfully.

A quantitative study was completed by Mathes (2003) to identify factors that would be useful in predicting student success in online courses in a Midwestern community college during the spring 2002 semester. A logistic regression analysis was conducted to examine course completion while final course grade was analyzed using multinominal logistic regression analysis. Students enrolled in a 16-week online course were asked to participate through an announcement posting in their online course. The announcement contained a link where students would be taken to complete the survey instruments. Students represented enrollment from various disciplines and participation was voluntary. During this spring 2002 semester there were 40 full semester credit courses with 30 different instructors, five of which had never taught an online credit course previously. To measure student success the researcher measured course completion and final course grade. Students who completed the course and received a grade of a C or better were considered to have successfully completed the course. The demographics and personal variables showed the majority of online participants were white, female, and single (never married). The average age was 30 and the average number of dependents was 1.25. Most were employed full-time and were part-time
students with intermediate computer skills. To analyze the data a logistic regression analysis was used to determine if any one independent variable could be used to predict the dependent variable of student success. In addition, a multinomial regression analysis was used to determine if there was a relationship between any of the independent variables and the dependent variable of final course grade. Results identified several variables that predicted student success. Age was found to be a statistically significant predictor where an increase in age corresponded to a decrease in student success. Also single or married students were shown to be less likely to complete an online course than a divorced student. The Academic Intent variable showed students seeking an A.A. or A.S. transfer degree were more likely to succeed in an online course than a student seeking a certificate or attending for other reasons.

A study conducted by Johnson (2003) examined the differences in student characteristics between completers and non-completers in online community college courses, and for students in equivalent face-to-face classes. Additionally, students provided self-reported reasons as to why they did not complete coursework. Student course completion rates were also examined to determine if there was a difference between online and equivalent face-to-face courses. The study was conducted at a rural community college in the Midwest. The sample included 454 community college students; 305 were online students and 149 were face-to-face students. All online students for the Spring 2002 semester were enrolled in 43 different technical and academic transfer classes. The 149 traditional face-to-face students were enrolled in 15 different technical and academic transfer classes during the Spring 2002 semester. The
classes in the face-to-face comparison group are equivalent courses taught online by the same instructor.

Student demographic and enrollment status was downloaded in the software program Excel from the institution’s information management system. The findings showed that completion rates differed significantly, where the face-to-face courses had a 19% higher completion rate than the equivalent online courses. Johnson attempted to contact all non-completers via phone by making a minimum of three phone calls to each student. Johnson was able to contact 65 (56%) of the online student non-completers by phone to ask, “Why did you choose not to complete your online course?” The students’ self-reported reasons for not completing a course showed the following themes. Personal/time was a theme reflected by 34% of students which supports the profile of a community college online student, where personal problems, work conflicts, and lack of motivation or lack of time factor into the drop out decision due to having personal and/or professional commitments in addition to higher education goals. Course design/communication was the next theme reported by 28% of online students in this study. Here students commented about the lack of explanation of course materials or the lack of email or discussion board responses from the instructor. Technology/WebCT tutorial was the next theme reported by 18% of the students. This theme contained issues related to computer, Internet, and the WebCT tutorial. Comments here included problems with attaching documents, posting messages, and uploading and downloading files. The institutional issues theme accounted for 11% of the responses and included statements about advisement, enrollment, class cancellation and drop procedures. The last theme was learning preference accounting for 9% of the responses and included comments about
students’ preference towards face-to-face learning over online learning. Johnson’s (2003) recommendations included the need for further research into the reasons, intentions and motivations behind online student enrollment and persistence.

Summary

This proposed dissertation supports further research needed to determine an effective means of improving student performance, based on course completion and final grade earned, for students taking online community college classes. This dissertation also adds to literature by using Keller’s ARCS model (Keller, 1987) as the theoretical framework to support the use of emailed messages in building student motivation. The focus of this dissertation is to expand upon research already completed in the field of online learning using Keller’s (1987) ARCS model and motivational messages by filling in gaps that other researchers have not addressed to gain a better understanding of how to improve student performance while using an online delivery system for classes. Studies presented in this review of literature present results from data collection that was focused on various aspects of online education, including online education offered in community colleges and other higher education settings. These studies show support for the variables chosen for this study and they point to important gaps that need to be addressed in researching online learning. Table 2 shows a summary of ARCS research studies from the literature as reviewed in this chapter.
Table 2

*ARCS Research Studies*

<table>
<thead>
<tr>
<th>Study</th>
<th>n</th>
<th>Number of Classes</th>
<th>Length of Study</th>
<th>Number of motivational messages</th>
<th>Media used to deliver motivational messages</th>
<th>ARCS subscale(s) studied</th>
</tr>
</thead>
<tbody>
<tr>
<td>J. Visser (1990)</td>
<td>32</td>
<td>1</td>
<td>11.5 weeks</td>
<td>Varied – based on student progress, evaluation results, and responses to weekly questionnaires.</td>
<td>Hard paper copy mailed</td>
<td>Total ARCS</td>
</tr>
<tr>
<td>J. Visser &amp; Keller (1990)</td>
<td>15</td>
<td>1</td>
<td>10 weeks</td>
<td>Varied – average of 2/week; delivered based on student progress, evaluation results, and responses to weekly questionnaires.</td>
<td>Hard paper copy mailed</td>
<td>Total ARCS</td>
</tr>
<tr>
<td>Naime-Diefenbach (1991)</td>
<td>111</td>
<td>3</td>
<td>One-45 minute class meeting</td>
<td>1 set of attention and 1 set of confidence enhanced instructional materials were given to students.</td>
<td>Handouts on paper copies delivered during class meeting.</td>
<td>Attention &amp; Confidence</td>
</tr>
<tr>
<td>Moller (1993)</td>
<td>66</td>
<td>2</td>
<td>20 minutes</td>
<td>One self-instructional lesson with confidence building strategies</td>
<td>Handouts on paper copies delivered during class meeting.</td>
<td>Confidence</td>
</tr>
<tr>
<td>L. Visser (1998)</td>
<td>81</td>
<td>4</td>
<td>9 months</td>
<td>8 messages delivered.</td>
<td>Hard paper copy of letters &amp; greeting cards mailed</td>
<td>Total ARCS</td>
</tr>
<tr>
<td>Gabrielle (2003)</td>
<td>784</td>
<td>12</td>
<td>One semester</td>
<td>Messages were delivered for each new topic or lesson in the course.</td>
<td>Variety – web, PDAs, email</td>
<td>Each subscale individually was analyzed.</td>
</tr>
<tr>
<td>Huett (2006)</td>
<td>81</td>
<td>1</td>
<td>5.5 weeks</td>
<td>4 – delivered on a weekly basis.</td>
<td>Email</td>
<td>Confidence</td>
</tr>
</tbody>
</table>
This study adds to the literature by analyzing the impact of emailed motivational messages. Johnson’s (2003) study identified several factors that may impact a student’s performance in an online course. One of these factors was the lack of email communication from the instructor, which was reported by students who did not complete their online class. This dissertation study will address the issue of email communication by using motivational messages sent via email from the faculty member to improve student completion rates. L. Visser (1998) recommended that research be done to investigate the use of motivational communications using the ARCS model in a virtual environment with rapid feedback, as opposed to mailing the messages through the postal service. Huett’s (2006) study was email based and Gabrielle’s (2003) study included some email messages, along with other technological modes of message delivery, but all other ARCS research studies reviewed used paper documents that were mailed or hand delivered in class as the basis for motivational message delivery.

Similar to this dissertation proposal, Gabrielle’s (2003) study included 12 courses where students were randomly assigned to treatment and control groups. Many of the other ARCS based studies reviewed are based on small numbers (one to four) for classes used in their studies. This study uses 12 online community college courses for the research study. However, Gabrielle’s study was conducted using tuition-free courses at a public military school, which is a different setting, as compared to this study using tuition-based classes at a community college.

Huett’s (2006) research used an experimental design, like this dissertation, but examined only the confidence element of the ARCS model, whereas, this dissertation proposal is analyzing all four elements of the ARCS model. Huett’s study was conducted
at a university over 5.5 weeks, where this proposal is focused on community colleges
during an entire semester of classes. This researcher’s study will use a community college
student population in Illinois while applying Keller’s CIS to measure the impact of
motivational communications in online courses. As discussed in this chapter, not all
studies have shown a positive effect on student motivation using the ARCS model. Both
Naime-Diefenbach’s (1991) and Moller’s (1993) studies were conducted during one class
meeting, which is a short time frame to show a change in students’ motivation. Neither of
these studies addressed all four components of the ARCS model. This dissertation
proposal is based on a full semester of coursework and will analyze all four elements of
the ARCS model to reflect changes in student motivation.

Approximately 38% of registered online students do not submit their first
assignment (Simpson, 2003). Studies show that faculty should take care not to
overwhelm students at the beginning of an online course in locating resources for
coursework. To avoid this, faculty members should begin courses with a supportive
environment that promotes persistence. According to Stipek (1997), participants in an
online class may feel a level of anxiety different from the traditional face-to-face
students. These online students who are combining family and job responsibilities with
mastering the technology required to take an online class often experience higher levels
of anxiety, which can have negative effects on their learning. To address this issue, Keller
(1987), Stipek (1997) and others have shown instructors can utilize communication
strategies to minimize student anxiety in online courses. Communication strategies sent
in the form of motivational messages can be employed in online delivery to increase
student motivation levels without taking up too much instructional time or adding additional costs to the class (Gabrielle, 2003; Huett, 2006; L. Visser, 1998).

Further research is needed to determine a means of improving online student performance in terms of course completion and grades. This study focuses on sending online motivational messages, by email, to online community college students randomly assigned to a treatment or control group within the same course. The research focuses on addressing gaps in the current literature on online education by sending the motivational messages by email, by using a sample of community college students, and by using selected discipline areas for the study. Also, it adds to the literature by supporting the use of motivational messages to improve student performance from Keller’s (1987) ARCS model.
Chapter 3

Methods

This chapter presents the design of the study, including research design and methods, site characteristics, population and sample, operational definitions and measures, data collection procedures, coding of the variables, and data analysis.

Research Design

This purpose of this study was to determine whether motivational communications sent from an instructor to students had an impact on their completion and performance in an online class, with students’ final course grade at the end of the semester. The research design was experimental. Students enrolled in an online community college course were randomly assigned to two groups, an experimental group and a control group. Random assignment, which often considered the most rigorous approach for social science research, is the process of assigning students at random to different groups (Creswell, 2005). For this dissertation study a table of random numbers was used to assign students to the control and experimental groups. All students were assigned a random number, which was generated by using Microsoft Excel’s RAND function. Using this same RAND function in Excel, a table of random numbers was then generated. A random starting point in the table was selected and then numbers were matched from the table to the numbers assigned to the students until half of each class had students identified. These students became the experimental group. The control group was then the remaining half of students on the roster whose random assigned number was not matched by the random table of numbers generated.
This research design used a between-group, true experiment, where the participants were randomly assigned to different conditions (Creswell, 2005). This design included a treatment group of students who received five emailed motivational messages from the faculty member teaching the online course. All messages were delivered electronically to the students’ email accounts within their online course platform of WebCT. The control group of online students did not receive the motivational communications from the faculty member, but did have access to the same information presented in the motivational messages from the college’s website and the course syllabus that was posted online. Therefore, the experimental design did not deprive students of information that was readily available to them via the Internet. This was an important aspect of the study because it was not the intention of the researcher to diminish the learning of any student. Information was communicated to students through direct e-mail communication (experiment group) or posted to the class website (control group) to ensure that students in the control group were not disadvantaged relative to the experiment group. This approach was also important to meeting the requirements of the Institutional Review Board (IRB).

The variable types in this quantitative study included demographic, independent, intervening, and dependent. The independent variable was the motivational communications sent by the online faculty. The two dependent variables were course completion (whether a student finished the class or not), and final course grade. Intervening variables “stand between” the independent and the dependent variables and influence the effects on the dependent variables (Creswell, 2005, p. 123). The intervening variables were the student’s motivation as measured by the CIS instrument. Ten
demographic variables related to student characteristics were: age, gender, student status (full- or part-time), employment, dependents, number of previously enrolled online courses, college GPA, prior education, academic intent, and hours working on online course. These demographic variables were selected based on a review of the literature that revealed a number of related online studies in chapter two (Halsne & Gatta, 2002; Johnson, 2003; Mathes, 2003). A graphic displaying the relationship between variables is shown in Figure 2.

![Figure 2. Variables pertaining to the study of motivational communications on student performance in an online class.](image)

**Site Characteristics**

The location for this study was a community college in southern Illinois selected based on its volume of online enrollment and online course offerings. The selected
institution offered 97 online courses in various departments for spring 2009. Departments were chosen based on the number of online course offerings and the willingness of faculty to participate in this research. Four faculty members were identified who together taught 12 online classes. These 12 classes were in the subject areas of psychology, sociology, and business. One faculty member taught three online sections of General Psychology, another faculty member instructed two online sections of Business Computer Systems and one additional faculty member taught two online sections of Anthropology. By using random assignment and keeping courses within a small number of departments and with a limited number of instructors, the threats to validity were reduced by minimizing factors that may threaten cause and effect between the treatment and outcome where conclusions may be false or invalid (Creswell, 2005).

