

A COMPARISON OF COURSE DELIVERY FORMATS ON STUDENT SUCCESS
FOR FIRST YEAR DEVELOPMENTAL ENGLISH STUDENTS
AT CALIFORNIA COMMUNITY COLLEGES

by

Camilla Nancy Phillips Bantum

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

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ABSTRACT

A COMPARISON OF COURSE DELIVERY FORMATS ON STUDENT SUCCESS FOR FIRST YEAR DEVELOPMENTAL ENGLISH STUDENTS AT CALIFORNIA COMMUNITY COLLEGES.

This study examined the influence of campus-based and online-based community college developmental English courses on two student success factors: course persistence and course success. Retrospective data on all first year California community college students enrolled in developmental English courses between 2008 and 2011 were analyzed for differences between students. Descriptive statistics were used to compare differences in individual student characteristics of age, gender, and race, and the situational variables of enrollment status and eligibility for tuition fee waiver. Logistic regression analysis was utilized to examine the difference in likelihood of course success and course persistence of developmental English students in the two course delivery formats.

Results indicated that course delivery format has a statistically significant relationship with both course persistence and course success. Statistically controlling for all other independent study variables, students in online developmental English courses were less likely to persist to course completion, or to receive final grades of C or higher than students in campus-based courses.

Key words: campus-based, course completion, course success, online, student characteristics

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DEDICATION AND ACKNOWLEDGMENTS

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CHAPTER 1: INTRODUCTION

“The best current evidence is that media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in nutrition...only the content of the vehicle can influence achievement.” (Clark, 1983, p. 445). Richard Clark made this controversial statement in 1983. Since that time, asynchronous course delivery has become the most significant change to the process of teaching and learning in decades (Simonson, 2012). This format is utilized, in part, to augment campus-based courses to the burgeoning undergraduate population, as a means of increasing graduation rates. According to an assessment of international educational performance by the Organization for Economic Cooperation and Development (OECD), the U.S. holds the 15th spot in the number of students entering and completing higher education. This stands in stark contrast to the 2nd rank the U.S. once held (Callan, 2006). President Obama pledged in 2010 to take the U.S. to first place among countries with the most college graduates by 2020 (Ahorlu, Alvarez, & Hurtado, 2011). Following suit, six prominent community college organizations signed a Call to Action, a pledge to increase by 50 percent the number of students with high-quality degrees and certificates by 2020 (College Board, 2012). To achieve these goals, improving student success at community colleges is imperative because these institutions enroll approximately 40 percent of all undergraduates (Staklis, 2010). However, the number of entering college students academically unprepared for college level coursework is a significant concern to those in higher education. According to a database from the Achieve the Dream initiative, 59% of community college students, particularly low-income students and students of color, enrolled in at least one developmental course

during the three years that students were tracked (Bailey, Jeong, & Cho, 2008). In the National Postsecondary Student Aid Study of 2003-04, 43 percent of first- and second-year students enrolled in public two-year colleges took at least one remedial course during that year (as cited in Horn & Nevill, 2006). Attewell, Lavin, Domina, and Levey (2006) found that in the National Educational Longitudinal Study sample, 58 percent of community college students took at least one remedial course. Most recently, in the California Community Colleges system (CCC), 70%-90% of first-time students who take an initial assessment test require remediation in English, math or both (California Community College Chancellor's Office [CCCCO], 2012). To meet the challenge of educating underprepared students, engaging traditionally underserved students, and helping students from all backgrounds succeed while facing shrinking budgets and rising enrollment, colleges must be certain that all of their resources, time, and money are being spent on educational practices that work for all students (CCCCO, 2012). The rise of courses offered through the online course delivery format has led to developmental courses being offered online as well. Unfortunately, there is little research on the relationship between the unique characteristics of community college students enrolled in developmental courses and their ability to succeed in the online course delivery format. The question being addressed through this study is whether the practice of offering first year community college students access to online developmental English courses is an appropriate utilization of dwindling economic resources, and effective in promoting students' educational goals.

Background

Many universities today recognize that students in their first year of study

have particular learning needs as a consequence of their differing backgrounds, previous learning experiences and their often under-developed academic preparation. Often, first year students find their initial studies stressful as they are exposed to new ways of learning. Many in their first year of post-secondary learning find difficulty with learning approaches that place high levels of responsibility onto them (Calder & Hanley, 2004). College students need the ability to assume responsibility for their own learning, to undertake independent research and inquiry, and to communicate and argue their ideas in a succinct fashion (Calder & Hanley, 2004). First year students are often lacking in these skills when they enter college and need to quickly overcome deficits in these capabilities to achieve success. Designing learning environments to engage learners in their first year of college studies requires some degree of caution and care. The online course delivery format, as an example, requires self-regulation skills from students.

Instruction in the online course delivery format has become popular because of its potential for providing flexible access to content and instruction at any time, from any place. By their very design, community colleges have many characteristics that make them an ideal setting in which courses offered in the online course delivery format can flourish (Liu, Gomez, Khan, & Yen, 2007). Such an environment calls for a flexible and inclusive model of delivering education and makes the "anywhere and anytime" approach of online learning very compelling. In a 2009 national survey of community colleges administered by the Instructional Technology Council (ITC), student demand for distance learning courses continued to exceed the availability of course offerings (ITC, 2010). Community colleges teach about 37% of the entire higher education population; however, they account for over one-half of all online students currently enrolled in higher

education (Parsad & Lewis, 2008). Ninety-one percent of two-year colleges provide courses online, (Parker, Lenhart & Moore, 2011), and approximately 24% of community college students were enrolled in an online course in 2009 (U.S. Dept. of Education, 2011).

The majority of studies comparing equivalency of campus-based and online courses have focused on well-prepared university students (Coma Del Corral, Guevara, Luquin, Pena, & Otero, 2006; Fjermestad, Hiltz, and Zhang (2005); Hannay & Newvine, 2006; Shelley, Swartz, and Cole, 2007). The few empirical studies that have compared campus-based and online outcomes in the community college setting suggest that students are less likely to complete online courses, even after controlling for a wide array of student characteristics (Jaggars & Xu, 2010; Zavarella, 2008). Students in online courses at Virginia community colleges had an 82-percent chance of completing the course, compared with a 90% chance in campus-based courses. Among students in remedial courses, the gap was even wider. Eighty-five percent of students completed their campus-based courses, but only 74% completed the same course online (Xu & Jaggars, 2010). In a follow-up study, course persistence rates were even lower for online developmental students in a Washington community college study, with a 16 percentage point difference in remedial English courses and a 14 percentage point difference in remedial math courses (Xu & Jaggars, 2011).

Problem Statement

More than half of new community college students are academically underprepared for college level courses, and are referred to developmental English and math courses. While the number of students needing developmental coursework continues to grow, research on this population and their success rate is limited (Bragg &

Barnett, 2008; Esch, 2009). In addition, only a few researchers have conducted studies in which they have investigated developmental English courses in the online course delivery format despite the rapid implementation of online learning opportunities in colleges and universities. Moreover, community colleges continue to create online courses and enroll students in these courses who may or may not be technically and educationally experienced enough to succeed. Growing community college enrollment, specifically in online and developmental courses, invites the need for research with this population. The current study adds to the literature on differences among first year community college students enrolled in campus-based and online-based developmental English courses.

Purpose Statement

The purpose of this quantitative retrospective causal comparative study was to test an adaptation from the Composite Persistence Model by Rovai (2002), and compare course delivery formats to student success for students enrolled in their first year of college in developmental English courses at California community colleges, controlling for individual student characteristics. Course delivery format was generally defined as either campus-based or online-based. For the purposes of this study, student success was understood to include two variables, course persistence and course success. Course persistence was generally defined as maintaining enrollment in the course to the end of the academic term. Course success was generally defined as receiving a final grade of C or receiving two quality points out of four possible. The student characteristics of age, gender, and race, and the situational variables of enrollment status and eligibility for tuition fee waiver were statistically controlled in this study.

Online college courses have been a benefit to community colleges in improving access to instruction for more students. As educational institutions work to develop

online courses, the need persists to confirm the effectiveness of these instructional changes. Educational research studies are conducted to compare the effects of various learning environments. Comparative studies can provide formative assessment as online courses evolve (Eggert, 2009). It is also important in these lean economic times to utilize every resource, including human capital, time and money in the most effective manner towards the mission of assisting college students in their educational endeavors. Thus, understanding success indicators of students enrolled in online developmental English courses at community colleges is important for college administrators, and the cost effectiveness of offering these courses needs to be better understood.

Significance of Study

Over the last several years, there has been a plethora of research concerning the equivalence of online versus campus-based college courses, especially for the academically prepared four-year college student (Chiero & Beare, 2010; Kelly, Ponton, & Rovai, 2007; Russell, Tekleselassie, Turnbull, Arthur, & Burnham, 2008). There is a gap in the literature, however, concerning the typical community college student who must complete one or more developmental math or English courses before being enrolled in a college level course required for graduation. As online courses continue to be developed across all disciplines, online developmental courses are also becoming more prevalent.