**Population and Sample**

The population for the study was all online students enrolled at one southern Illinois community college. The sample was then reduced to students in 12 online classes from the Business and Liberal Arts and Science (LAS) Departments during the spring 2009 semester. This community college’s online course schedule was reviewed by the researcher and by a Dean who offered advice regarding classes to include in the study. The Dean made recommendations to the researcher as to which online faculty members would most likely be willing to participate in the research study. Eight online faculty members were contacted requesting to have their online courses participate. Emails were the primary mode of communication and phone messages were also attempted by the researcher to request participation. Four of the eight faculty members replied and granted
consent to participate in the study. Two faculty members were from the LAS department and two were from the Business department. Twelve online classes, which were instructed by one of these four faculty members, were selected from the LAS department and the Business department that was included in this study.

These 12 online classes were from the LAS and Business subject areas and contributed to controlling for differences in instructional practices across different subject matter. When possible, classes with multiple online sections having the same faculty member were included in the study to account for instructor differences in their educational background (experience and formal education) and teaching styles within the online classroom environment.

**Control and experimental groups comparisons.** Statistical tests were used to analyze any differences between the control and experimental groups based on background variables, subject matter (LAS compared to Business), and instructor.

Students in the experimental group showed no significant differences from the control group in the following background variables: age, gender, student status, employment status, number of dependents, number of online courses previously enrolled, GPA, prior education, academic intent, and hours spent working on online course. The following presents descriptive statistics to discuss the student sample by experimental group and control group. Also, tests were performed to determine whether the experimental and control groups differed on the background variables. The results represent 197 students that completed the survey at the end of their online course, where n for the control group was 103 and n for the experimental group was 94. Some questions
were left blank by the students, which accounts for missing data where n did not total 197. These cases were minimal and identified in the text for ease of comprehension.

Table 3 represents descriptive statistics for the variables of age and GPA by control and experimental groups. All students reported their age on the survey, therefore, n=197. Twenty-three students reported that the term the study was conducted was their first semester attending college so they did not have a college GPA to report, or possibly they were uncertain of their college GPA if they had attended college elsewhere. Results of a t-test showed no mean difference between the control and experimental groups for age at an α=.05 level (t=.093, df=195, p=.926) and GPA at an α=.05 level (t=.576, df=172, p=.565).

Table 3

*Frequency Distribution on Age and GPA by Group*

<table>
<thead>
<tr>
<th>Control Variable</th>
<th>n</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>103</td>
<td>18</td>
<td>51</td>
<td>28.38</td>
<td>8.7</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>94</td>
<td>17</td>
<td>62</td>
<td>28.26</td>
<td>10.0</td>
</tr>
<tr>
<td>Both Groups</td>
<td>197</td>
<td>17</td>
<td>62</td>
<td>28.32</td>
<td>9.3</td>
</tr>
</tbody>
</table>

(continued)
Table 3 (continued)

<table>
<thead>
<tr>
<th>Control Variable</th>
<th>n</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>93</td>
<td>1.90</td>
<td>4.00</td>
<td>3.27</td>
<td>.52</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>81</td>
<td>1.70</td>
<td>4.00</td>
<td>3.22</td>
<td>.54</td>
</tr>
<tr>
<td>Both Groups</td>
<td>174</td>
<td>1.70</td>
<td>4.00</td>
<td>3.24</td>
<td>.53</td>
</tr>
</tbody>
</table>

Table 4 shows frequencies on gender, with no missing data. The percentage distribution of males and females was 67% for the total group of students as well as the control and experimental groups. A Chi-square test to determine association between gender and treatment showed no significant results ($\chi^2 = .000$, df=1, p=1.00).

Table 4

*Frequency Distribution of Gender by Groups*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
</tr>
<tr>
<td>Control Group</td>
<td>34</td>
<td>33%</td>
<td>69</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>31</td>
<td>33%</td>
<td>63</td>
</tr>
<tr>
<td>Both Groups</td>
<td>65</td>
<td>33%</td>
<td>132</td>
</tr>
</tbody>
</table>

Table 5 represents frequencies on student enrollment status as full- or part-time and by employment. Student enrollment status includes responses from all 197 students completing the survey. The employment status variable was missing three responses where questions were left blank, where students possibly missed the question, or possibly where students were uncomfortable or unwilling to provide an answer. Chi Square tests
measuring association between enrollment status and the experimental and control group was not significant ($\chi^2 = .993, \text{df}=1, p=.319$) and on employment status was not significant ($\chi^2 = .457, \text{df}=1, p=.499$).

Table 5

*Frequency Distribution of Enrollment Status and Employment Status by Groups*

<table>
<thead>
<tr>
<th>Control Variable</th>
<th>Full-Time</th>
<th>Part-Time</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
</tr>
<tr>
<td>Enrollment Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>62</td>
<td>60.2%</td>
<td>41</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>49</td>
<td>52.1%</td>
<td>45</td>
</tr>
<tr>
<td>Both Groups</td>
<td>111</td>
<td>56.3%</td>
<td>86</td>
</tr>
<tr>
<td>Employment Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>57</td>
<td>55.9%</td>
<td>45</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>46</td>
<td>50.0%</td>
<td>46</td>
</tr>
<tr>
<td>Both Groups</td>
<td>103</td>
<td>53.1%</td>
<td>91</td>
</tr>
</tbody>
</table>

Table 6 shows the frequency of dependents by groups. One student in the experimental group did not answer this question, providing the total n of 196. The largest percentage of students across all groups indicated they had no dependents, with the next largest having one and so forth through the last option of five dependents or more. A Chi-square test of association between the control and experimental group and number of dependents showed no significant association ($\chi^2 = 2.443, \text{df}=5, p=.785$).
Table 6

*Number of Dependents by Groups*

<table>
<thead>
<tr>
<th>Dependents</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
<th>Both Groups</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
</tr>
<tr>
<td>0</td>
<td>40</td>
<td>38.8%</td>
<td>35</td>
<td>37.6%</td>
<td>75</td>
<td>38.3%</td>
</tr>
<tr>
<td>1</td>
<td>25</td>
<td>24.3%</td>
<td>29</td>
<td>31.2%</td>
<td>54</td>
<td>27.6%</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>17.5%</td>
<td>17</td>
<td>18.3%</td>
<td>35</td>
<td>17.9%</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>10.7%</td>
<td>7</td>
<td>7.5%</td>
<td>18</td>
<td>9.2%</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>5.8%</td>
<td>4</td>
<td>4.3%</td>
<td>10</td>
<td>5.1%</td>
</tr>
<tr>
<td>5+</td>
<td>3</td>
<td>2.9%</td>
<td>1</td>
<td>1.1%</td>
<td>4</td>
<td>2.0%</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100%</td>
<td>93</td>
<td>100%</td>
<td>196</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 7 shows the frequency of student responses on four variables having to do with prior educational experience: the level of prior education, the level of academic intent, weekly hours spent on online classes, and online classes with previous enrollment. There were no missing data for any of these four educational variables, hence the number of responses is 197 for all variables. Approximately 90% of the students indicated they had finished high school or a higher level of education, with high school being the option selected more frequently by the largest group of students across all three groups. Over half of the experimental and control groups had finished high school as their highest level of education. A Chi-square test of association between the control and experimental group and on level of prior education showed no significant association ($\chi^2=2.114$, df=6, p=.909).
For the academic intent variable the AAS degree had the highest percentage response across all three groups, which indicates students seeking a two-year degree to prepare for employment or to be re-trained for career placement. The second highest academic intent option was the AA or AS degree, which usually refers to students seeking to transfer to a 4-year institution. A Chi-square test of association between the control and experimental group and academic intent showed no significant association ($\chi^2=1.647$, df=3, p=.649).

Two to four hours per week was the option selected most often by students associated with all three groups when asked about the amount of hours they spent on a weekly basis working on their online class. A Chi-square test of association between the control and experimental group on time spent working on an online class showed no significant association ($\chi^2=10.559$, df=5, p=.061).

For the number of online classes previously enrolled variable, zero was the highest response across all three groups. Approximately 30% of students in all three groups were taking their first online class when enrolled in the class associated with this study and approximately 70% had already taken an online class. A Chi-square test of association between the control and experimental group and number of online classes previously enrolled showed no significant association ($\chi^2=5.780$, df=5, p=.328).
<table>
<thead>
<tr>
<th>Educational Variables</th>
<th>Control Group</th>
<th>Experimental Group</th>
<th>Both Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
</tr>
<tr>
<td><strong>Prior Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GED</td>
<td>5</td>
<td>4.9%</td>
<td>4</td>
</tr>
<tr>
<td>High School</td>
<td>56</td>
<td>54.4%</td>
<td>58</td>
</tr>
<tr>
<td>Certificate</td>
<td>16</td>
<td>15.5%</td>
<td>11</td>
</tr>
<tr>
<td>Associate Degree</td>
<td>15</td>
<td>14.6%</td>
<td>11</td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>5</td>
<td>4.9%</td>
<td>3</td>
</tr>
<tr>
<td>Master Degree</td>
<td>1</td>
<td>1.0%</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>4.9%</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>103</td>
<td>100%</td>
<td>94</td>
</tr>
<tr>
<td><strong>Hours Spent on Online Class</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 Hrs/Week</td>
<td>16</td>
<td>15.5%</td>
<td>18</td>
</tr>
<tr>
<td>3-4 Hrs/Week</td>
<td>47</td>
<td>45.6%</td>
<td>31</td>
</tr>
<tr>
<td>5-6 Hrs/Week</td>
<td>27</td>
<td>26.2%</td>
<td>26</td>
</tr>
<tr>
<td>7-8 Hrs/Week</td>
<td>10</td>
<td>9.7%</td>
<td>7</td>
</tr>
<tr>
<td>9-10 Hrs/Week</td>
<td>3</td>
<td>2.9%</td>
<td>6</td>
</tr>
<tr>
<td>10+ Hrs/Week</td>
<td>0</td>
<td>0.0%</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>103</td>
<td>100%</td>
<td>94</td>
</tr>
</tbody>
</table>

(continued)
Table 7 (continued)

<table>
<thead>
<tr>
<th>Educational Variables</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
<th>Both Groups</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
</tr>
<tr>
<td>Online Classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previously Enrolled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>30</td>
<td>29.1%</td>
<td>26</td>
<td>27.7%</td>
<td>56</td>
<td>28.4%</td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>15.5%</td>
<td>11</td>
<td>11.7%</td>
<td>27</td>
<td>13.7%</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>14.6%</td>
<td>17</td>
<td>18.1%</td>
<td>32</td>
<td>16.2%</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>18.4%</td>
<td>9</td>
<td>9.6%</td>
<td>28</td>
<td>14.2%</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>7.8%</td>
<td>12</td>
<td>12.8%</td>
<td>20</td>
<td>10.2%</td>
</tr>
<tr>
<td>5+</td>
<td>15</td>
<td>14.6%</td>
<td>19</td>
<td>20.2%</td>
<td>34</td>
<td>17.3%</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100%</td>
<td>94</td>
<td>100%</td>
<td>197</td>
<td>100%</td>
</tr>
</tbody>
</table>

To summarize, the above results represent student characteristics on 10 variables associated with demographic and prior educational experiences presented according to experimental, control, and in some cases the total group. A Chi-square test of association or a t-test for mean differences was conducted on each variable to determine statistical difference or association between intervention group status. Results showed that no significant difference or association for any of the 10 background variables. These statistical results show the control and experimental groups are not different on these 10 variables, which supports hypothesis statement 1 and reflects a strength of the study’s random assignment design. Random assignment of subjects to treatment is the process of assigning students at random to different treatments, and it is a hallmark of experimental designs (Creswell, 2005). When the assumptions of random assignment are met, the groups are expected to not differ statistically on a range of characteristics. In this case,
results show the students do not differ on demographic and educational characteristics of importance to this study when appropriate statistical tests for group differences or associations are applied.

Statistical tests were used to analyze differences between groups by subject (LAS compared to Business) and by instructor (four instructors, with two from each subject area). Results of a t-test showed no mean difference by Business classes between the control and experimental groups for final grade at an $\alpha=.05$ level ($t=1.465$, df=94, $p=.146$) and no mean difference by LAS classes between groups for final grade at an $\alpha=.05$ level ($t=1.598$, df=76, $p=.114$). A Chi-square test of association by Business classes between the control and experimental group on successful course completion showed no significant association ($\chi^2=0.16$, df=1, $p=.900$) and no significant association ($\chi^2=1.382$, df=1, $p=.240$) was shown by LAS classes between groups on course completion. Results of a t-test showed no mean difference by Business classes between the control and experimental groups for motivation based on the overall CIS results at an $\alpha=.05$ level ($t=1.739$, df=99, $p=.085$) and no mean difference by LAS classes between groups for motivation based on the overall CIS results at an $\alpha=.05$ level ($t=.760$, df=86, $p=.449$).

In analyzing the data for differences between groups based on instructors, the instructors are referred to as instructor A, B, C, and D. Results of t-tests showed no mean differences by each of the four instructors between the control and experimental groups for final course grade (Instructor A: $t=1.215$, df=52, $p=.230$; Instructor B: $t=1.364$, df=22, $p=.186$; Instructor C: $t=.899$, df=44, $p=.373$; Instructor D: $t=1.507$, df=48, $p=.138$). Chi-square tests of association by instructors between the control and
experimental group on successful course completion showed no significant association (Instructor A: $\chi^2 = 1.074$, df=1, p=.300; Instructor B: $\chi^2 = .745$, df=1, p=.388; Instructor C: $\chi^2 = .016$, df=1, p=.900; Instructor D: $\chi^2 = .098$, df=1, p=.754). Results of t-tests showed no mean differences by each of the four instructors between the control and experimental groups for motivation based on the overall CIS results (Instructor A: $t= .933$, df=60, p=.354; Instructor B: $t= .175$, df=24, p=.863; Instructor C: $t= 1.371$, df=45, p=.177; Instructor D: $t= 1.723$, df=52, p=.091). The statistical tests support using the control and experimental groups to control for differences by teacher and by subject.

Several similarities were observed between the 12 online classes. All 12 classes were three credit hours, and none required any synchronous discussions (where students are required to be online together at a certain time). Also, none of the classes required any visits to campus to complete any of the coursework. All courses required chapter quizzes to be completed online, and 10 of the 12 courses had a time limit set for these quizzes, which ranged from 30 minutes to 1 hour. All classes required some type of discussion posting, with some requiring postings on a weekly basis and some requiring postings on topics or chapters as they were covered by the instructor.

Whereas the classes demonstrated a great deal of similarity in their design, some variation was observed between the classes as well. The classes varied in the type of assignments that students were required to post to complete the course, with three courses requiring essays, nine classes requiring that students answer questions posed by the instructor on a weekly basis, two classes requiring viewing videos online, and two classes requiring hands-on tutorials to be completed. Table 8 shows a description of the 12 online
classes used in this study with instructor’s identified using letters A, B, C, D to identify the course taught to the instructor.
<table>
<thead>
<tr>
<th>Instructor</th>
<th>Name of Class</th>
<th>Credit Hours</th>
<th>Sections</th>
<th>Type of Assignments</th>
<th>Quizzes/Tests</th>
<th>Discussions</th>
<th>Attendance Policy</th>
<th>Synchronous</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Human Relation in the Workplace</td>
<td>3</td>
<td>1</td>
<td>weekly chapter</td>
<td>17</td>
<td>Yes</td>
<td>Missing more than 3 assignments will result in a drop.</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Small Business Management</td>
<td></td>
<td></td>
<td>assignments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Intro to Marketing</td>
<td>3</td>
<td>1</td>
<td>weekly chapter</td>
<td>16</td>
<td>Yes</td>
<td>Missing more than 3 assignments will result in a drop.</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>assignments, videos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Business Computer Systems</td>
<td>3</td>
<td>2</td>
<td>weekly chapter</td>
<td>12</td>
<td>Yes - 3 postings/ week</td>
<td>Must access course at least every 7 days or student will be dropped.</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>assignments, writing assignment, &amp;</td>
<td></td>
<td></td>
<td>weekly chapter</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Office hand-on tutorials</td>
<td></td>
<td></td>
<td>assignments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Intro to Business</td>
<td>3</td>
<td>1</td>
<td>weekly chapter</td>
<td>22</td>
<td>Yes - 3 postings/ week</td>
<td>Must access course at least every 7 days or student will be dropped.</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>assignments, essay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(continued)
Table 8 (continued)

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Name of Class</th>
<th>Credit Hours</th>
<th>Sections</th>
<th>Type of Assignments</th>
<th>Quizzes/Tests</th>
<th>Discussions</th>
<th>Attendance Policy</th>
<th>Synchronous</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Social Problems</td>
<td>3</td>
<td>1</td>
<td>topic assignments, final essay.</td>
<td>11</td>
<td>Yes - at least one per topic</td>
<td>None stated.</td>
<td>No</td>
</tr>
<tr>
<td>C</td>
<td>Cultural Anthropology</td>
<td>3</td>
<td>2</td>
<td>discussions, films, essay</td>
<td>18</td>
<td>Yes - twice per week</td>
<td>May be dropped from class if not posting discussions twice per week.</td>
<td>No</td>
</tr>
<tr>
<td>D</td>
<td>Introduction to Psychology</td>
<td>3</td>
<td>3</td>
<td>Short writing assignment for each lesson responding to questions.</td>
<td>16</td>
<td>Yes</td>
<td>None stated.</td>
<td>No</td>
</tr>
</tbody>
</table>
Student enrollment was reviewed by the researcher to determine if the same student had enrolled in more than one online course that was included in the study; however, duplicate student enrollment was not an issue. If more than three students had been duplicated in an online class then that course would have been removed from the study and replaced with an alternative course. When the classes were selected, one alternate online class was selected, using the same four faculty members. This alternate class was to be utilized if student duplication became problematic. This was to maintain an unduplicated count of online students in the experimental group to receive the motivational messages and in the control group. However, no aspect of this contingency plan was needed since no student participated in more than one online course included in this study.

Measures

Motivation is essential to learning and performance, particularly in technology-mediated environments where students must take an active role in their learning by being self-directed (Lee, 2000). Prior research has indicated that motivation is a variable that explains dropout when students choose to study at a distance (Gabrielle, 2003; J. Visser, 1990; L. Visser, 1998; Zvacek, 1991). Levitz and Noel (1985) claim, retention research at higher education institutions should identify critical interventions and follow students who receive the program or service, noting whether the intervention has an impact.

Keller observed that motivation is the “neglected heart of our understanding of how to design instruction” (1983, p. 390), and this knowledge claim became a focal point of this research. In this study, motivational messages were incorporated into an online
course to provide a means of examining whether they increased student motivation. Motivational messages were communications related to students’ sense of belonging to a class, by expressing an understanding of their difficulties and showing confidence and interest in them (Simpson, 2003). In distance education classes student motivation problems can go unnoticed and, as a result, online learners may not receive timely help that brings about higher levels of motivation when needed most (L. Visser, 2002). Zvacek (1991) argued the role of motivation in the distance education process cannot be overstated.

In conducting this study, the experimental group received five motivational communications from the online instructor, and the messages were aligned with Keller’s (1987) motivational model called ARCS, which stands for Attention, Relevance, Confidence and Satisfaction. Five messages were delivered to students during their online course at critical points of contact, such as the start of the course, at midterm, and pre-exam (Simpson, 2002). More messages were delivered in the first half of the course than at the end to give support to students at the beginning of the course to help ensure a successful start in the course. The delivery of the motivational messages was based on Simpson’s (2002) argument that the incidence of drop out of online students is heavily front-loaded, with almost 30% of students not getting as far as the first assignment and unsuccessful online students lacking an effective support system.

To best accomplish the first condition of Keller’s ARCS model, which is Attention, the motivational messages are a surprise to students. The challenge of sustaining the students’ attention to these messages throughout the course is accomplished by not overstimulating the students with a message at every due date, but
to deliver them at key points in the course with positive, encouraging tones. Messages that support the Relevance element of Keller’s model focus on the goal orientation of the students. To support the Confidence element in Keller’s ARCS model, the messages provide encouragement and help the learner realize that some level of success is possible if effort is exerted. “The fear of failure is often stronger in students than teachers realize. A challenge for teachers in generating or maintaining motivation is to foster the development of confidence” (Keller, 1987, p. 5). To accomplish the Satisfaction element positive reinforcement was provided about students’ accomplishments. For example, on motivational message three out of five the following statement is made: “Keep in mind you have more assignments ahead towards completing the course. So, stay focused on the positive, learn from your mistakes and stick with it!” See Appendices A, B, C, D, and E for the five motivational messages used in this study.

The motivational messages were drafted by this researcher and reviewed by the online faculty members to ensure that content of the messages was appropriate for delivery to the online classes. One message used the word, midterm, and a faculty member suggested the use of, midpoint, instead expressing a concern that midterm implied a midterm test, which was not the case in that online class. All students in the experimental group received emailed messages at the same time. Messages were distributed electronically by the researcher to student email accounts within the online course platform of WebCT. This researcher was granted instructor access to all 12 online classes. Students were required by the faculty member to utilize their WebCT email account for communication during their online class.
Tables 9 through 12 summarize variables, by type, with their assigned codes for data entry and analysis.

Table 9

*Definitions and Coding of Background Variables*

<table>
<thead>
<tr>
<th>Background Variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Continuous variable coded using whole numbers.</td>
</tr>
<tr>
<td>Gender</td>
<td>0=Female and 1=Male.</td>
</tr>
<tr>
<td>Student Status</td>
<td>0=Full-time and 1=Part-time.</td>
</tr>
<tr>
<td></td>
<td>Part-time students were enrolled in less than 12 credit hours.</td>
</tr>
<tr>
<td></td>
<td>Full-time students were enrolled in 12 credit hours or more.</td>
</tr>
<tr>
<td>Employment Status</td>
<td>0=Full-Time (working 40 hours or more during a week)</td>
</tr>
<tr>
<td></td>
<td>1=Part-Time (working less than 40 hours during a week)</td>
</tr>
<tr>
<td></td>
<td>2=Unemployed (not currently employed)</td>
</tr>
<tr>
<td>Number of Dependents</td>
<td>Variable coded as whole numbers from 0 to 5, with 0-4 corresponding to the actual number of dependents and 5 representing 5 or more online classes previously enrolled in.</td>
</tr>
<tr>
<td>Number of online courses previously enrolled</td>
<td>Variable coded as whole numbers from 0 to 5, with 0-4 corresponding to the actual number of online classes previously enrolled and 5 representing 5 or more online classes previously enrolled in.</td>
</tr>
</tbody>
</table>

(continued)
### Table 9 (continued)

<table>
<thead>
<tr>
<th>Background Variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative College GPA</td>
<td>Continuous variable coded as: 0.00 to 4.00 using the institution’s method of calculating cumulative GPA.</td>
</tr>
<tr>
<td>Prior Education</td>
<td>0=GED, 1=High School, 2=Certificate, 3=Associate’s Degree, 4=Bachelor’s Degree, 5=Master’s Degree, 6=Other</td>
</tr>
<tr>
<td>Academic Intent</td>
<td>0=AA/AS, 1=AAS, 2=Certificate, 3=Course Enrollee</td>
</tr>
<tr>
<td>Hours Spent Working on</td>
<td>0=1-2 hours per week, 1=3-4 hours per week, 2=5-6 hours per week, 3=7-8 hours per week, 4=9-10 hours per week, 5=more than 10 hours per week.</td>
</tr>
<tr>
<td>Online Course</td>
<td></td>
</tr>
</tbody>
</table>

### Table 10

**Definitions and Coding of Independent Variables**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group / Control Group</td>
<td>0= Control Group, 1= Experimental Group</td>
</tr>
</tbody>
</table>
Table 11

*Definitions and Coding of Intervening Variables*

<table>
<thead>
<tr>
<th>Intervening Variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td>These variables are measured using Keller’s Course Interest Survey (CIS), which consisted of 34 questions using a 5-point scale, with 1 meaning not true and 5 meaning very true (See Appendix F).</td>
</tr>
<tr>
<td>Relevance</td>
<td></td>
</tr>
<tr>
<td>Confidence</td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
</tr>
</tbody>
</table>

Student motivation level was investigated as a total average measure of all four subscale components and as individual average measures for each ARCS subscale.

Table 12

*Definitions and Coding of Dependent Variables*

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Description</th>
</tr>
</thead>
</table>
| Successful Online Completion | 0=Non-successful completers. Students receiving a final letter grade of a D, F, W or I.  
1=Successful course completion. Students continuing in a class and remaining on the roster to receive a final letter grade of an A, B, or C. |
| Online Course Final Grade | Final class grade was coded as follows: 4=A, 3=B, 2=C, 1=D, 0=F, based on grading policy prescribed by the institution. |

All course grade information was posted by the instructor at the end of the course. This researcher had full access in WebCT to the final course grades.
**Pilot studies.** Two pilot studies were conducted to test the logistics of emailing the five motivational messages and the survey and to gain insight from students on improvements that could be made to the motivational email messages. This pilot study was situated at one rural community college in southern Illinois and was conducted using a quasi-experimental design. A pilot study was conducted in order to find deficiencies in the design of the study that could be addressed before the large scale study began. If the pilot study revealed results lacking in validity or reliability then changes could be made to prevent errors in the main research (Creswell, 2005). The goals of the pilot study were to use results to refine the motivational messages and improve the design and distribution of the email communications and the online survey instrument. The first pilot study was conducted during the summer 2008 semester using two comparable math classes. Two groups of students enrolled in online classes for a semester were examined by comparing one class of students who received motivational messages designated as the experimental group and one class of students who were identified as the control group who did not receive messages. This quasi-experimental design used intact groups of online students and did not rely upon random assignment of students to the experimental and control groups (Creswell, 2005). The experimental group (n=17) received five motivational messages from the online faculty member teaching the course; the control group (n=8) did not.