Community college leaders making decisions on institutional policies regarding distance education programs need to provide assistance to all students to help them achieve their educational objectives. Failure to identify specific variables which may influence academic success of online students, and failure to design programs designed to

help these students can have negative results for both the institution and the student (McGivney, 2004).

Administrators may benefit from this study by obtaining data that allow them to set policies about requirements for enrollment in online developmental courses. Measurement of success factors identified by this study could be made part of existing placement procedures, or additional assessments could be developed and used when students wish to enroll in online developmental classes. Such screening could help the institution support student success. Counselors may be able to identify students who are at higher risk for not successfully completing developmental English courses. This will enable them to provide better advice about the most suitable delivery format for these students. Students who fail to successfully complete online coursework may disrupt their educational goals. Students themselves may benefit from this study by learning what student characteristics contribute to success in developmental English courses. If they choose to enroll in an online course, they will be aware of areas where they may need to seek additional help or resources. Developmental educators and researchers may also benefit from this study. There is little literature examining what factors predict success for community college students in online courses. There is even less focused on developmental English students. This study seeks to fill that gap in the literature.

Research Questions

The research questions of this study are:

1. Are there statistically significant differences in student characteristics and situational factors between first year community college students enrolled in online and campus-based developmental English courses?

2. Does course delivery format influence course persistence in first year students enrolled in online and campus-based developmental English courses?
3. Does course delivery format influence course success in first year students enrolled in online and campus-based developmental English courses?

Research Hypotheses

The following hypotheses were tested for the current study:

Hypotheses for Research Question One

H₀₁₁: There is no significant difference based on age in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course

H₀₁₂: There is no significant difference based on gender in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course

H₀₁₃: There is no significant difference based on race/ethnicity in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course.

H₀₁₄: There is no significant difference based on student enrollment status in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course.

H₀₁₅: There is no significant difference based on eligibility for tuition fee waiver in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course.

Hypothesis for Research Question Two

H₀₂₁: Course delivery format does not statistically significantly influence course persistence rates in first year community college students enrolled in developmental English courses.

Hypothesis for Research Question Three

H₀₃₁: Course delivery format does not statistically significantly influence course success rates in first year community college students enrolled in developmental English courses.

Identification of Variables

Personal, institutional, and circumstantial variables are critical in affecting student success (Berge & Huang, 2004). Key variables central to this study and their operationalized definitions include:

Independent variables

For this study, course delivery format is the independent variable. There are two course delivery formats considered for this study. Developmental English students were enrolled in either an online-based course delivery format or a campus-based course delivery format. The industry standard definition of what constitutes an online course is: those in which at least 80 percent of the course content is delivered online. Campus-based instruction includes courses in which zero to 29 percent of the content is delivered online (Sloan Consortium, 2002). For the current study, course delivery format is operationally defined as a designation from the California Community Colleges Chancellor's Office (CCCCO) database that the particular developmental English course is either online or campus-based.

Dependent variables

Course success: For this study, course success was measured by each student's final course grade. A student that received a C or better, or two quality points out of four possible, was considered academically successful. Course success was a dichotomous nominal variable for this study.

Course persistence: The rapid growth of online classes has presented a need for research to determine the characteristics of completers and non-completers in online courses (Aragon & Johnson, 2008). For the purposes of this research, course persistence is a dichotomous nominal variable. Students were considered course completers if they remained enrolled for the entirety of the academic term. Students were non-completers if they withdrew or dropped out before the end of the academic term.

Background variables

Demographic factors have demonstrated significance for online course persistence and course success (Aragon & Johnson, 2008; Moore, Bartkovich, Fetzner & Ison, 2008; Morris, Wu & Finnegan, 2005). The following factors were compared for this study:

Age: Student age during the academic term they were enrolled in the basic skill English course. Age was expressed in ordinal categories, 18-19, 20-24, 25-29, 30-39, 40-49, 50+.

Gender: The designation reported as either male or female

Race: the CCCCCO captures data on the following race/ethnicities:

Black, Asian, Filipino, Hispanic, Native American, Pacific Islander, Two or More races, and White.

Enrollment Status: Students are considered full-time when their course load is 12 semester units or greater. A part-time student carries less than 12 semester units.

Eligibility for tuition waiver: For the purposes of this study, students were either eligible or ineligible for the California Community College Board of Governor's fee waiver grant (BOG) for the semester they enrolled in the developmental English course. This designation was determined by the Chancellor's Office of the California Community Colleges.

CHAPTER TWO: LITERATURE REVIEW

There has been little research comparing online and campus-based developmental courses. Of the studies reported in the literature, there are even fewer studies targeting these courses at the community college. It is understood that the demographic characteristics and academic preparedness of community college students is significantly different from the four-year college students (Bailey, Jeong, & Cho, 2008; McIntosh & Rouse, 2009). For the purposes of this literature review, research is presented in the areas of community college education, course persistence, the online course delivery format, and developmental education. The chapter begins with a discussion of the conceptual framework derived from themes in the literature.

Conceptual Framework

Given the importance of student success in college, using instructive perspectives to guide research and practice is essential. Fortunately, a handful of sound approaches are available, though no single view is comprehensive enough to account for the complicated set of factors that interact to influence student and institutional performance, what Braxton, Sullivan, and Johnson (1997, p. 107) call “the student departure puzzle.” The most often cited theories define student success in college as persistence and educational attainment, or achieving the desired degree or educational credential. These perspectives emphasize to varying degrees the importance of academic preparation and the quality of student experiences during college. This section is organized around an adaptation of Tinto’s (1987) and Bean and Metzger’s (1985) frameworks of college student departure.

During the past several decades, many theoretical models of higher education student persistence have emerged. The earliest attempts to explain persistence were based

on psychological models. These models (e.g., Fishbein & Ajzen, 1975) theorized that a student's decision to persist is largely based on previous behavior, attitudes, and norms that drive behavior through the formation of intent to learn. More recent models, although grounded in these psychological models, explain persistence and attrition through student-institution “fit” by looking at student, institutional, and environmental variables and specific themes, such as the social integration of students into campus life. Two important and influential models in this genre were developed by Tinto (1975) and by Bean and Metzner (1985).

Tinto's Model of Student Departure

Perhaps, the most influential attempt to explain the process of persistence in higher education as a function of student-institution “fit” was put forward by Tinto. He theorized that the primary determinants of successful persistence can be broken down into: (a) factors that are drawn from experiences prior to college and individual student characteristics and (b) factors that are drawn from experiences at college. Experiences before college and student characteristics are input variables that cannot be affected greatly by schools. However, student experiences subsequent to admission, which Tinto referred to as “integration” variables, are affected by school policies and practices. Tinto (1987, p. 123) suggested that “the more central one's membership is to the mainstream of institutional life the more likely, other things being equal, is one to persist.” Typically, postsecondary education persistence studies find that academic integration has an important impact on persistence (Pascarella & Terenzini, 1991). Consequently, persistence is often viewed as a measure of how well students integrate into a particular school (Rovai, 2003). Tinto's model has limited applicability since it is best suited to

institutional analysis of the persistence of traditional undergraduate students (Maxwell and Rendon) at four-year institutions. Tinto's model is not as useful for studying the attrition of older students or for the distance education student, for whom academic and social integration within the university may be less influential (Bean & Metzner, 1985). Additionally, Yorke (1999) suggested that Tinto's theory has relatively little to say about the impact of external factors in shaping students' perceptions, commitments, and reactions that he feels are important. These factors are especially significant to the distance education student.

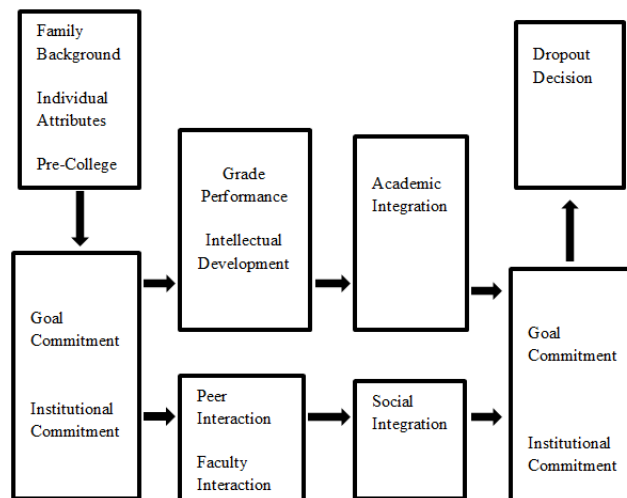


Figure 1. Tinto's Model of Student Departure (Rovai, 2003)

Online students are very likely to be nontraditional, and even traditional programs are moving toward higher numbers of nontraditional students. Nontraditional students are usually associated with living away from campus, belonging to social groups that are not associated with the college, having dependents, not being involved in campus organizations, and attending college part-time. Because these students manage their time among their classes, work, families, and roles in the community, there is often little time for campus involvement outside the classroom (Graham & Gisi, 2000).