A second pilot study was conducted during the fall 2008 semester using three online classes. The site for the first and second pilot studies was the same community college. These classes included an accounting course (n=14), a word processing class (n=16), and a class on PowerPoint (n=12). To improve upon the design of this research
study, the second pilot study used an experimental design where half of the students in each class were randomly assigned to an experimental group (n=21) and the other half to a control group (n=21). The experimental group received four motivational messages of the five proposed for the full study; the last message was not delivered because of time restrictions. Adequate time was needed to deliver the online CIS and then to review the results for any changes to the research design before the main study launched in January 2009, and time was not adequate to deliver and analyze results from the fifth message. Even so, the data gathered from the prior pilot study and the first four motivational messages was deemed adequate to inform this research.

Both pilot studies delivered invitations to complete the online CIS to students’ college email accounts. The survey was delivered from the instructor’s account by using SurveyMonkey (www.surveymonkey.com). This approach was used because the researcher felt using an external website might make the students feel comfortable about completing the survey, as opposed to posting a survey to complete inside of the online class platform, which was Angel. Survey results on both pilot studies were low and links to the online surveys in SurveyMonkey were broken in the students’ college email accounts. This phenomenon was discovered when this researcher tested the online survey link in her web based college email account. Before distributing email to students’ accounts, the researcher tested the SurveyMonkey links using her college email account, but did so using Microsoft Outlook to manage her college email and the emailed survey link was fine. The broken links were caused by a conflict between SurveyMonkey and the college’s web based email system. The links were broken, or they were not hyperlinked formatted, so a student could not click on the URL address and be taken to
the survey. The links were valid and could still be used, but would have to be copied and pasted into a browser’s URL box, which was an extra step that most students were not aware of accomplishing.

Results of both pilot studies showed higher student motivation for the experimental group than the control group, according to Keller’s (2006) CIS. Of the four ARCS subscales, the Confidence subscale revealed the largest difference between the average scores for both pilot studies. Table 13 shows a comparison of the control and experimental groups based on mean CIS results and standard deviations. For summer 2008 pilot’s study students completing the survey in SurveyMonkey was n=2 for the control group and n=4 for the experimental group and for the fall 2008 pilot study survey responses were n=12 for the control group and n=14 for the experimental group.

Table 13

*CIS Results From 2008 Pilot Studies*

<table>
<thead>
<tr>
<th>ARCS</th>
<th>Control</th>
<th>Experimental</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Summer 2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention</td>
<td>3.50</td>
<td>.534</td>
<td>3.62</td>
</tr>
<tr>
<td>Relevance</td>
<td>3.78</td>
<td>.672</td>
<td>4.03</td>
</tr>
<tr>
<td>Confidence</td>
<td>3.75</td>
<td>.567</td>
<td>4.53</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>3.83</td>
<td>.787</td>
<td>3.86</td>
</tr>
<tr>
<td>Total ARCS</td>
<td>3.72</td>
<td>.640</td>
<td>4.01</td>
</tr>
</tbody>
</table>

(continued)
Table 13 (continued)

<table>
<thead>
<tr>
<th>ARCS</th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
<th>Experimental</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention</td>
<td>3.49</td>
<td>1.03</td>
<td>3.92</td>
<td>.492</td>
<td>0.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance</td>
<td>4.37</td>
<td>.568</td>
<td>4.60</td>
<td>.402</td>
<td>0.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence</td>
<td>4.15</td>
<td>.537</td>
<td>4.68</td>
<td>.303</td>
<td>0.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>4.35</td>
<td>.331</td>
<td>4.56</td>
<td>.268</td>
<td>0.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total ARCS</td>
<td>4.15</td>
<td>.618</td>
<td>4.45</td>
<td>.367</td>
<td>0.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results of the two pilot studies prompted the following improvements to the experiment: (a) the motivational messages were re-designed to be less text intensive and include more graphics to improve attention, (b) the surveys were delivered inside the online learning platform to avoid complications with external links, which were thought to result in better survey responses and (c) the drawings for gift cards were offered to improve survey completion results.

**Survey reliability.** The CIS was designed by Keller (2006b) with the goal of determining how motivated students are, were, or expect to be by a particular course. The survey was scored by averaging student responses for each of the four ARCS subscales and for the total ARCS score. The response scale ranged from 1 to 5 with a minimum score of 34 and a maximum of 170 for the total scale. There are eight items for the Attention and Confidence subscales and nine items for the Relevance and Satisfaction subscales (see Appendix F). To compute subscale scores at the respondent level, this researcher added each respondent’s answers (1 to 5 on the scale) for each ARCS subscale.
category and then divided by the total number of questions answered in each ARCS subscale. This converted the scores into a range from one to five, which makes it possible to compare performances on each of the subscales to one another.

In its initial development by Keller (2006b), the CIS was tested for internal consistency by administering it to 200 undergraduate and graduate students in the School of Education at the University of Georgia. The Cronbach alpha results for this original work are presented in Table 14, which shows moderate estimates of internal consistency on the ARCS subscales.

Table 14

*Keller’s CIS Internal Consistency*

<table>
<thead>
<tr>
<th>ARCS Sub-Scales</th>
<th>Internal Consistency Estimate (Cronbach α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td>.84</td>
</tr>
<tr>
<td>Relevance</td>
<td>.84</td>
</tr>
<tr>
<td>Confidence</td>
<td>.81</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>.88</td>
</tr>
<tr>
<td>Total scale</td>
<td>.95</td>
</tr>
</tbody>
</table>

Other researchers have used the CIS instrument in online education studies and have reported overall reliability estimates ranging from .81 to .93. Gabrielle’s (2003) study included 784 students at a military school and she obtained an overall Cronbach’s alpha of .81 for the four ARCS subscales on the CIS. Huett’s (2006) study was at a Texas University and included 81 students. He found scores on the CIS to have an overall
reliability alpha of .93, with reliability alphas for individual subscales as follows: attention .80, relevance .83, confidence .80, and satisfaction .83.

The CIS’s Cronbach alpha estimates of internal consistency for a total of 197 participants in this study are shown in Table 15.

Table 15

Current Study’s CIS Internal Consistency

<table>
<thead>
<tr>
<th>ARCS Sub-Scales</th>
<th>Internal Consistency Estimate (Cronbach $\alpha$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td>.84</td>
</tr>
<tr>
<td>Relevance</td>
<td>.82</td>
</tr>
<tr>
<td>Confidence</td>
<td>.67</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>.84</td>
</tr>
<tr>
<td>Total scale</td>
<td>.93</td>
</tr>
</tbody>
</table>

The Confidence subscale showed the weakest estimate; therefore, prompting further statistical analysis. A correlation of all CIS items and a factor analysis was conducted and both showed that question 9 on the survey (“Whether or not I succeed in this course is up to me.”) was not correlated to any other confidence subscale questions at the p<.05 level. When question 9 was removed from the analysis, the Cronbach alpha estimate improved to .72, with all remaining items associated with the confidence subscale showing significantly correlation coefficients at the p<.05 level. Based on this information, question #9 was removed from all further statistical analyses in this study.

The 34 CIS items were subjected to principal components analysis (PCA) in SPSS, where the focus is to reveal any concealed variables that cause the identified
variables to covary (Costello & Osborne, 2005). SPSS was used to analyze ways the variables could be reduced or summarized into smaller sets of factors or components. In the Scree Plot provided by SPSS, there is a clear bend or break point in the shape of the plot at components two and four; therefore, four components were retained. The CIS had statements assigned to the Attention, Relevance, Confidence, and Satisfaction subscales. The PCA analysis was conducted with four components and varimax rotation. The results are shown in Table 16.
Table 16

*Summary of Factor Analysis Results for CIS Items*

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>Component</th>
<th>ARCS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. This class has very little in it that captures my attention.</td>
<td>A</td>
<td></td>
<td>0.720</td>
<td>0.000</td>
<td>0.281</td>
<td>0.270</td>
</tr>
<tr>
<td>8. I do NOT see how the content of this course relates to anything I already know.</td>
<td>R</td>
<td></td>
<td>0.709</td>
<td>0.092</td>
<td>0.141</td>
<td>0.065</td>
</tr>
<tr>
<td>25. I do NOT think I will benefit much from this course.</td>
<td>R</td>
<td></td>
<td>0.639</td>
<td>-0.080</td>
<td>0.176</td>
<td>0.220</td>
</tr>
<tr>
<td>31. I feel rather disappointed with this course.</td>
<td>S</td>
<td></td>
<td>0.632</td>
<td>0.199</td>
<td>0.230</td>
<td>0.200</td>
</tr>
<tr>
<td>11. The subject matter of this course is just too difficult for me.</td>
<td>C</td>
<td></td>
<td>0.619</td>
<td>0.358</td>
<td>-0.038</td>
<td>-0.084</td>
</tr>
<tr>
<td>2. The things I am learning in this course will be useful to me.</td>
<td>R</td>
<td></td>
<td>0.535</td>
<td>0.119</td>
<td>0.459</td>
<td>0.385</td>
</tr>
<tr>
<td>6. You have to be lucky to get good grades in this course.</td>
<td>C</td>
<td></td>
<td>0.522</td>
<td>0.075</td>
<td>-0.016</td>
<td>0.018</td>
</tr>
<tr>
<td>7. I have to work too hard to succeed in this course.</td>
<td>S</td>
<td></td>
<td>0.493</td>
<td>0.179</td>
<td>-0.016</td>
<td>-0.096</td>
</tr>
</tbody>
</table>

(continued)
Table 16 (continued)

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>Component</th>
<th>ARCS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. I feel confident that I will do well in this course.</td>
<td>C</td>
<td>.401</td>
<td>.314</td>
<td>.186</td>
<td>.222</td>
<td></td>
</tr>
<tr>
<td>34. I get enough feedback to know how well I am doing.</td>
<td>C</td>
<td>.135</td>
<td>.728</td>
<td>.133</td>
<td>.275</td>
<td></td>
</tr>
<tr>
<td>32. I feel that I get enough recognition of my work in this course by means of grades, comments, or other feedback.</td>
<td>S</td>
<td>.177</td>
<td>.696</td>
<td>.148</td>
<td>.284</td>
<td></td>
</tr>
<tr>
<td>18. I am pleased with the instructor's evaluations of my work compared to how well I think I have done.</td>
<td>S</td>
<td>.293</td>
<td>.659</td>
<td>.169</td>
<td>.031</td>
<td></td>
</tr>
<tr>
<td>14. I feel that the grades or other recognition I receive are fair compared to other students.</td>
<td>S</td>
<td>-.109</td>
<td>.641</td>
<td>.135</td>
<td>.084</td>
<td></td>
</tr>
<tr>
<td>19. I feel satisfied with what I am getting from this course.</td>
<td>S</td>
<td>.301</td>
<td>.518</td>
<td>.435</td>
<td>.232</td>
<td></td>
</tr>
<tr>
<td>30. I find the challenge level in this course to be about right: neither too easy not too hard.</td>
<td>C</td>
<td>.422</td>
<td>.503</td>
<td>.211</td>
<td>.312</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
### Table 1 (continued)

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>Component</th>
<th>ARCS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>27. As I am taking this class, I believe that I can succeed if I try hard enough.</td>
<td>C</td>
<td></td>
<td>.215</td>
<td>.486</td>
<td>.246</td>
<td>.075</td>
</tr>
<tr>
<td>33. The amount of work I have to do is appropriate for this type of course.</td>
<td>S</td>
<td></td>
<td>.318</td>
<td>.475</td>
<td>.210</td>
<td>.270</td>
</tr>
<tr>
<td>23. To accomplish my goals, it is important that I do well in this course.</td>
<td>R</td>
<td></td>
<td>-.153</td>
<td>.209</td>
<td>.731</td>
<td>.010</td>
</tr>
<tr>
<td>13. In this class, I try to set and achieve high standards of excellence.</td>
<td>R</td>
<td></td>
<td>-.055</td>
<td>.266</td>
<td>.676</td>
<td>.186</td>
</tr>
<tr>
<td>15. As a student in this class, I am curious about the subject matter.</td>
<td>A</td>
<td></td>
<td>.430</td>
<td>.070</td>
<td>.656</td>
<td>.264</td>
</tr>
<tr>
<td>16. I enjoy working in this course.</td>
<td>S</td>
<td></td>
<td>.429</td>
<td>.232</td>
<td>.575</td>
<td>.380</td>
</tr>
<tr>
<td>12. I feel that this course gives me a lot of satisfaction.</td>
<td>S</td>
<td></td>
<td>.384</td>
<td>.267</td>
<td>.554</td>
<td>.396</td>
</tr>
<tr>
<td>29. My curiosity is often stimulated by the questions asked or the problems given on the subject matter in this class.</td>
<td>A</td>
<td></td>
<td>.254</td>
<td>.347</td>
<td>.520</td>
<td>.336</td>
</tr>
</tbody>
</table>