Bean's Model of Student Attrition

Bean and Metzner (1985) proposed a model grounded on Tinto's model and earlier psychological models to explain attrition of nontraditional students, whom they defined as “older than 24, does not live in a campus residence (i.e., is a commuter), or is a part-time student, or some combination of these three factors; is not greatly influenced by the social environment of the institution, and is chiefly concerned with the institution's academic offerings (especially courses, certification and degrees)” (p. 489). They argued that older students have different support structures than younger students and since they have limited interaction with other groups within the college community they draw more support from outside the academic environment “because their reference group of peers, friends, family, and employers exists outside the institution” (p. 506). This is in contrast to traditional students, where on-campus students and faculty represent their most important support group. Accordingly, Bean and Metzner's model is more relevant than Tinto's model in explaining the persistence of distance education students. In analyzing attrition factors for nontraditional students, Bean and Metzner identified four factors that affect persistence: (a) academic variables such as study habits and course availability; (b) background and defining variables such as age, educational goals, ethnicity, and prior GPA; (c) environmental variables such as finances, hours of employment, family responsibilities, and outside encouragement; and (d) academic and psychological outcomes while at the college. In particular, they concluded that “students' reports of financial difficulty were positively related to attrition from college” and “many older students expressed concern about the ability to finance a college education” (p. 503). These variables, many of which are outside the control of the school, may push students

out of school by putting too much pressure on their time, resources, and sense of wellbeing.

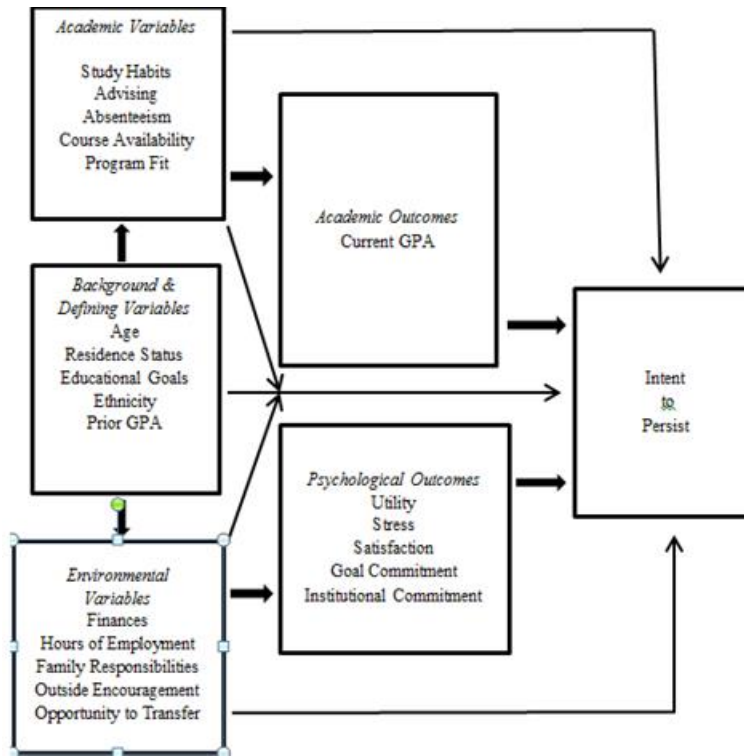


Figure 2. Bean’s Model of Student Attrition (Rovai, 2003)

Rovai’s Composite Persistence Model

A synthesis of Tinto's and Bean and Metzner's models may be a better predictor of the persistence of nontraditional adult students than either model by itself (Rovai, 2003). To this end, Rovai (2002) developed a composite model adapted to the needs of online learners in order to better explain persistence and attrition in distance education programs (See Figure 3). He organized the model into two major categories: Prior to Admission and After Admission. He formed two categories under Prior to Admission: Student Characteristics and Student Skills. Both Tinto’s (1987) and Bean and Metzger’s (1985) models suggest the importance of these categories for student persistence. Student characteristics such as age, ethnicity, gender, intellectual development, and academic

performance and preparation prior to college can affect student persistence (Bean & Metzner, 1985). For example, minority students may feel isolated in online courses, a risk factor associated with dropouts. Murguia, Padilla, and Pavel (1991) found that social integration into college was enhanced for ethnic groups when they had ethnic clubs or enclaves available. Ross and Powell (1990) reported that females tend to be more successful in online courses than males. Rovai (2001) found similar gender-related differences in an online course and explained them as differences in communication patterns and sense of community.

Several researchers also noted a significant relationship between previous academic performance and completion of distance learning courses. Schlosser and Anderson (1994) explained this relationship by theorizing that students who completed more formal education or received higher grades had more fully developed research and study skills and more realistic expectations of the requirements and the effort needed to fulfill their educational goals. Thus, research indicates that first year students are less likely to be successful in online-based courses.

Naturally, the experiences of students subsequent to college admission can have a profound effect on a student's persistence decision (Tinto, 1975). These experiences are divided into external and internal factors on Rovai's Composite Persistence Model (2002) (See Figure 3). The external factors draw heavily from the environmental variables contained in Bean and Metzner's (1985) model, such as finances, hours of employment, family responsibilities, and outside encouragement. Tinto (1993) also acknowledged that going to college might be only one of many obligations that a student will have. Consequently, he suggested that persistence might be seriously weakened by external

factors when institutional academic and social systems are weak. Accordingly, additional demands on the time of nontraditional students such as life crises, e.g., sickness, divorce, loss of a job, etc., can adversely affect persistence. Regardless of students' academic preparation and existing skills, if they cannot pay for college, make adequate child care arrangements, or adjust their work schedules, they are unlikely to persist in school.

Internal factors after admission are also important. Students' involvement in and attachment to their school are essential elements for success. Accordingly, the first year experiences of new online students are critical. Early counseling is essential to establish expectations and to give a sense of the college community (Cullen, 1994). These experiences should quickly dispel any assumptions by students that online courses are easier, less demanding, or less time-consuming than regular courses (Hardy & Boaz, 1997). There is also an important need to create a learning community (e.g., Rovai and Tinto) that encompasses the needs of all students, connects them to each other, to the institution, and to the resources that they need to succeed, and allows them to get responsive help (Workman & Stenard, 1996). Most successful retention efforts include program elements that focus on increasing academic integration consisting of active participation and satisfactory experiences where students personally interact with faculty and each other.

Many of the internal factors on the composite model were taken from Tinto (1987), and Bean and Metzner's (1985) models as described above. However, both Tinto and Bean and Metzner conceptualized integration from the perspective of college students who attended class on campus. The research literature suggests that students

who take classes at a distance have additional needs, and these needs are also depicted in Figure 3 as internal factors.

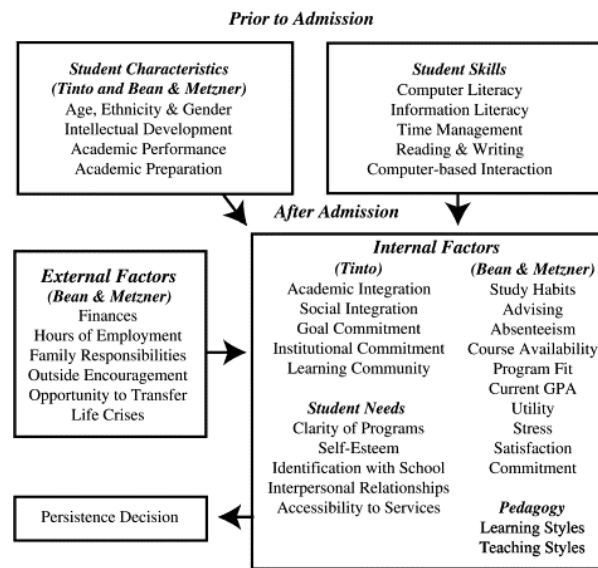


Figure 3. Rovai's (2002) Composite Persistence Model

Conceptual Model for Current Study

There is no simple formula that ensures student persistence. Adult persistence in an online program is a complicated response to multiple issues. It is not credible to attribute student attrition to any single student, course, or school characteristic. There are numerous internal and external factors that come into play, as well as interactions between factors. However, there is a growing consensus on several important factors to explain persistence in online programs. These factors are included in the composite model shown in Figure 1. The conceptual framework used for this research has been informed by the principles of Rovai's (2002) Composite Persistence Model (See Figure 4). This adapted model proposes that student success in online-based community college developmental English courses is influenced by the student characteristics of age, gender, and ethnicity. The external factors of enrollment status and eligibility for tuition fee

waiver, and the internal factors of course delivery format and enrollment in a developmental course then influence the student success factors of course persistence and course success (See Figure 4).