(continued)
Table 16 (continued)

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>Component</th>
<th>ARCS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>28. The personal benefits of this course are clear to me.</td>
<td>R</td>
<td>.322</td>
<td>.302</td>
<td>.508</td>
<td>.244</td>
<td></td>
</tr>
<tr>
<td>20. The content of this course relates to my expectations and goals.</td>
<td>R</td>
<td>.401</td>
<td>.225</td>
<td>.479</td>
<td>.385</td>
<td></td>
</tr>
<tr>
<td>26. I often daydream while in this class.</td>
<td>A</td>
<td>.387</td>
<td>.078</td>
<td>.460</td>
<td>.085</td>
<td></td>
</tr>
<tr>
<td>21. The instructor does unusual or surprising things that are interesting.</td>
<td>A</td>
<td>.055</td>
<td>.056</td>
<td>-0.010</td>
<td>.779</td>
<td></td>
</tr>
<tr>
<td>10. The instructor creates suspense when building up to a point.</td>
<td>A</td>
<td>.080</td>
<td>.132</td>
<td>.197</td>
<td>.757</td>
<td></td>
</tr>
<tr>
<td>1. The instructor knows how to make us feel enthusiastic about the subject matter of this course.</td>
<td>A</td>
<td>.158</td>
<td>.233</td>
<td>.248</td>
<td>.709</td>
<td></td>
</tr>
<tr>
<td>24. The instructor uses an interesting variety of teaching techniques.</td>
<td>A</td>
<td>.075</td>
<td>.327</td>
<td>.273</td>
<td>.686</td>
<td></td>
</tr>
<tr>
<td>5. The instructor makes the subject matter of this course seem important.</td>
<td>R</td>
<td>.171</td>
<td>.433</td>
<td>.360</td>
<td>.498</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
Table 16 (continued)

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>Component</th>
<th>ARCS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. The students actively participate in this class.</td>
<td>R</td>
<td></td>
<td>-.073</td>
<td>.379</td>
<td>.192</td>
<td>.385</td>
</tr>
<tr>
<td>17. It is difficult to predict what grade the instructor will give my assignments.</td>
<td>C</td>
<td>.371</td>
<td>.344</td>
<td>- .298</td>
<td>- .033</td>
<td></td>
</tr>
</tbody>
</table>

Eigenvalues

|                      |          | 11.828 | 2.542 | 1.882 | 1.398 |

% of variance accounted for

|                      |          | 35.8% | 7.7%  | 5.7%  | 4.2%  |

Interpretation

<table>
<thead>
<tr>
<th></th>
<th>Interest</th>
<th>Feedback</th>
<th>Goals</th>
<th>Instructor Techniques</th>
</tr>
</thead>
</table>
For the purpose of this analysis, factor loadings of .40 and over are in italics and shaded. Costello and Osborne (2005) consider .40 as the minimum loading for social services research and they suggest if an item is less than .40 it may either not be related to the other items or it may suggest an additional factor that should be explored. Crossloadings are also in italics, which is an item that loads at .32 or higher on two or more factors (Costello & Osborne, 2005). There were two items in the PCA that contained crossloadings.

The factor loadings did not support Keller’s (2006a) ARCS subscales. This research study was based on a population that was unique to the ARCS model and to using the CIS instrument to measure student motivation. This study was based at a community college and was conducted entirely online. These two elements made this study different from other studies that used the CIS instrument to measure motivation and contributed to the ARCS subscales not being supported by the factor analysis. Huett’s (2006) ARCS study was online using emailed motivational messages, but was conducted at a Texas University. Gabrielle’s (2003) study using ARCS and the CIS did utilize email messages, but at a private military school. All other studies using the ARCS model were conducted with printed copies or handouts (no email was included) and were located at universities (Moller, 1993; Naime-Diefenbach, 1991; L. Visser, 1998).

The researcher individually reviewed the CIS statements and highlighted similar words or phrases in each of the four components where the factor loading were the highest. Four categories were determined by aggregating similar ideas together. The factor loadings, as interpreted by the researcher, revealed the following constructs:

(a) Interest, referring to the interest level of the student in the online course,
(b) Feedback, referring to the level of feedback provided to the student by the instructor during the online course, (c) Goals, referring to the student’s goals for taking this online course, and (d) Instructor Techniques, referring to the teaching techniques used by the instructor in the online course. These four emergent constructs of Feedback, Instructor Techniques, Goals, and Interest (FIGI) as supported by the factor analysis results were used for all further statistical analyses.

Data Collection

To implement this experimental design, permission was granted by the institution and faculty agreement was obtained to conduct the study, including coordinating the delivery of the motivational messages. Individual student permission was also granted via email, where students received an attached consent agreement and were asked to reply to grant their permission to participate in the study. The motivational messages were written by the researcher and then reviewed by the online faculty members before being delivered to the students in the experimental group. All five motivational messages were distributed electronically by the researcher. The researcher was allowed granted full access to all 12 online classes as a co-instructor. Using the assigned co-instructor’s WebCT email account, all five motivational messages were distributed to students’ email accounts within the online learning platform of WebCT.

The first motivational email was delivered on February 4, 2009, which was based on the 10th day class rosters to include any late additions to the class or students dropping making schedule changes. This emailed message (see Appendix A) was entitled “Class Success” and included an embedded graphic to relate to the students’ goal towards
success in their online class. The graphic was included in the email so the students were not required to download or open any files. When the student opened the email message, the graphic and the follow text message appeared: “The road to success may be filled with bumps and curves, but through hard work and determination this road will become smooth and straight. I look forward to working with you and helping you succeed in your online class!” The message was included to have students realize that faculty members recognize that completing an online class may not be easy and that the instructor is willing to help students in succeeding in their online class.

The motivational parts of this first email included general goodwill building statements about benefits of the course and strategies on how to succeed. Students should have found the email to be a surprise to capture their attention, with the goal of the email being to boost confidence in preparation for the beginning phase of the online course (Keller, 1987).

The second motivational message was emailed on February 13, 2009 as an online greeting card after the fourth week of classes. This email included a link for students to click on so they could view the online card. This message was animated with humorous graphics and music to get the students’ attention (see Appendix B). The text message with the greeting card offered advice to students who might be struggling with the course on how to get on the right track. The hurdle of submitting some of the first assignments is the reason for a substantial number of withdrawals (Simpson, 2003).

The third motivational message that was e-mailed to the students was sent after the sixth week of classes on March 1, 2009. This was a text message with a graphic that was sent directly in an email message with nothing to open or download (See Appendix
C). This message informed students of the importance to review the posted comments on their work provided by the instructor, as this will aid towards improving in the course. The faculty told students that they have more assignments to complete in the course and that they should stick with it!

The fourth emailed motivational message (see Appendix D) was timed to arrive on March 13, 2009, which was midterm in the course and included a congratulations message for the students continuing with the course with a motivating quote, “There is no challenge too great for those who have the will and heart to make it happen.” This message was designed to have more visual appeal with a graphic and color, along with text. This message was aimed at capturing the student’s interest more so than just a textual email. Following the study of L. Visser (1998) who asked students which message they liked the most and finding that her last message was the most popular because it contained more pictures than text, this researcher provided a message that offered an appreciation for the students’ efforts at submitting assignments. Students were reminded that they had reached the halfway point in their online course.

The last motivational message (see Appendix E), like message four, offered text and graphics and was timed to arrive on April 10, 2009, which was after week 11. There was a variety of photos in this message with the intent of having the message appeal to a wide variety of students and to show that they are all in this together. This message congratulated students on coming so far in the course and encouraged them to work hard in finishing the class. This message included a reminder of the final date for submitting work in the class.
During week 12 of the course, the CIS instrument (see Appendix F) was sent electronically to all students on April 20, 2009 to determine the impact of the motivational messages. The CIS measured the intervening variables associated with the ARCS theory. There were 34 statements in this questionnaire, with each item using a 5-point scale. Each statement was designed to measure one of the four elements of the ARCS model. The CIS, as opposed to other survey instruments designed by Keller, was selected because its purpose is to collect data on student motivation levels as a result of a specific course, aligning with the purpose of this study. The survey determined if students’ motivation was positively increased by the five communications delivered throughout the course, and, if so, which of the ARCS elements had the most impact. The CIS survey also included ten demographic questions (see Appendix G) to capture the information needed for the background variables. These demographic questions were based on other studies (Dutton et al., 2005; Huett, 2006; Johnson, 2003; Mathes, 2003). In addition, six open-ended questions were included in the experimental group’s survey to gain a better understanding of the students’ reactions to the motivational emails.

In addition to the CIS, data regarding student completion or non-completion of the class and the final course grade was also obtained from the faculty member of each online class. This researcher, as a co-instructor in these 12 classes, had full access to each online course’s gradebook in WebCT. When all grading was finalized at the end of the semester, an email notification was sent from the faculty member teaching the course to the researcher to verify that all grading was complete and the grades as displayed in WebCT was the final course grade.
At the end of the semester, data were analyzed to determine if these messages increased student motivation resulting in improved student performance in an online course. Results were compared between the control and the experimental group.

Data Analysis

For the data analysis the Statistical Package for the Social Sciences (SPSS) version 17 was used. The statistical procedures used to analyze the data are reported according to the research hypotheses. The main focus for this study was: What impact do motivational messages have on student motivation and performance (course completion and grades) in a community college online course? The three research hypotheses below address the impact of motivational messages sent from an instructor to students as the treatment versus the control group of students that participated in a similar content-based online course but without receiving the motivational messages.

1. Students in the experimental group showed a significant difference from the control group in successful course completion, defined as students receiving final grades of an A, B, or C.

2. Students in the experimental group showed a significant difference from the control group on final course grade.

3. Students in the experimental group were significantly different from the control group on motivation.
   a. For students in the experimental group, higher levels of motivation predicted final course grade.
   b. For students in the experimental group, higher levels of motivation predicted successful course completion.
**Assessing the research hypotheses.** Research hypothesis 1 stated that students in the experimental group showed a significant difference in successful course completion compared to the control group. Successful course completion was defined as students continuing in the class and remaining on the roster to receive a final letter grade of an A, B, or C. Non-successful completers were defined as students receiving a D, F, W, or I. All students listed on the 10-day roster for the 12 online classes were included in this analysis. A frequency distribution of data pertaining to the measure of successful course completion was reported by groups and a Chi-square test was conducted to show any significant association.

Research hypothesis 2 stated that students in the experimental group showed a significant difference from the control group on final course grade. The number of students in the control and experimental group was reported with the mean grade and standard deviation of each group. An independent samples t-test was used to compare the mean scores of the two groups to determine any significant difference. To provide an indication of the magnitude of the differences between groups, not just if the difference could have occurred by chance, Cohen’s $d$ effect size was computed. An effect sizes of .20 are small, .50 are medium, and .80 are large.

Research hypothesis 3 stated that students in the experimental group were significantly different from the control group on motivation as measured by the CIS. Students in this analysis represented those where all 34 CIS questions were answered. The number of students in the control and experimental group was reported, along with the mean and standard deviation. To determine if there was a significant difference in the mean scores on the CIS for the two groups, an independent samples t-test was conducted.
Cohen’s $d$ effect size was also computed. Further analyses were conducted, using t-tests and Cohen’s $d$ effect size, to determine which, if any, of the four subscales showed a statistical significant difference between the experimental group and the control group. The number of students answering questions in each of subscales was reported, along with the mean score and standard deviation.

Research hypothesis 3a stated that for students in the experimental group, higher levels of motivation using the subscales of Feedback, Instructor Techniques, Goals and Interest (FIGI) predicted final course grade. A multiple regression was used to assess how well the subscales can be used to predict the final course grade in an online class. A regression was conducted for the experimental group to determine which, if any, of the subscales showed a significant effect on final course grades. For each subscale the unstandardized coefficients, $B$ and SE $B$, and beta were reported with the R square value. Asterisks were used to show which relationships are significant and at what level.