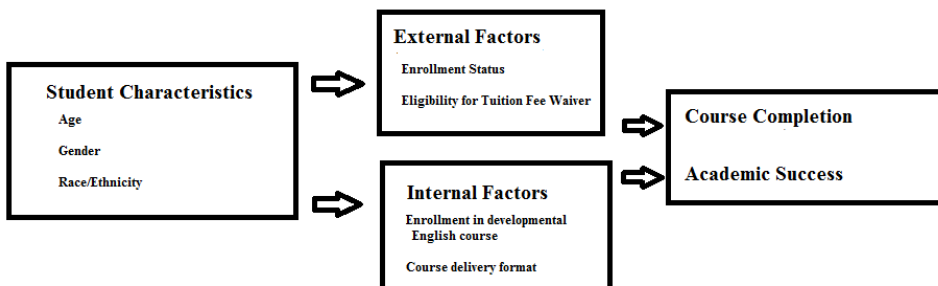


Figure 4. Adaptation from Composite Persistence Model (Rovai, 2002)

As noted at the outset of this section, no one theoretical perspective is comprehensive enough to account for all the factors that influence student success in college. Taken together, the different theoretical perspectives on student success and departure provide a holistic accounting of many of the key factors that come into play to shape what students are prepared to do when they get to college and influence the meanings they make of their experiences (Kuh, Kinzie, Buckley, & Bridges, 2006). The following section provides a context for the present research and its importance based on the problem identified in the literature.

Demographic Characteristics of Undergraduate College Students

The growth of the undergraduate postsecondary student population has been well documented in research by the National Center for Education Statistics (NCES) over the past 35 years. According to NCES, undergraduate enrollment in degree granting postsecondary institutions reached nearly 18.2 million students by fall of 2008 (NCES 2009-20). During this period of growth, the demographic profile of the undergraduate student population has shifted with the proportion of females comprising 57% of the total

student population in 2007, representing 29% of the total growth in full time enrollments compared to 22% for males (Digest, 2009). Additionally, the proportion of enrollments for undergraduate students between the traditional college age of 18-24 decreased during the time period of 1997 to 2007, representing only 16% of the increased enrollments, while enrollments of non-traditional students above the age of 24 comprised an increasing number of full-time enrollments. NCES projects participation in undergraduate education will continue to evolve with females projected to comprise 60% of all enrollments by 2016 and projected college enrollments to increase an additional 10% by 2017 (NCES 2009-20).

In addition to the increasing numbers of female students, the number of nontraditional students above the traditional college age of 18 to 24 represents another change in the demographic profile of the undergraduate student population. The transition of the student population since 1970, according to Snyder (2008), has resulted in a remarkably different postsecondary population than represented by the traditional residential student of the past, a population Snyder calls the “new traditionalists.” According to Snyder, the new traditional college student is an adult learner (students older than 22) and represents 84% of the higher education population in the United States today (approximately 14 million of the 17 million students currently enrolled in colleges and universities). A significant characteristic of this growth in undergraduate enrollments is an upsurge in enrollments of distance education courses. Enrollments in distance education courses have increased at institutions of all types but particularly at two-year public community colleges.

Demographic Characteristics of Community College Students

Most community college students attend classes and study while working, caring for dependents, and juggling personal, academic, and financial challenges (Center for Community College Student Engagement [CCSE], 2012). The 2011 Community College Institutional Survey (CCIS) reported that 67% of full-time students and 78% of part-time students work at least part-time while taking classes, and 53% of full-time students and 60% of part-time students also care for dependents (CCSE, 2012). Due to relatively low tuition, community colleges are seen as pathways to postsecondary education for financially challenged and minority students (Hagedorn, Maxwell, & Hampton, 2002; Mendoza, Mendez, & Malcolm, 2009; Roksa & Calcagno, 2010). Increasing tuition rates and reduced needs-based aid are disproportionately affecting low-income students who are more likely to attend community colleges (Mendoza, 2009). In addition, ability to pay has been found to be correlated to college persistence (Dowd & Coury, 2006; Hagedorn et al., 2002; Mendoza, 2009). The cost of education has a significant effect on student decisions to enroll and the "ability to pay has a direct effect on college persistence" (Carter, 2006, p.42). Low-income students often drop out of college if they do not receive enough financial aid (grants, loans, and work-study). The socioeconomic level of the student's family is related to retention, and financial aid can play a significant role in "recruiting, retaining, and graduating minorities" (Seidman, 2005, p. 16).

The data show a sizable gap between the percentage of community college students who aim to complete a credential and the percentage of those who actually do. A longitudinal study by ACT, Inc.'s Educational Research Division spanning 1983 to 2008 reports that student persistence between freshman and sophomore semesters at public

community colleges ranged between 51% to 53.7% which is significantly less than the 68% persistence rate at four-year public institutions and the national average 65.7% for higher education in 2008 (ACT, 2008). Fewer than half of entering community college students with a goal of earning a degree or certificate meets their goal within six years after beginning college (Bailey, Leinbach, & Jenkins, 2006). In addition, minority students make up 23% of the enrollments in 4-year institutions and 33% in 2-year institutions (Ryu, 2008). Students from ethnic minority backgrounds are more likely to enroll on a part-time basis and are more likely to be from low-income families (Fike & Fike, 2008). All of these factors have been shown in many studies to be related to lower retention and graduation (Adelman, 2006; Bailey, Jeong, & Cho, 2008; Crosta, Calcagno, Bailey, & Jenkins, 2006). Thus, community colleges are expected to accommodate a wide variety of students, and many of them face financial, academic, and personal challenges that may be beyond the control of the colleges, and can thwart students' retention and successful completion of programs (Adelman, 2005; Pascarella & Terenzini, 2005).

Developmental Education at the Community College

Demographic variables are associated with retention and graduation rates of community college students. Characteristics of gender, race, and socioeconomic status are known to be factors associated with college success and degree attainment (Bailey & Morest, 2004; Zeidenberg, 2008). However, another factor cuts across demographic characteristics for determining success as students enter college: how well prepared students are to take college-level courses upon entry (Greene, 2000; Reason, 2003). McClenney (2004) has reported that half of all first time community college students are

in need of developmental education in English, math, or reading. There is ample evidence to support that academic interventions can be effective in helping students overcome deficiencies in their precollege academic preparation (Pascarella & Terenzini, 2005). Developmental education interventions promote underprepared students' achievement and persistence in both the short term—the students' first semester—and in the longer term, leading to degree completion (Boylan, Bonham, & Brown, 1999). Interventions are critical for beginning community college students who need developmental education. McClenney (2004) explained, “The plain truth of the matter is that if students don't succeed in developmental education, they simply won't have the opportunity to succeed anywhere else” (p. 15).

The current study is examining course delivery formats and developmental English courses at the community college. The National Association for Developmental Education (NADE) gives the following definition for the field of developmental education: Developmental education programs and services commonly address academic preparedness, diagnostic assessment and placement, development of general and discipline-specific learning strategies, and affective barriers to learning. Developmental education includes but is not limited to: all forms of learning assistance, such as tutoring, mentoring, and supplemental instruction; personal, academic, and career counseling; academic advisement; and coursework (NADE, 2012). The most visible component of developmental education is a sequence of courses in reading, English, and math designed to prepare students for college-level work. Efforts to increase success of students who need developmental education can be costly. However, expenditures for achieving

advancements for developmental education students are recouped in financial benefits to institutions and ultimately to society at large (Gallard, Albritton, & Morgan, 2010).

Approximately twice the number of community college students enroll in developmental courses compared to four-year college students (Attewell, Lavin, Domina, & Levey, 2006; Levin & Calagno, 2008). With their open-door admission policy, community colleges serve a population with diverse needs and a wide range of skills. More than half of community college students will be placed into developmental education as a result of their scores on reading, writing, and mathematics entry assessments (Ashby, Sadera, & McNary, 2011). In fact, 82% of *SENSE* Promising Practices respondents (N=23,470) who reported their placement test results indicated they needed developmental education (CCSE, 2012). The annual cost of providing remedial instruction "ranges from about one billion dollars to three or more times this amount" (Noble, Schiel, & Sawyer, 2004, p. 30). With that in mind, however, Higbee, Arendale, and Lundell (2005) cite estimates that two million students would drop out of college annually in the absence of developmental education.

There is encouraging information in the literature concerning the developmental student and course persistence. Bettinger and Long (2005) examined the impact of English and math remediation on student persistence. The sample consisted of first-time community college students from 1998 to 2003. The researchers found that students placed into developmental courses persisted just as well as similar individuals who were not enrolled in developmental courses, although math remediation appeared to improve some student outcomes. Bettinger and Long's (2005) findings substantiated those of Jepsen (2006), who had analyzed the impact of taking developmental courses on

persistence to the second year of college for a similar sample of community college students in the state of California. Jepsen also found that enrolling in developmental courses was associated with returning to college for the second year as well as completing transfer-level classes. However, Jepsen found differences in grouping the students by age. For the more traditional college-age students, developmental courses were negatively associated with transfer; for older students, the association was positive for returning and attaining a degree or certificate. Crews and Aragon (2004) examined the relationship between first semester enrollment in a developmental writing course at a community college and student persistence and goal attainment. Their analysis revealed that students who had been enrolled in a developmental writing course had completed more of the hours they had attempted compared to those students who were not required to enroll in a developmental writing course. At the end of a 3-year period, participants and non-participants were examined for differences in degree/certificate completion. Findings indicated similar completion rates among students enrolled and not enrolled in the writing course (Crisp & Nora, 2010).

Characteristics of the Developmental Education Population

Studies in the literature have identified typical characteristics of the developmental student population. The developmental student begins at an older age (Burley, Butner, & Cejda, 2001), is juggling work, family, and school (Edgecombe, 2011; Rutschow et al, 2011), and tends to have multiple learning deficiencies (Burley et al., 2001; Rutschow et al., 2011) as compared to the non-developmental student population. The developmental student is also more likely to be from a minority race/ethnicity (Russell, 2008). In California, developmental education students may not necessarily be older students but more likely are “traditional” students who have matriculated through the K-12 system and arrived at the community colleges underprepared for

college-level work (CCC Student Success Task Force, 2012). It seems that these characteristics impact student success in campus-based and online-based learning environments. Degree completion for developmental students is rare. Less than one quarter of community college students in a National Educational Longitudinal Survey (NELS) sample who enrolled in developmental education completed a degree or certificate within eight years of enrollment in college. In comparison, almost 40 percent of community college students in the NELS sample who did not enroll in any developmental education course completed a degree or certificate in the same time period (Attewell, Lavin, Domina, & Levey, 2006).

The success data from the recent Accountability Reporting in Community Colleges (ARCC) Basic Skills Supplement are concerning. Of students who begin a mathematics sequence four levels below transfer-level (16.2 percent of entering students are assessed at this level) at a California community college, only 25.4 percent ever achieve a certificate, degree, or transfer preparation. While students who begin one level below transfer level (18.4 percent of entering students are assessed at this level) achieve one of these goals at the rate of 42.6 percent, that still leaves more than 50 percent of students failing to meet their educational goals. These same general ranges are seen in students who begin at equivalent levels in basic skills English writing, reading, and English as a second language (ARCC, 2012).

From an equity perspective, there is even greater cause for concern. Using the same data source (ARCC Basic Skills Supplement), Hispanics comprise over 40 percent of all basic skills enrollments while Blacks comprise 11 percent. These levels are well above the respective 30 percent and 7 percent these groups represent of the overall community college student population. Further, Blacks have the lowest rate of successful completion of college-level mathematics at only 17 percent after a period of two years.

Hispanics completed college-level mathematics at a rate of 25 percent. In comparison, Whites and Asians completed college-level mathematics at rates of 30 percent and 38 percent, respectively (ARCC Basic Skills Supplement, 2012). This disparity in completion rates underscores the need for community colleges to embrace the goal of measuring and working to close equity gaps. Many colleges still struggle with how best to tackle this pervasive issue, and the struggle becomes more desperate as resources are further constrained.

Recommendations from California Community Colleges Student Task Force

A recent recommendation from the 2012 CCC Student Success Task Force is for the community college system to develop a cohesive statewide framework for the delivery of basic skills educational services. The Task Force believes that the community college system must develop more effective models of basic skills instruction and implement them on a large scale. Traditional lecture courses employ a delivery format many students have already experienced, to repeat content they have failed to master; these strategies have not been highly successful with developmental students (Boylan, Bonham, & White, 1999). Colleges are seeking alternative strategies that promote active learning and increase students' chances of success. It will be very difficult to meet the Obama administration's goal of increasing the number of community college graduates by 5 million by 2020 without making significant progress on improving outcomes for students who arrive at community colleges with weak academic skills (Bailey & Cho, 2010). This includes the use of asynchronous online-based course delivery.

The Online Course Delivery Format

The number of students enrolling in online courses from both 2-year and 4-year colleges continue to grow in the United States (Allen & Seaman, 2011). More than six million students, nearly a third of total enrollment at degree-granting postsecondary institutions, were taking at least one online course in 2010. This represents an increase of more than 100% from the four years previous (Shea & Bidijerano, 2010). Rovai et al. (2008) reported that distance education delivered asynchronously via the Internet is the most popular distance learning mode used in higher education today.” Asynchronous distance education is defined as instruction that does not occur simultaneously compared to the campus-based instruction found in most traditional classrooms (Schlosser & Simonson, 2010). In the literature, research shows that online learners who participate in distance education courses are different from traditional campus-based students. Moore and Kearsley reported in 2005 that the demographic characteristics of typical distance learning students include adults who range in age from 25 to 50 years, take courses to acquire new skills or upgrade their knowledge, enroll voluntarily in distance education courses, and have previously attended post-secondary education programs. Moore and Kearsley (2005) asserted that students with more formal education experience were more likely to complete distance learning course successfully. Most of these students take education seriously; are highly motivated, committed, and task-oriented; and want to use the knowledge they have gained (Moore & Kearsley, 2005). In contrast to this study, Smith Jaggars and Xu (2010) reported on a study concerning first year community college students, and which demographic characteristics had a statistically significant impact on online courses taken in the first year. Results indicated that in terms

of the first year, online courses were significantly more popular among females, English-fluent students, those who applied and were eligible for financial aid, who never enrolled in remedial education, who were above 25 years old at college entry, who had earned credits in previous semesters, who had enrolled in computer literacy or development courses, and who had attempted online courses before. In terms of ethnicity, Black students and Hispanic students were significantly less likely to take an online course both in the first semester and first year than were White students (Smith Jaggars & Xu, 2010). Comparing these studies, similar characteristics are seen in successful online students, regardless of year in college. Other studies concur with these findings, including a 2011 report on a study of Washington state community college students that stated that online courses are consistently more popular among women, White students, English-fluent students, students from higher quintiles of socioeconomic status (SES), and students with a stronger level of academic preparation (Xu & Smith Jaggars, 2011). With increased demand for online learning as well as more institutions of higher learning striving to provide diverse educational opportunities, online course delivery continues to grow as a viable means of providing increased access to a greater number of students (Allen & Seaman, 2010).

Online Course Delivery in Continued Demand

The online course delivery format provides opportunities for individualized instruction (Pajari, 2003; Trenholm, 2006). Each student can be working on topics that demand their attention. Online classes are also well suited to mastery learning approaches (Kennedy, Delgarno, Gray, Judd, Waycott, Bennett, & Churchward, 2007; Lindsay, Johnson, Cummings & Scale, 2006). In traditional classroom settings, new topics are

introduced each day even if some students are still struggling with the previous lesson (Artino, 2007; Puzziferro, 2008). The online courses can provide students with more time-on-task and repetition for learning (McCabe, 2006). The pacing is directed by the students so that those who are reviewing can move through the lessons quickly while other students can take extra time for practice that they need. Many students like the learning anywhere, anytime option (Eggert, 2009). Some appreciate that flexibility simply for control of their learning (Cavanaugh et al., 2008; Trenholm, 2006;). Others look for online learning opportunities to fit their education around work and family responsibilities (Tham & Werner, 2005). Lorenzetti (2005) contends that there are many students who either would not be able to continue their education at the postsecondary level or who would have to settle for less than adequate educational experiences if they were not able to take classes online.

The same flexibility that is a positive aspect of online courses is also a danger (Hughes & Hagie, 2005). Students need to be independent learners (Yukselturk, 2009). Adequate reading skills and self-discipline are essential for success in the online course delivery format (Brouse, 2007). Clearly, online coursework is not ideal for all students (Engelbrecht & Harding, 2005).

Course Delivery Format and Course Persistence

Efforts to improve the success of college students, including retention and improved rates of degree attainment, remain a high priority in the United States (Nelson, 2010). To achieve important graduation goals, colleges must increase student retention at the course level and bring about successful course persistence among retained students. The issue of attrition in online courses is important for two reasons: First, it is important in assessing

the relative effectiveness of the cost of online learning compared to traditional classroom-based teaching as this affects educational planning and the value of investment in distance online learning by learners, educational institutions, corporations and government agencies. Secondly, it is also important in determining what approaches might increase the student engagement with and learning effectiveness of online distance learning itself, as this affects opportunities for access, learning outcomes and the perceived value and credibility of online courses (Tyler-Smith, 2006). In order to develop high quality distance education programs, it is important for designers and educators of distance education courses to understand the characteristics of distance learners and what affects their success (Yukselturk & Bulut, 2007).

Although nontraditional students have an attraction for online courses, not all of these students are able to succeed in these type courses. Early identification of students who are at risk for failure in online courses can help academic advisors steer students in the right direction when it comes to developing an academic plan. According to Wojciechowski and Palmer (2005), “The identification of characteristics associated with successful online students could provide the necessary information for teachers and admissions personnel to suggest or discourage a student from registering for an online course” (p. 3). With the number of nontraditional students on college campuses continuing to increase, continual achievement by these students in online classes is imperative.