Research hypothesis 3b stated that for students in the experimental group, higher levels of motivation using the subscales of Feedback, Instructor Techniques, Goals and Interest (FIGI) predicted successful course completion. Logistic regression, which is used for dependent categorical variables like successful course completion, was used to assess how well the four subscales can be used to predict successful course completion (defined as students earning an A, B, or C at the end of their online class). A logistic regression was conducted for the experimental group to determine which, if any, of the subscales showed a significant effect on successful course completion. For each subscale the coefficients $B$, S.E. and Wald were reported. Asterisks were used to show which relationships are significant and at what level.
To gain a better understanding of the students’ reactions to the five motivational email messages, the experimental group’s survey included six open-ended questions. This part of the data collection was done qualitatively with open-ended questions so that the views of the participants were not restricted (Creswell, 2005). This qualitative part of the research was selected to explore what impact the motivational messages have on the experimental group and how these messages could impact student motivation (Creswell, 1998). The questions were qualitatively reviewed by the researcher by using codes to label a segment of text. Similar codes were then grouped together to form themes or categories which reflect a major idea from the data. A narrative discussion for this qualitative data is included with quotes from individuals to support the findings and to better capture the feelings and emotions of the students (Creswell, 2005).
Chapter 4

Findings

This chapter presents findings on the impact of motivational messages on student performance in and completion of online courses at one selected community college in a Midwest state. This experimental study randomly assigned students enrolled in 12 online classes to an experimental group that received five motivational email messages delivered at specified points in a 16-week semester online course. By contrast, students assigned to the control group received the same content but did not receive motivational email messages. This study tested three research hypotheses and two sub-hypotheses.

The Sample

Ten-day class rosters were used for the starting point of this study. This was important to capture late enrolled students and to exclude from the study any students that dropped at the beginning of the semester due to schedule changes or just not showing up for classes. Table 17 provides a description of the sample for the study. The 10-day roster sample is presented in row one of Table 17. From the 10-day rosters, 388 students were listed on the 12 online class rosters as enrollees. Of the total, 197 were randomly assigned to the control group, and 191 were randomly assigned to the experimental group. These randomly assigned groups established who would receive the motivational email messages (experimental group) and who would not (control group). The sample of students receiving a final class grade totaled 248 (refer to row two of Table 17). From this total, 121 were assigned to the control group, and 127 were assigned to the experimental group. These are students who remained enrolled throughout the entire
semester and earned an A, B, C, D, or F as a class grade at the end of the semester. This means, of the total 388 students, 140 students withdrew from a class without receiving a letter grade, with n=76 being from the control group and n=64 being from the experimental group. Students completing the online survey totaled 197 (refer to row 3 in Table 17), where n=103 were from the control group and n=94 were from the experimental group. These are students that were still enrolled in their online class when the survey was released and who voluntarily completed it. Six students who were part of the experimental group completed the online survey but then withdrew from their class within two weeks of the end of the semester. Thus, the total number of students with a final course grade completing the online survey were 191 (refer to row 4 in Table 17), with n=103 being from the control group and n=88 being from the experimental group. Total students withdrawing from the study were 140 (refer to the last row in Table 17), with n=76 from the control group and n=64 from the experimental group.

Table 17 reflects lower survey return rates for the experimental group as compared to the survey return rates for the control group. There were 14 electronic surveys in the experimental group that were opened, but not submitted. WebCT marked these surveys as “in progress.” Since these surveys were not submitted, the researcher did not have access to any of the responses these 14 students might have entered. Of these 14 “in progress” surveys, 12 were from the experimental group and 2 were from the control group. Since the experimental group’s survey was longer by adding the six open-ended questions, possibly the length of the survey or the task of answering open-ended questions (as compared to statements on a 5-point scale) discouraged students from finishing their surveys and submitting them in WebCT.
Surveys were completed by students using the WebCT’s survey tool, which had the advantage of keeping the survey feature inside the online learning platform, as compared to using an external site for survey collections, and increasing the response rate. As a result, WebCT’s survey feature allowed the researcher to identify who had submitted a survey, but did not allow the researcher to match a student’s survey answers to his/her name. An email address associated with WebCT was used to match students’ email addresses with their login names, which enabled the researcher to match students’ names with their survey responses and their final letter grade. The number of students with survey responses and final letter grades totaled 174 (refer to row 5 of Table 17). Of this total, 93 were assigned to the control and 81 to the experimental group; 23 students did not have e-mail addresses that match the survey so these students are missing from correlational analyses that examine relationships requiring survey data and letter grades.

Table 17

*Sample Descriptives*

<table>
<thead>
<tr>
<th>Sample</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
<th>Both Groups</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
</tr>
<tr>
<td>10-day roster students</td>
<td>197</td>
<td>50.8%</td>
<td>191</td>
<td>49.2%</td>
<td>388</td>
<td>100%</td>
</tr>
<tr>
<td>Students with final grade</td>
<td>121</td>
<td>48.8%</td>
<td>127</td>
<td>51.2%</td>
<td>248</td>
<td>100%</td>
</tr>
<tr>
<td>10-day roster students completing online survey</td>
<td>103</td>
<td>55.3%</td>
<td>94</td>
<td>44.7%</td>
<td>197</td>
<td>100%</td>
</tr>
<tr>
<td>Students with final grade completing the online survey</td>
<td>103</td>
<td>53.9%</td>
<td>88</td>
<td>46.1%</td>
<td>191</td>
<td>100%</td>
</tr>
</tbody>
</table>

(continued)
Table 17 (continued)

<table>
<thead>
<tr>
<th>Sample</th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
<th>Both Groups</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
</tr>
<tr>
<td>Students with survey and grade data matching</td>
<td>93</td>
<td>53.4%</td>
<td>81</td>
<td>46.6%</td>
<td>174</td>
<td>100%</td>
</tr>
<tr>
<td>Student withdrawing</td>
<td>76</td>
<td>54.3%</td>
<td>64</td>
<td>45.7%</td>
<td>140</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Research Hypotheses Testing**

The main focus for this study is to determine what impact motivational messages has on course performance (final grade) and course completion in a community college online course. Three research hypotheses statements were tested to determine significant differences between the control and experimental groups.

**Hypothesis 1.** Hypothesis 1 stated that students in the experimental group would show a significant difference in successful course completion compared to the control group. Successful course completion is defined as students receiving a final grade of an A, B, or C. All students listed on the 10-day roster for the 12 online classes were included in this analysis. There were 197 students in the control group and 191 students in the experimental group, totaling 388 students. Table 18 shows completion information by group.
Table 18

*Chi-Square Test for Successful Course Completion by Groups*

<table>
<thead>
<tr>
<th>Group</th>
<th>Successful Completion</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Completers</td>
<td>93</td>
<td>47.2%</td>
</tr>
<tr>
<td></td>
<td>Non-completers</td>
<td>104</td>
<td>52.8%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>197</td>
<td>100.0%</td>
</tr>
<tr>
<td>Experimental</td>
<td>Completers</td>
<td>112</td>
<td>58.6%</td>
</tr>
<tr>
<td></td>
<td>Non-completers</td>
<td>79</td>
<td>41.4%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>191</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

To determine if the difference in successful course completion between the two groups was statistically significant, a Chi-square test was used. Results of the Chi-square test \(\chi^2 = 4.636, \text{ df}=1, p=.024\) showed a significant association in the proportion of completers in the treatment.

**Hypothesis 2.** Hypothesis 2 stated that students in the experimental group would show a significant difference from the control group on final course grade. Table 19 shows the mean grade of each group, representing all 248 students who were listed on class rosters and received a final letter grade at the end of the spring 2009 semester. The mean grade was a C for both groups, based on a 4.0 scale. This result is based on a grading scale of 2.0 to 2.99 representing a C grade. No plus or minus was attributed to letter grades in this particular institution.
To determine if the difference in the mean final course grade was statistically significant, an independent-samples t-test was used to compare the mean scores of the two groups. Results of the t-test showed a significant difference in the mean final grade at $\alpha=.05$ level ($t=2.33$, df=246, p=0.020). While the mean final grade for both groups is equivalent to a C grade, students in the experimental group showed a significantly higher final course grade than students in the control group. Cohen’s $d$ effect size for analysis of course final grade was small at .30.

To further test the research hypothesis of students in the experimental group showed a significant difference from the control group on final course grade, the mean grade was compared for the control and experimental group for students that completed the online survey and earned a letter grade in their class. Table 20 shows $n=93$ for the control group and $n=81$ for the experimental group with their mean final grade and standard deviation.

Table 19

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>121</td>
<td>2.40</td>
<td>1.327</td>
</tr>
<tr>
<td>Experimental</td>
<td>127</td>
<td>2.78</td>
<td>1.201</td>
</tr>
</tbody>
</table>
Table 20

*T-test for Final Course Grade by Groups of Students Completing the Survey*

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>93</td>
<td>2.73</td>
<td>1.17</td>
</tr>
<tr>
<td>Experimental</td>
<td>81</td>
<td>3.09</td>
<td>.109</td>
</tr>
</tbody>
</table>

To determine if the difference in mean final grade of students completing the survey is statistically significant between the experimental and control group, an independent-samples t-test was used to compare the mean scores of the two groups. Results of the t-test showed a significant difference in the mean grade for the two groups at $\alpha=.05$ level ($t=2.15$, $df=172$, $p=0.033$).

**Hypothesis 3.** Hypothesis 3 stated that students in the experimental group were significantly different from the control group on motivation as measured by the CIS. Table 21 shows the mean CIS score of the two groups, based on a 5-point response scale, ranging from 1=not true to 5=very true. The number of students included in this analysis represents those where all CIS statements were answered. Eight students did not complete all 34 CIS statements; therefore, 189 students were included in the analysis, with $n=100$ being associated with the control group and $n=89$ with the experimental group.
Table 21

*T-test for Overall Mean Score on Course Interest Survey by Group*

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>100</td>
<td>3.67</td>
<td>0.68</td>
</tr>
<tr>
<td>Experimental</td>
<td>89</td>
<td>3.87</td>
<td>0.62</td>
</tr>
</tbody>
</table>

To determine if there is a significant difference in the overall mean scores on the CIS for the two groups, an independent-samples t-test was conducted. Results of the t-test showed a significant difference in the mean score on the CIS for the two groups at $\alpha=.05$ level ($t=1.696$, df=187, $p=0.047$). This result supported this hypothesis that students in the experimental group who received the five motivational messages showed higher motivation, as measured by the overall CIS score, than the control group. Effect size statistics provides an indication of the magnitude of the difference between groups, not just if the difference could have occurred by chance. Cohen’s $d$ effect size for the two groups on the total CIS score was small at .33.

Further analyses were conducted to determine which, if any, of the emergent subscales titled Feedback, Instructor Techniques, Goals and Interest (FIGI) showed a statistical significant difference between the experimental group and the control group. An independent-samples t-test was conducted on each of the mean scores of each of the four subscales for the control and experimental groups. Table 22 shows the mean scores and standard deviations on the four subscales for the two groups. A total of 197 students completed the online CIS; however, each subscale is missing one or more responses from students that left a question blank. Answers to the Interest subscale represent 195 student
responses, the Feedback subscale has 193 student responses, the Goals subscale shows 196 student responses and the Instructor Techniques subscale has 196 student responses.

Table 22

*T-test Results for Subscale Mean Scores by Group*

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Groups</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback</td>
<td>Control</td>
<td>102</td>
<td>3.98</td>
<td>.819</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>91</td>
<td>4.00</td>
<td>.718</td>
</tr>
<tr>
<td><em>Instructor Techniques</em></td>
<td>Control</td>
<td>103</td>
<td>2.97</td>
<td>.875</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>93</td>
<td>3.26</td>
<td>.865</td>
</tr>
<tr>
<td>Goals</td>
<td>Control</td>
<td>103</td>
<td>3.78</td>
<td>.855</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>93</td>
<td>3.90</td>
<td>.751</td>
</tr>
<tr>
<td><em>Interest</em></td>
<td>Control</td>
<td>101</td>
<td>3.93</td>
<td>.687</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>94</td>
<td>4.28</td>
<td>.599</td>
</tr>
</tbody>
</table>

*p<.05

A t-test was conducted on each of the four subscales to determine significant differences when comparing mean scores between groups. Results for the Interest subscale showed a significant difference (t=3.769, df=193, p=0.000), and results of a t-test comparing mean scores for the Instructor Techniques subscale showed a significant difference (t=2.278, df=194, p=.024). Feedback (t=0.084, df=191, p=.933) and Goals (t=.900, df=194, p=.369) subscales failed to show significance. Cohen’s *d* effect size test
was .54 for Interest, which reflected a medium effect size and .33 for Instructor Techniques, which reflected a small effect size.

**Hypothesis 3a.** Hypothesis 3a stated for students in the experimental group, higher levels of motivation predicted final course grade. A multiple regression was used to assess how well the subscales that emerged in the FIGI model predicted the final course grade. A statistically significant effect for the Goals subscale was found on final course grade. The other subscales did not show a significant effect. The R square is .081, which means that 8.1% of the variance in final course grade is explained by the subscales. This result supported this hypothesis where students in the experimental group show higher levels of motivation, based on results of the Goals subscale. Table 23 shows the multiple regression results.

Table 23

*Multiple Regression for Subscales Predicting Final Grade*

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td>Feedback</td>
<td>-.171</td>
</tr>
<tr>
<td>Instructor Techniques</td>
<td>-.035</td>
</tr>
<tr>
<td>Goals</td>
<td>.540</td>
</tr>
<tr>
<td>Interest</td>
<td>-.090</td>
</tr>
</tbody>
</table>

*R*² .081

*p<.05*
Hypothesis 3b. Hypothesis 3b stated for students in the experimental group, higher levels of motivation predicted successful course completion. A logistic regression was used to assess how well the subscales predicted successful course completion in an online class. No statistically significant effect for any of the four subscales was found on successful course completion. This result suggested that the researcher should reject this research hypothesis. Table 24 shows the logistic regression results for the experimental group.

Table 24

*Logistic Regression for Subscales Predicting Course Completion*

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td>Feedback</td>
<td>.534</td>
</tr>
<tr>
<td>Instructor Techniques</td>
<td>-.208</td>
</tr>
<tr>
<td>Goals</td>
<td>-.145</td>
</tr>
<tr>
<td>Interest</td>
<td>.478</td>
</tr>
</tbody>
</table>

*p<.05

Open-ended survey responses. To understand students’ reaction to the five motivational email messages, the experimental group’s survey included six open-ended questions:

1. What impact did the five emailed messages have on your class motivation?
2. What if anything did these messages motivate you to do?
3. Out of the five messages sent, which one did you like the best and why?
4. Out of the five messages sent, which one did you like the least and why?

5. What was your reaction to the five emailed messages?

6. What impact did the five messages have on your communications with the instructor?

A total of 94 students in the experimental group received the electronic survey that included the six open-ended questions. Not all 94 students responded to the open-ended questions Overall, approximately 70 responses for each of the six questions were submitted and all of these responses were reviewed by the researcher. This qualitative data collection and analysis was used to expand the researcher’s knowledge of the impact of the five emailed messages. To analyze the responses from the six questions, codes or labels describing a segment of text were assigned to that text (Creswell, 2005). When the list of codes was aggregated, three themes and one subtheme emerged from the analysis of the students’ responses.

**Theme 1: Increased motivation.** The first theme that emerged from the review of the data was associated with increased motivation to continue their courses. This theme emerged from 58 coded student responses, indicating that their motivation was positively impacted from the emailed messages. The following are five direct quotes from student responses, where the first three are representative of other statements and the last two are more extreme responses made to support this theme:

1. “They kept me motivated.”

2. “They were a very high motivator.”

3. “These messages had a huge impact on my class motivation.”

4. “It motivated me to keep on climbing the mountain because of how great it would feel when I reach the top.”
5. “Absolutely very motivating technique to help get through the course.”

This theme suggests students indicate they had a high motivation level as a result of receiving the emailed messages.

A subtheme emerged from the coding associated with this theme where students who did not state directly the impact of the messages on their motivation, but implied how these emailed messages benefited their motivation by using other related terms. This subtheme is labeled as Working Harder, and represents 44 coded student responses indicating that the emailed messages helped them to work harder or study harder to successfully complete the course. The following direct quotes support this subtheme, where the first three quotes below are representative of the student responses and the last two were selected because these students provided more explanation in their response:

1. “Helped me a lot to not give up.”
2. “Made me work harder.”
3. “To keep trying as hard as I can.”
4. “They kept me going with the class. It is so easy to just quit on online classes, but these helped me stay in the game.”
5. “Continue to work and try hard, although it seems overwhelming at times.”

**Theme 2: Caring instructor.** The second theme that emerged from the data was students citing how the emailed messages reflected a caring instructor, which the students viewed as surprising and adding a personal touch to the online class. This theme reflected 56 coded student responses indicating that the students felt surprised by the emailed messages and that the instructor sending the messages cared about their success. The following are direct quotes from student responses that support the Caring Instructor theme. The first three quotes below are representative of the student responses and the
last two were selected because these students provided more explanation in their response:

1. “The messages showed that our instructor ultimately cared for our success.”

2. “Showed me that the teacher cares.”

3. “I was like, wow, someone actually cares about keeping us going.”

4. “Surprised, that someone cared to make it more about just bookwork and tests and made it more personal, it was nice.”

5. “I was surprised, but it was a nice feeling to see the instructor’s encouragement. They made me feel like somebody cared about my progress in the class.”

**Theme 3: Willingness to communicate.** The third theme that emerged from the data was students citing in their responses how the emailed messages made them more comfortable to ask questions and communicate with their online instructor. This theme reflects 46 coded student responses indicating that more apt to communicate with the faculty member teaching their online class due to the emailed messages. The following are direct quotes from student responses that support the Willingness to Communicate theme. The first three quotes below are representative of the student responses and the last two were selected because these students provided more explanation in their response:

1. “It made it easier to ask questions if need be.”

2. “I feel more comfortable talking with this instructor.”

3. “It made me realize that she is easy to talk to and I feel that I can come forward with my questions.”

4. “The messages made me feel more comfortable if I need to contact the instructor. She is not like a boring teacher like I’m used to.”

5. It made me feel like I could contact her with anything because she showed her concern through these messages.”
Most of the open-ended responses reviewed by the researcher included positive comments, but there were a few responses that were not supportive of the email messages. Two responses were noted where students explicitly stated that the messages “did not” impact their class motivation, and seven responses were noted where students felt the messages did not help their motivation, but they liked receiving the messages. Two students stated that they were already self-motivators and they didn’t feel the emailed messages changed their motivation level. The following are a few direct quotes from these students:

1. “I didn’t find these messages motivating.”
2. “I am a self motivator so it didn’t impact me.”
3. “Not a whole lot. It is always good to be reminded that you instructor is there if you need them though.”
4. “I thought they were thoughtful and creative, but I am already focused on work and do not need any other motivation for this class.”
5. “I didn’t feel extremely motivated, but did enjoy seeing them.”

Conclusions

This study’s findings lead to several conclusions. Most importantly, students participating in an online course benefited from receiving five motivational emailed messages. This study confirmed the conclusions of J. Visser (1990), J. Visser and Keller (1990), Gabrielle (2003), and Huett (2006) that motivational messages did impact student motivation level and have a positive influence on their class performance, although the constructs associated with motivation emerged differently in this study than the original
CIS. The emergence of the FIGI model of motivation represented a better fit to the data collected on online community college students than the CIS.

This study showed a significant association in the proportion of successful course completers in the experimental group as compared to the control group. This test showed that students in the experimental group who received the emailed messages, received more A’s, B’s, or C’s for a final course grade than the control group. This research found a significant difference between groups on final course grade and on CIS scores, with Interest and Instructor Techniques subscales associated with the FIGI model emerging and being confirmed as statistically significant. Further, a multiple regression test showed a statistically significant effect for the Goals subscale. These results suggest e-mail messages attempting to enhance the performance of online students taking a community college course can improve their motivation and impact their final course grade and course completion.

Three major themes (Increased Motivation, Caring Instructor, and Willingness to Communicate) and one subtheme (Working Harder) emerged from coding six open-ended questions included in the survey used with the experimental group. These questions were included to gain a better understanding of the impact of the five motivational messages on student online course performance. No other research study used the CIS instrument, supplemented with open-ended questions, with online community college students, which adds to the literature.
Chapter 5

Summary, Conclusions, Implications and Recommendations

This chapter provides a summary of the purpose and research questions answered by conducting this study, major findings, conclusions, implications and recommendations for future research. The recommendations support the need for further research into determining an effective means of improving student performance in online community college classes, based on course completion and final grade earned.

Summary of Major Findings

The main focus of this research was on examining the impact motivational messages sent from instructor to student through email have on student motivation and performance (course completion and grades) in a community college online course. Three research hypotheses were posed regarding the impact of the motivational messages sent to students who were randomly assigned to an experiment group and a control group, with students in the control group not receiving the motivational messages but participating in the same content. The results pertain to students enrolled in 12 online community college classes using data collection from the instructor’s final course grades and the Course Interest Survey (CIS).

Hypothesis 1. This hypothesis stated that students in the experimental group would show a significant difference from the control group in successful course completion, meaning students persisting to the end of the course and receiving a letter grade of A, B, or C. Students listed on the 10-day class roster were included in this
hypothesis testing. There were 197 students in the control group, and 191 students in the experimental group, totaling 388 students.

Results from a Chi-square test showed a significant difference in the proportion of successful completers in the control group and the experimental group. These results led this researcher to accept research hypothesis 1. The results show the motivational messages emailed to the experimental group had an impact on course completion.

**Hypothesis 2.** Hypothesis 2 stated that students in the experimental group would show a significant difference from the control group on final course grade. This analysis involved 121 students in the control group, and 127 students in the experimental group, with 248 students in both groups. These numbers represent all the students on rosters of the 12 online courses that received a final letter grade of an A to an F at the end of the spring 2009 semester.

Results of a t-test showed a significant difference between the control and experimental groups on the mean numeric score for the letter grade using the following scale: A=4, B=3, C=2, D=1 and F=0. The experimental group had a mean numeric score of 2.78 and the control group had a mean numeric score of 2.40. With this difference being statistically significant, this research hypothesis statement is accepted. The results suggest that the motivational messages emailed to the experimental group had a positive impact on final course grade as compared to the control group, which did not receive motivational messages via the e-mail format.

**Hypothesis 3.** Hypothesis 3 stated that students in the experimental group would be significantly different from the control group on motivation. Students included in this
hypothesis analysis were 100 students in the control group and 89 students in the experimental group all of whom answered all 34 of the CIS items.

Results of an independent-samples t-test showed a significant difference in the mean score on the CIS between the control and experimental groups. This result suggested this researcher should accept the research hypothesis statement that students in the experimental group who received the five motivational messages showed a higher motivation level as measured by the overall CIS score than the control group. Further analyses were conducted to determine if any of the four subscales, Feedback, Instructor Techniques, Goals and Interest (FIGI), that emerged showed a significant difference between the experimental and control group. Results from independent-sample t-tests showed that the subscales of Interest and Instructor Techniques showed a significant difference between the two groups when comparing mean scores.

**Hypothesis 3a.** Hypothesis 3a stated for students in the experimental group, higher levels of motivation would predict the final course grade. A multiple regression was used to assess this research hypothesis and a statistically significant regression effect of the Goals subscale on final course grade was found. The multiple regression tests showed how emailed messages impacted the Goals subscale and were related to final grades earned in the online course. This result showed students in the experimental group demonstrated higher levels of motivation using the subscale of Goals, and a higher final course grade.

**Hypothesis 3b.** Hypothesis 3b stated for students in the experimental group, higher levels of motivation predicted successful course completion. A logistic regression was used to test this research hypothesis and the results showed no statistically significant
regression effect of any of the subscales on course completion for the experimental group. This result suggested that the researcher should reject this research hypothesis.

**Open-ended survey responses.** To gain a better understanding of the students’ reaction to the five motivational email messages, the experimental group’s survey included six open-ended questions. Responses from the students also aids in supporting the research hypotheses statements. Students made specific reference to how the five emailed messages related to their motivation and finishing their course. Whereas the vast majority of responses were positive, some students noted that their motivation was unaffected or a few indicated their motivation was diminished.

Three major themes and one subtheme emerged from reviewing and coding the students’ comments. The first theme that emerged was Increased Motivation, where students mentioned directly in their responses how their motivation was positively impacted from receiving the emailed messages. A subtheme of Working Harder emerged from the coding process, where students didn’t directly state how the messages impacted their motivation but rather implied how their motivation was increased by using other related terms such as “not giving up”, “not quitting”, and “working harder”. A second theme that emerged from students’ statements was how the emailed messages reflected a Caring Instructor. Students interpreted these messages as being surprised and as having an instructor that cared about their success. The last major theme that emerged was a Willingness to Communicate. Students cited in their responses how receiving the five emailed messages made them feel more comfortable to ask questions and communicate with their online instructor.
Theoretical Framework

A new model emerged in this study from the Principal Components Analysis that was conducted on results from the CIS instrument. This new FIGI model of Feedback, Instructor Techniques, Goals, and Interest suggest that intrinsic and extrinsic motivation is important to student success. Keller’s (2006a) ARCS model was not supported by the data, and this observation relates to the fact that the ARCS model focuses on intrinsic motivation only. See Figure 3 below which illustrates the FIGI motivation model.

![FIGI Model](image)

Intrinsic motivation refers to motivation that comes from inside a person rather than from external rewards, such as a grade. Intrinsic motivation is founded in the natural human tendency to pursue interests and exercise abilities (Deci, 1996). An intrinsically motivated student works on an assignment because they are interested in that topic or because the challenge of finding a solution provides a sense of pleasure and satisfies a personal goal. Intrinsic motivation does not mean that a student does not seek an external reward, but it suggests that external rewards are not enough to keep a student motivated.
For example, an intrinsically motivated student may want to get a good grade in a class, but if the assignments do not interest them or provide some satisfaction towards completing a goal, then the good grade may not be enough to maintain that student’s motivation towards completing the class. The FIGI model has two subscales of Goals and Interest that support the intrinsically motivated student, and again, despite the fact that items from the CIS represent these ideas, the constructs associated with the original CIS did not represent this notion of intrinsic motivation.