While much of the higher education literature examines institutional level retention and proposes academic and co-curricular activities to bring about student engagement and retention overall, far less is known about retention at the course level,

especially in community college online courses. Park and Choi (2009) examined factors contributing to adult learners' decision to persist in online education at a large Midwestern university. Park and Choi's study examined student characteristics such as age, gender and educational background in concert with learner skills as a function of pre-entry variables affecting a dropout decision. They found course completers did not differ from non-completers in their individual characteristics. Park and Choi's study supported other researchers such as Willging and Johnson (2004) who examined individual student characteristics as predictors of persistence in graduate online cohorts. Willging and Johnson posited individual characteristics have little influence on persistence in distance education. By contrast, other researchers within the literature represent the opposite perspective. In a study of 464 online students, Dupin-Bryant (2004) performed discriminant analysis with six pre-entry variables to study student persistence and success. Dupin-Bryant's study found individual student pre-entry variables could be used to distinguish individuals who completed university online distance education courses from those who did not.

Tyler-Smith (2006) reported that withdrawal rates for adults engaged in distance education were substantially higher than traditional students, and reached up to 80% at some institutions (as cited in J. McKean, 2011). A survey of community college administrators indicated that course retention was 65% for distance-education courses compared to 72% for campus-based courses (Lokken, 2009). As it relates to the present study of colleges in the California Community College system, the distance education success rate rose slightly in 2009-2010, from 53 percent to 57 percent. This success rate compares to an increase from 64 percent in 2005-2006 to 67 percent for campus-based

students. The gap for the success rate between campus-based instruction and online instruction closed from 11 percent to 10 percent (CCCCO, 2011).

Several factors that contribute to student success in the online course delivery format have been identified in the literature. The literature contained numerous studies of factors influencing student persistence within distance education at the institution or course level. Few, however, examined these factors across multiple institutions or with aggregate data. The use of secondary datasets is becoming increasingly popular to social and policy analysts seeking to understand issues such as student persistence and attainment. Remler and Van Ryzin (2011) asserted in an important sense “In part, this is because of the growing cost and complexity of gathering social, health, and economic data from individuals and organizations.” (p. 195). As it relates to this study, aggregated data from over one hundred California community college campuses were examined for differences between campus-based and online students enrolled in developmental English courses for course persistence and course success.

Course Delivery Formats and Course Success

Peterson & Bond, 2004 examined the impact of course delivery formats on lower-performing students; its results suggested that the bottom one-third of students performed better in the campus-based setting than in the online setting. A study comparing learning outcomes between online and campus-based sections of an economics course (Figlio, Rush, & Yin, 2010) found no significant difference between the two groups overall but noted that among students with low prior GPAs, those in the online condition scored significantly lower on in-class exams than did those in the campus-based sections. These findings have led some researchers to suspect that online instruction might not be as

effective as campus-based instruction for academically underprepared students. Two regression studies that controlled for multiple covariates have focused on online versus campus-based course withdrawal in the community college context. First, in a study of a developmental writing course in a community college (Carpenter, Brown, & Hickman, 2004), students in the online version of the course were substantially more likely to withdraw over the course of the semester than were students in the campus-based version. It may not be surprising, then, that online students who stayed in the course were more likely to earn a good grade than were campus-based students who stayed. Second, a study of developmental mathematics students in community college found that completion rates were higher for campus-based (80%) than online (61%) courses, a difference which remained consistent and was statistically significant after controlling for multiple student variables (Zavarella, 2008).

Selected Student Demographic Characteristics and Online Student Success

From a review of the literature, three student characteristics were selected for comparison in the current study: age, gender, and race. Enrollment status and eligibility for tuition fee waiver were selected as situational variables. Each of these variables has been previously found to have some impact on community college student persistence in online courses.

One study in the literature on online education and persistence is the National Center for Education Statistics (NCES) study of undergraduate and graduate participation in distance education (NCES 2003-154). Using data collected from the 1999-2000 National Postsecondary Student Aid Study, the NCES study examined demographic characteristics by percentage of undergraduate students who participated in distance

education during the 1999-2000 academic year (NCES 2003-154). NCES included the demographic characteristics of gender, race/ethnicity, and age compared by percentage of total participation in distance education (NCES 2003-154). These characteristics reflect the entry characteristics identified in the persistence and attainment literature. An overview of these demographic characteristics by frequency distributions indicated apparent differences for this academic year. For instance, more females than males participated in distance education (8.5% to 6.5%). Another observation in that study revealed students age 24 and above participated more frequently in distance education than those below age 24 (9.9% to 6.0%). White and Black students engaged in distance education at higher rates (8.0% and 7.9%) than their Hispanic counterparts (6.2%). While the NCES study demonstrated differences between the frequency distributions of student demographic factors engaged in distance education, the study did not establish an empirical link to student persistence and attainment. In contrast, a study by Welsh (2007) found that demographic variables that included age, ethnicity, and gender were not statistically significant predictors of successful or unsuccessful student completion in an online distance learning course.

Morris, Wu, and Finnegan (2005) surveyed students enrolled in online courses at the University of Georgia hoping to develop rules for predicting groups of students likely to complete or not complete online classes. Seven variables were identified (gender, age, SAT-verbal, SAT-math, current credit hours, HS GPA, College GPA) that could be used to predict student dropout with 52.6% accuracy and student completion with 66.1% accuracy for an overall accuracy of 62.8%. Morris et al. (2005) explained that, based on demographics and academic information, high school GPA and SAT math scores were

the best predictors of completion for students at the university. Identifying student retention factors for online courses at the community college, however, has become a concern for college administrators.

Online student success and gender. In a study by Aragon and Johnson (2008), females demonstrated a low positive correlation to persistence in contrast to their male counterparts. Yukselturk and Bulut (2007), however, found that gender as a variable was unrelated to learning outcomes in online courses. There may be other factors that impact course persistence and gender. For example, there is some evidence that females are more likely to apply for, receive, and respond to tuition and other post-secondary supports, which lowers the cost of school and may increase their probability of graduation (Angrist, Lang, and Oreopoulos 2006; Dynarski 2007). In addition, Conger and Long (2010) found that male students arrive at college with lower high school grades than female students, and suggest this may explain some of the widened gender disparity in performance, including persistence.

Online student success and age. Wojciechowski and Palmer (2005) investigated student characteristics related to academic success in an online business course. Selected demographic and student characteristics were examined. One hundred and seventy-nine students participated in the study and their average age was twenty-five. Students were considered successful in the online course if they received a grade of “C” or better. “The variables found to be statistically significant for the general population included age, previous online courses, ACT English, ASSET Reading, grade point average, previous withdrawals, and attendance at orientation” (p. 70). The findings from the study indicated that successful students were older and had taken online courses previously

(Wojciechowksi & Palmer, 2005). Colorado and Eberle (2010), however, found that students' age did not significantly affect academic performance in online courses. This is a common theme when looking at individual student characteristics and online student success. There are conflicting findings in the literature regarding specific student characteristics and student success factors, especially when there are limited studies that have considered online students at community colleges. In a study by Patterson and McFadden (2009) for example, age was found to have a significant unique effect on retention in two Master's level programs, with older students more likely to dropout. Aragon and Johnson's (2008) study, on the other hand, studied student demographic characteristics of students enrolled in distance education courses at a rural community college in the Midwestern United States, and found that age was not demonstrably different between students who completed their course or did not complete the course.

Online student success and race/ethnicity. In addition to the demographic characteristics of age and gender, Bowen, Chingos and McPherson (2009), in a study of contemporary educational attainment, articulated the necessity to “reduce the gross disparities in graduation rates that exist today among groups classified by race and socioeconomic status.” (p. 207). They argue that any meaningful analysis of the role of distance education in student persistence or attainment should examine race or ethnicity as a variable. According to a report by the National Center for Education Statistics (2007), institutions of higher learning experienced an increase in enrollment among various ethnic groups such as Asians, Hispanics, and Blacks between 1980 and 2005. The proportion of American college students who are minorities has been increasing. In 1980, 16.1 percent were minorities, compared with 30.9 percent in 2005. Much of the change

can be attributed to rising proportions of Hispanic and Asian students. The proportion of students who are Black was 12.7 percent in 2005, an increase of 3.5 percentage points from 1980. The percentage of the total student enrollment who are Hispanic rose by 6.9 percentage points during the same time period (National Center for Education Statistics, p. 13). With such an increase in enrollment among minority groups, ethnicity is an important variable to consider when investigating academic performance in online education, yet few studies (Clayton & Cate, 2004; Graunke & Woosley, 2005) have been conducted which examine the relationship between ethnicity and academic performance. One study by Yukselturk (2009) found that white students successfully completed online courses at higher rates than Black students. These findings are supported in the literature by others that found minorities were less likely to complete courses or programs (DuBrock, 2000; Wiggam, 2004).

Online student success and enrollment status. Research indicates a high correlation between full-time enrollment and students achieving their educational objectives (Aragon & Johnson, 2008; Fike & Fike, 2008; Moore, Bartkovich, Fetzner & Ison, 2008). In a sample of 427 community college students, for example, enrollment units was a strong predicting factor for students to persist in their education (Nakajima, 2008). Other studies do not concur with this correlation. Wojciechowski and Palmer (2005) investigated the relationship between student status along with several other variables and student performance. The sample in this study consisted of 179 undergraduate online students. Approximately 74.3% or 133 of the students were enrolled part-time and approximately 25.7% or 46 students were enrolled full-time (Wojciechowski & Palmer, 2005). The results of the study indicated that “no statistically

significant relationship” (Wojciechowski & Palmer, p. 9) existed between student performance and student status. In another community college study, students enrolled full-time in online courses performed slightly higher than those students enrolled part-time; however, this difference was not significant (Colorado & Eberle, 2010).