Extrinsic motivation refers to student motivation that comes from outside an individual or an external reward, like getting good grades or getting a job (Wlodkowski, 1999b). Extrinsically motivated students pursue a task even when they have little interest in it for the anticipated satisfaction they will get from some reward. Extrinsic motivation does not mean that a person will not get satisfaction from completing a task. It means that the external reward continues to be a motivator even when the task is associated with little or no interest. The FIGI model has two subscales of Feedback and Instructor Techniques that are associated with the extrinsically motivated student.

This study’s quantitative results support the emergence of the FIGI model, with new extrinsic motivation subscales of Feedback (from the instructor) and Instructor Techniques (instructor teaching style and methods). The qualitative results also add support to the extrinsic subscales for student motivation. Based on six open-ended questions, the themes of Increased Motivation, Working Harder, Caring Instructor, and Willingness to Communicate emerged from analysis of the qualitative data. Students cited how the emailed messages impacted their course motivation positively and how they helped students focus on working harder to successfully complete their online
course. The Caring Instructor and Willingness to Communicate themes showed students value feeling a connection to their online instructor through a personal touch.

Palloff and Pratt (2003) argued that the virtual student, referring to online students, need communication and feedback. Rendon (1994) argued nontraditional students are more likely to succeed when they experience active efforts to validate them on the part of their educational institution than when they experience a more impersonal educational experience. Validation is defined as, “an enabling, confirming and supportive process initiated by in- and out-of-class agents that fosters academic and interpersonal development” (Rendon, 1994, p. 44). Though this study did not measure validation directly, results suggest an instructor who fosters validation by communicating with students may raise their motivation and possibly also promote the students’ feeling of self worth. Rendon reported that what transformed nontraditional students into “powerful learners” (p. 37) were incidents where students felt validated as learners. These validating agents, such as faculty, took an active interest in students, providing encouragement and affirming them as being capable of doing college-level academic work.

Rendon’s (1994) validation concept can be applied to using emailed motivational messages as tool for faculty to create a supportive, caring environment for an online class so that students can see themselves as “powerful learners” (p. 37) and thus be validated. “The idea [of validation] is to unleash the power of learning that is present in all human beings” (p. 48). The Caring Instructor theme in this study reflected student responses with the importance of an instructor who cares about students’ success. The Willingness to Communicate theme provided responses that suggest students felt comfortable in contacting the instructor during the online course.
Motivation to persist is related to the meaning that students associate with the college experience and how they relate to their future goals and careers (Anderson, 1985). Results from this study support the notion that students complete tasks in an online class for both intrinsic and extrinsic reasons. An educator’s goal is to improve student motivation, which then influences improved performance in a class. This study suggests the best way to accomplish this outcome is to incorporate emailed motivational messages that are focused on both external and internal motivations into online community college courses.

**Implications**

Results provide valuable insights into how email can be used in a community college online classes to motivate students and enhance their course performance. The FIGI model that emerged from this study’s Principal Components Analysis showed the importance of four constructs related to motivation that emerged from this study, specifically constructs associated with subscales titled Feedback, Instructor Techniques, Goals, and Interest. This FIGI model showed the importance of extrinsic and intrinsic motivation, both of which were shown to impact student motivation. Student Feedback and Instructor Techniques represent extrinsic motivation in the FIGI model, and Goals and Interest represent intrinsic motivation in the model.

The open-ended survey questions answered by students in the experimental group showed that students felt motivated by the messages and felt that the instructor cared about their success and expressed willingness to communicate with that faculty member. Students commented on feeling more comfortable to ask questions, and some expressed
surprise that the messages came from a faculty member. These qualitative questions showed how students felt that their motivation was impacted, but also showed a benefit of the students perceiving their instructor as caring about their success, giving the student a feeling of importance. This result could serve to impact a student’s motivation level in a course and indicate that the instructor cares about their performance in the course. Also, having better lines of communication could serve to improve student performance in an online class, where students are apt to ask questions or get clarification on their online assignments.

College faculty and administrators are always interested in improving student performance in courses. Due to limited funds and time, a low-cost, time efficient method for improving student performance is needed for improvements to be implemented. By using email to deliver motivational messages to students in an online course, no extra expenses are incurred. Email message can be drafted and used in multiple courses with some editing. Faculty should consider when to implement these messages, since they may lose their impact if used widespread or standardized for all courses.

With the increase in technology and online learning there is an increasing acceptance that educating students beyond the traditional campus environment is a major element of a college’s mission (Rovai, 2002). Society today calls for life-long learning for students to stay employable in the workforce, and many students turn to community colleges to maintain or upgrade their skills. Yet, many adults are unable to participate in traditional face-to-face classes due to current employment commitments, family responsibilities, or geographic limitations. Online learning offers community colleges the opportunity to better serve these students’ needs. With the increase in online course
offerings by community colleges to expand education possibilities to more students, comes a problem of online student performance. Having faculty incorporate motivational email messages in their courses can impact a student’s motivation and course performance.

**Recommendations for Further Research**

This study used an experimental design to examine the impact of motivational emailed messages on student performance in online community college classes. Recommendations for further research as a result of this study include:

1. Further research should be conducted to study the impact of the timing and number of motivational messages. In this study five messages were emailed to students with three messages being delivered before midterm, one message arrived at midterm, and then one message towards the end of the class. This supported Simpson’s (2002) statement that online student dropout is heavily front-loaded with almost 30% of students not getting as far as the first assignment and that unsuccessful online students lack an effective support system. Results could be impacted by adjusting the number of messages delivered or the timing of the delivery of the messages.

2. This study should be replicated at other community colleges that offer online courses to further explore the FIGI subscales. This was the first online research study to use the ARCS subscales and CIS at a community college institution. The factor analysis for this study did not support the ARCS subscales. Instead the new FIGI model emerged. This new motivation model should be further researched at other community colleges.

3. This study should be replicated using a larger sample size. Twelve online classes were used for this study with 197 CIS responses. A larger data set of survey responses might yield different results.

4. A similar study should be conducted to compare the possible impact of motivational messages that are personalized. For this study messages were delivered by class; the greeting line on the email messages included the name of the online class, and did not utilize a student’s first name or any personal information. L. Visser’s (1998) research showed higher completion rates in a class that received personalized messages, as compared to classes that received
collective messages. Personalized email messages would take more time to design and deliver, but they might affect the results.

Final Thoughts

The mission of community colleges is focused on meeting the needs of the various students it serves. These needs are changing in this fast-past technological world that we are living in now. As students continue to pursue life-long learning through community colleges, course delivery via technology will enable students to access higher education opportunities regardless of geographic, family, and career obstacles. Online students may be more challenged, than their face-to-face counterparts, with having motivation to perform well in a class due to problems with understanding course content, accessing and using technology, feelings of isolation, and lacking communication with the instructor (Beffa-Negrini et al., 2002). Student motivation is particularly necessary in an environment where technology may be perceived as a replacement for human presence in instruction (Glahn & Gen, 2002). Technology needs to be applied to online learning so that the “human touch” can be recognized (Mooney, 2008, p. B9). By building student motivation this will aid in improving student performance in online coursework. This is vitally important to online learning due to the loss of face-to-face interaction and the possible feeling of isolation during online classes.
References


Appendix A

Motivational Message #1

This motivational email was sent to students on the 10th day of the class.

The road to success may be filled with bumps and curves, but through hard work and determination this road will become smooth and straight.

I look forward to working with you and helping you succeed in your online class!

- Faculty’s Name
Appendix B

Motivational Message #2

This motivational email greeting card was sent to students at the end of the fourth week of classes.

Are you experiencing roadblocks with the first assignments?

If so, keep going......don’t give up. Take time to review the posted course instructions and syllabus to overcome any detours and to get on the right track!

-Faculty’s Name
Appendix C

Motivational Message #3

This motivational email was sent to students at the end of the sixth week of classes.

EMAIL MESSAGE TO CLASS:

Name, congratulations on making progress towards completing your online class! Pat yourself on the back for crossing what can be an important hurdle towards finishing an online class.

Not done as well as you hoped on these past assignments? Remember that a few poor grades won’t ruin your chances of passing the class. What’s important is to keep going and to find out where you went wrong. It’s tempting when you get feedback to just move on, but these comments on your work is important towards helping you to improve, so be sure to take advantage of the feedback provided.

If you don’t understand why you lost points, then seek clarification right away. Phone _______ or email ________ asking for an explanation. Mistakes can happen and if you think there’s an error in the grading or you just don’t see where you went wrong at, then do contact me now so we can resolve this matter before going any farther with the class.

Keep in mind you have plenty more assignments ahead towards completing the course. So, stay focused on the positive, learn from your mistakes, and stick with it!

Good luck on your next assignment!
This motivational email was delivered at midterm.

"There is no challenge too great for those who have the will and heart to make it happen”

Congratulations! You have reached midterm in your online class, which means you are at the halfway point. Your efforts in submitting work by the posted due dates are appreciated and will serve you well in completing the class successfully!!
Appendix E

Motivational Message #5

This motivational email was delivered at the end of the 12th week of classes.

You are all in this together......

As you prepare for the final exam, remember that you are not alone. You have classmates that are working right along with you in finishing the class!

Congratulations.... only two weeks left in the class. You can do it!

- Just a reminder that your final exam due date is _____. Access the final exam__________.
- All online work must be submitted by ________.
- Final class grades are located ________________.
- Remember: ____________________________________________.
Appendix F

Course Interest Survey

1 (or A) = Not true
2 (or B) = Slightly true
3 (or C) = Moderately true
4 (or D) = Mostly true
5 (or E) = Very true

1. The instructor knows how to make us feel enthusiastic about the subject matter of this course.
2. The things I am learning in this course will be useful to me.
3. I feel confident that I will do well in this course.
4. This class has very little in it that captures my attention.
5. The instructor makes the subject matter of this course seem important.
6. You have to be lucky to get good grades in this course.
7. I have to work too hard to succeed in this course.
8. I do NOT see how the content of this course relates to anything I already know.
9. Whether or not I succeed in this course is up to me.
10. The instructor creates suspense when building up to a point.
11. The subject matter of this course is just too difficult for me.
12. I feel that this course gives me a lot of satisfaction.
13. In this class, I try to set and achieve high standards of excellence.
14. I feel that the grades or other recognition I receive are fair compared to other students.
15. As a student in this class, I am curious about the subject matter.
16. I enjoy working in this course.
17. It is difficult to predict what grade the instructor will give my assignments.
18. I am pleased with the instructor's evaluations of my work compared to how well I think I have done.
19. I feel satisfied with what I am getting from this course.
20. The content of this course relates to my expectations and goals.
21. The instructor does unusual or surprising things that are interesting.
22. The students actively participate in this class.
23. To accomplish my goals, it is important that I do well in this course.
24. The instructor uses an interesting variety of teaching techniques.
25. I do NOT think I will benefit much from this course.
26. I often daydream while in this class.
27. As I am taking this class, I believe that I can succeed if I try hard enough.
28. The personal benefits of this course are clear to me.
29. My curiosity is often stimulated by the questions asked or the problems given on the subject matter in this class.
30. I find the challenge level in this course to be about right: neither too easy not too hard.
31. I feel rather disappointed with this course.
32. I feel that I get enough recognition of my work in this course by means of grades, comments, or other feedback.
33. The amount of work I have to do is appropriate for this type of course.
34. I get enough feedback to know how well I am doing.
### COURSE INTEREST SCORING GUIDE

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Appendix G

Background Survey Questions

1. What is your age?

2. What is your gender? (Male or Female)

3. What is your student status? (Part-time or Full-time)

4. What is your employment status? (Full-time; defined as 40 hours a week or more, part-time; defined as less than 40 hours a week or unemployed)

5. How many dependents do you have? (0, 1, 2, 3, 4, 5 or more)

6. Number of online classes previously enrolled in? (0, 1, 2, 3, 4, 5 or more)

7. What is your cumulative college GPA?

8. What is your prior education? (GED, High School, Certificate, Associate’s Degree, Bachelor’s Degree, Master’s Degree, other ____________)

9. What is your academic Intent? (A.S./A.A., A.A.S., Certificate, or Course Enrollee)

Motivational Message Questions (only for experiment group)

I am studying the impact of email messages during an online course and am trying to understand your perceptions of these messages. During this class you received four emailed messages from the instructor. Please answer the following questions while reflecting on those four messages. Attached is a picture of those messages to refresh your memory.

1. What was your reaction to these messages?

2. What if, anything did these messages motivate you to do?

3. What impact did these messages have on your class motivation?

4. Out of the four messages sent, which one did you like the best and why?

5. Out of the four messages sent, which one did you like the least and why?

6. What impact did these messages have on your communications with the instructor?