Unfortunately, many community college students are not in a position to enroll full time, particularly those who work full time and are enrolled to upgrade their job skills, as well as those who depend on full-time employment to support families (California Community Colleges, 2012). “Students who attend college part time are at a disadvantage relative to their fulltime peers,” according to a report released by the National Center for Education Statistics (Walsey, 2007, p. A25).

Online student success and eligibility for tuition fee waiver. A student’s financial aid status is also a strong predictor of online course persistence. Financial aid was created to help eligible students achieve their academic goals (Hart, 2003). Many traditional and nontraditional students rely on financial aid from the federal government to fund their college education. Students receive financial assistance from sources other than the federal government such as family, part-time employment, and scholarships. However, the federal government is the number one provider of student financial aid (Hatfield, 2003). Eligible students may receive financial aid in the form of work-study, grants, subsidized and unsubsidized loans. In addition to the financial responsibilities that younger students have, older students also have financial responsibilities related to their families such as taking care of young children and aging parents (Hart, 2003). “Student financial aid is designed to assist all students in obtaining access to higher education regardless of age and economic circumstances. Although no specific aid types are

designed to fit the needs of adult learners, federal and state programs do not limit aid based on a student's age" (Hatfield, 2003, p. 33). Morris, Wu, and Finnegan (2005) found that financial aid combined with locus of control was a good predictor of whether or not students would complete distance education courses. In Morris, Wu, and Finnegan's study, the combination of financial assistance and locus of control predicted dropout with approximately 74.5% accuracy.

For the purposes of this study, eligibility for tuition fee waiver was examined as a situational variable. The California Community Colleges has a specific program, called the Board of Governors Fee Waiver (BOGFW) that provides assistance to cover community college enrollment fees. To be eligible, a student must be a California resident and must qualify under one of the following conditions: The student and/or their parents must currently be receiving AFDC (Aid to Families with Dependent Children, or SSI/SSP (Supplemental Social Security Income/State Supplementary Program) or General Assistance/General Relief, or the student is a disabled veteran or a dependent of a deceased or disabled veteran as certified by the Department of Veterans Affairs. For students that do not qualify per the conditions above, they can qualify under income guidelines. Under Title 5 of the California Code of Regulations, the student or student's family must have a total income in the prior year that is equal to or less than 150% of the U.S. Department of Health and Human Services Poverty Guidelines based on family size.

The Academically Underprepared Student and Online Education

In the United States, over 50% of students in community colleges take one or more developmental courses (Bailey, 2009; Bailey et al., 2010). Given the demand for distance learning and for developmental education, it is not surprising that colleges are

now offering increased opportunities for online developmental education. Computers and the Internet have the potential to deliver learning in a way that actively involves students and that offers flexibility to busy adult learners. In addition, developmental students generally start out behind their peers, and the flexibility of online classes can provide a way to help them catch up (Hendricks, 2012). However, many institutions harbor particular concern about online course performance among underprepared or traditionally underserved students, who are already at risk for course withdrawal and failure (Jaggars & Bailey, 2010). Some experts suggest that community college developmental students face unique challenges when it comes to online learning (Ashby, Sadera, & McNary, 2011). Conventional wisdom suggests that students who are underprepared academically for college are least likely to access and benefit from online courses. In fact, some evidence suggests that online learning may undercut academic progression among low-income and academically underprepared students (Jaggars & Bailey, 2010).

The National Center for Educational Statistics (2003) reported that only 13% of higher education institutions offered developmental education courses using advanced technology as a mode of delivery for both distance education and campus-based course instruction. The research on using online learning platforms specifically in developmental reading has been limited; however, it has increased in recent years, especially with the upward trend in online distance education (Burgess & Caverly, 2009). Some perspectives in developmental education reflect a hesitation to promote online developmental reading courses, citing high attrition rates and a lack of confidence as reasons that developmental readers cannot handle the independent nature of this delivery mode (Petrides, Kerglani, & Nguyen, 2006). Further, other researchers have argued that developmental students need

instant feedback and teacher presence to learn effectively; therefore, online learning may place them at risk for dropout or feeling isolated (Boylan, 2002; Maxwell, 1997).

Conversely, emerging studies document academic achievement gains from developmental education students in online developmental education programs. For example, in their longitudinal study of online remedial education effects, Rienties, Templelaar, Dijkstra, Rehm, and Gijsselaers (2008) found that participants who took developmental education courses online outperformed their campus-based counterparts in terms of course exams, course GPA, and course persistence.

Concerns include student readiness, the lack of face-to-face interactions, student access to computers and the Internet, and a breadth of special student needs. Some experts in developmental education have also argued that online learning requires skills that many students who need developmental education have not yet mastered, such as literacy, time management, and the ability to work independently.

Boylan (2002) recommends technology be used in moderation with developmental students. He goes on to say, "Computer-based distance learning has yet to be proven effective with developmental students. Distance learning often requires independent learning skills, study discipline, time management skills, and a high degree of motivation. These characteristics are not plentiful among developmental students" (Boylan, 2002, p. 82). Hartle (2009) stated it somewhat differently in issuing the public higher education challenge of the new millennium. "Over the last generation, we have increased access to higher education for underprepared students. Now we must ensure those students finish what they start." (p. 29). While this may be true of developmental

students in general, some will have the skills and motivation to succeed or even prosper in online courses; the challenge is to identify these students.

Reluctance to Embrace Online Developmental Education Courses

Developmental educators have been reluctant to embrace online course delivery. The first National Study for Developmental Education in 1996 reported 3% of developmental courses were taught totally online; the second national study in 2005 found that number had increased only slightly (Gerlaugh et al., 2007). The hesitancy to embrace online developmental education is supported by conflicting results from studies in the literature on the success of students enrolled in online developmental courses. One study utilized existing data from ten semesters to compare the effectiveness of online and classroom-based developmental math courses at a four-year liberal arts university (Eggert, 2009). There was no statistically significant difference in the successful course persistence means of the two instructional delivery systems (Eggert, 2009). In another study on developmental math courses, Lynch-Newburg (2010) found that the students who were enrolled in the online courses at a community college had higher retention rates and higher success rates than the students enrolled in the campus-based courses. A third study on developmental math courses by Phillip (2011) found that the course delivery format at a four-year college had an impact on success for the developmental math student. In that study, the online classes had significantly fewer students complete the course, with 93% of the campus-based students completing the course compared to 76% of the online students. In a study comparing online and campus-based developmental reading courses, it was found that although online students who completed the course were more likely to be academically successful than retained campus-based students, the

online instructional delivery method appeared less successful than the campus-based method in retaining students to course completion (Wu & Jaggars, 2010). Based on these studies, Dr. Shanna Jaggars, a senior research associate at CCRC, commented, “an online course is not necessarily a desirable alternative to a campus-based course for a developmental student” (as cited in Phillip, 2011, p. 1).

Online Developmental Student Success

Although the “no significant difference” phenomenon between campus-based and online education described by Russell (2001) continues to dominate the literature, the majority of studies in this area focus on students who are well-prepared and motivated to succeed in the course. As a result, we have little evidence on the effectiveness of online courses among the low-income and academically underprepared students who make up the bulk of community college students. However, some existing studies on a particular course (e.g., Bendickson, 2004; Chamber, 2002; Vargo, 2002) or individual institutions (e.g., Carpenter, Brown, & Hickman, 2004; Zavarella, 2008) suggest that online courses are often associated with less desirable course outcomes for underprepared students. Given the rapid growth of online courses in community colleges, it is important to verify that these courses do no harm to students’ academic success in this particular educational setting.

Studies of online developmental student success have focused on two main factors, course persistence and course success. Zavarella and Ignash (2009) studied developmental algebra students in lecture, computer-assisted non-lecture, and online distance learning sections at two campuses of a large urban community college in Florida to determine the effect of delivery mode on student retention. The completion rates were

80% for the lecture sections, 58% for the computer-assisted sections, and 61% for the online sections. The authors recommended that colleges carefully counsel students considering online classes and help the students choose a delivery format that is appropriate for them. Carpenter et al. (2004) controlled for a variety of factors and found that developmental writing students were significantly more likely to withdraw from an online course than from a campus-based course.

Final grades as a measure of course success have also been studied. One study of community college students in developmental mathematics observed that 73% of campus-based students completed the course with a grade of A, B, or C, while only 51% of online students did so (Summerlin, 2003). Figlio, Rush, & Yin (2010) explicitly examined impacts among less-prepared students, finding that such students perform significantly more poorly in online courses. Their study noted that among Hispanics, males, and students with low prior GPAs, students in the online course delivery format scored significantly lower on in-class exams (Figlio, Rush, & Yin, 2010). Earlier, Summerlin (2003) focused on a developmental mathematics course, and compared a sample of online students ($n = 79$) to a randomly-drawn sample of campus-based students ($n = 143$) in terms of their end-of-semester scores on a state mathematics exam. Across the college, observed withdrawal from the online sections was substantially higher; but among those students who completed the course, exam scores were similar between the groups after controlling for reading ability, age, gender, and ethnicity.

A widespread concern among experts in developmental education is that many underprepared students do not complete their initial developmental education courses, and the challenges they face cause some developmental students to drop out of college

(Bailey & Cho, 2010). For example, among one cohort, those who took one or more online courses in their first fall semester were significantly less likely to return in the spring, with adjusted retention rates 5 percentage points lower than those of students who took a campus-based curriculum (69% vs. 74%) (Jaggars, 2011). In the study, it was also found that students who took developmental math and English courses online were much less likely to subsequently succeed in college-level math and English. Adjusted enrollment rates into college-level English were almost 30 percentage points lower among those who took their developmental English course online compared to those who took a campus-based developmental English course (Jaggars, 2011).

As noted earlier, there is very little research on the relationship between the unique characteristics of community college students and their ability to succeed in online courses (Jones, 2010). There is even less research on students enrolled in online developmental courses, particularly English courses; this study addresses that gap in the literature.

Summary of Relevant Literature

After a thorough review of the literature, it is clear that more research is needed to understand the effect of course delivery formats on student success factors for developmental education, especially at the community college. In order to develop high quality distance education programs, it is important for designers and educators of distance education courses to understand the characteristics of distance learners and what affects their success (Yukselturk & Bulut, 2007). Some of the essential characteristics that might affect learner satisfaction as an online learner (i.e., gender, age, race/ethnicity, enrollment status, and financial aid status) have been investigated in the literature.

Research must be conducted to ensure that we are providing learning opportunities and course delivery formats that support the success of students enrolled in these classes. The current study compares both campus-based and online developmental English courses for student success factors. The variables of interest identified in the literature that were supported through empirical tests will be used to examine the role of course delivery format on student success using first time developmental English students enrolled in California community colleges between 2008-2011. This information adds to the developmental education and the distance education literature for the community college population.

CHAPTER THREE: METHODOLOGY

With their open-door admission policy, community colleges serve a population with diverse needs and a wide range of skills. Identifying factors that contribute to student success is essential to the effort of actually improving students' rates of community college completion. By more clearly understanding where students falter, community colleges can strategically focus their scarce resources to help improve the success of their students and increase their completion rates (College Board, 2012). Students taking online courses have a 10–20% increase in attrition rate over their campus-based classmates (Angelino, Williams, & Natvig, 2007). By offering developmental courses in an online course delivery format, the challenges inherently increase. Research must be conducted to ensure that we are providing learning opportunities and course delivery formats that support the success of students enrolled in these classes.

Research Design

This study utilized a non-experimental causal-comparative design to explore the relationship between one independent and two dependent variables. Course delivery format is the independent variable used to determine its impact on student success as determined by the course persistence and course success of students enrolled in developmental English courses at California community colleges. Existing data on these variables were collected from all 112 campuses of the California Community Colleges, covering a span of three academic years. The use of existing data at multiple community colleges to explore the research questions transcends much of the existing literature that relies on single institution case studies and enables research on the issues of student

success. This methodology was selected by the researcher to increase the generalizability of the findings for institutions and students at California community colleges.

Course delivery format, course persistence, and course success are operationalized as dichotomous nominal variables.

Research Questions and Hypotheses

The research questions were developed from a review of literature on characteristics and factors influencing student success with a focus on students engaged in distance education at the community college.

1. Are there statistically significant differences in student characteristics between online and campus-based developmental English students?
2. Does course delivery format influence course persistence rates between students enrolled in online and campus-based developmental English courses?
3. Does course delivery format influence course success rates between students enrolled in online and campus-based developmental English courses?

Hypotheses for Research Question One

H₀₁₁: There is no significant difference based on age in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course.

H₀₁₂: There is no significant difference based on gender in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course.

H₀₁₃: There is no significant difference based on race/ethnicity in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course.

H₀₁₄: There is no significant difference based on student enrollment status in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course.

H₀₁₅: There is no significant difference based on eligibility for tuition fee waiver in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course.

Hypothesis for Research Question Two

H₀₂₁: Course delivery format does not statistically significantly influence course persistence rates between first year community college students enrolled in developmental English courses.

Hypothesis for Research Question Three

H₀₃₁: Course delivery format does not statistically significantly influence course success between first year community college students enrolled in developmental English courses.

Restatement of the Purpose

The purpose of this study was to test an adaptation of Rovai's Composite Persistence Model (2003) and compare online and campus-based course delivery formats on the student success factors of course persistence and course success for students enrolled in developmental English courses at California community colleges. The results of this study are of benefit to all community colleges, and especially the California Community College system. In this time of limited economic resources for higher education, having the ability to better predict retention and student success aids institutions as they utilize diminishing resources.

Participants

The population of interest for this research included first year California community college students that enrolled in at least one online or campus-based developmental English course from 2008-2011. This is a comparative study involving existing data. The Chancellor's Office of the California Community Colleges maintains information on student and institutional data on their Management Information System (MIS). Since research involving human subjects may have associated ethical issues, the pre-existing data collected for the study from the student enrollment database was collected, recorded, and maintained in such a way that anonymity of the participants and confidentiality of the student information was preserved. Before data collection began, a Certification of Exemption (Appendix A) was granted by the Institutional Review Board (IRB) of Liberty University. Data on 188,204 California community college students were collected for this study.

Setting

The California Community College (CCC) system serves over two million students, representing nearly 25 percent of the nation's community college student population. Operating through 112 colleges and 71 off-campus centers, California's two-year institutions provide primary programs of study and courses, in both credit and noncredit categories that address its three primary areas of mission: education for university transfer; career technical education; and basic skills. The student population served by all of the community college programs is characterized by enormous diversity in age, in ethnicity and cultural heritage, in walks of life, in their economic situations, in academic preparation, and in their purposes and goals.

As stated in the Advancing Student Success in California Community Colleges report, more than 70 percent of California community college students enter the system under-prepared to do college-level work (CCCC, 2012). A majority of these are first generation college students, low-income, and/or are from underrepresented groups. These students face the most challenging obstacles for success and, unfortunately, have the lowest completion rates in the system. Only 53.6 percent of degree-seeking students ever achieve a certificate, degree, or transfer preparation. For African-American and Latino students, the rate is much lower (42 percent and 43 percent respectively). In addition, of the students who enter college at one level below transfer level in Math, only 46.2 percent ever achieve a certificate, degree, or transfer preparation. Of those students entering four levels below, only 25.5 percent ever achieve those outcomes. Regardless of their goals, the vast majority of students come to community colleges in need of basic skills in reading, writing, and/or mathematics. The current study examined data from 145,601 first year CCC students enrolled in developmental English courses from 2008-2011.

The system provides learning opportunities for students in campus-based and online courses and programs. Distance education at the California Community Colleges grew at a significant rate from 2005-2010. It nearly doubled in the number and percentage of course sessions. By 2009-2010, online sessions increased by 93 percent to represent 9.06 percent of all educational sessions offered. Distance education sessions continued to grow in 2009-2010 although at a slower rate due to system wide budget reductions resulting from the state fiscal crisis (CCCCO, 2011).

Instrumentation

The dependent variables in this research were measured by the comparison of existing data. For the purposes of this study, the database stored in the MIS system at the Chancellor's Office of the California Community Colleges was considered the instrument

of research. A primary advantage of using this statewide resource is that a database can store very large numbers of records efficiently, and an entire population can be studied. This increases the generalizability of the study's findings. In the current study, information on all first year students enrolled in online and campus-based developmental English courses at California Community Colleges for the period between the fall of 2008 and the fall of 2011 were compared for course persistence and course success.

Procedures

After receiving IRB approval, consent was also secured by the Chancellor's Office of the California Community Colleges to examine existing data (Appendix B) from their MIS database. The primary independent variable is course delivery format. Student characteristics of gender, age, race, enrollment status, and eligibility for tuition waiver were also examined to compare with the student success factors of course persistence and course success for students enrolled in developmental English courses for the academic years between fall of 2008 and fall of 2011. See Table 3.1 for coding of the independent variables.

Table 3.1.
Coding of Independent Variables

Course delivery format		Student Individual Characteristics	
0 =	Campus-based	Age	
1 =	Online	*2 =	18-19
Gender		3 =	20-24
0 =	male	4 =	25-29
1 =	female	5 =	30-39
Ethnicity		6 =	40-49
1 =	Caucasian/White	7 =	50+
2 =	African American/Black	Enrollment Status	
3 =	Hispanic	0 =	Enrolled < 12 semester units
4 =	Asian	1 =	Enrolled 12> semester units
5 =	Pacific Islander	Eligibility for BOG tuition waiver	
6 =	Filipino	0 =	Ineligible
7 =	Native American	1 =	Eligible

*Students in the group <18 years old and coded 1 were eliminated from the data analysis

Prior to the collection of data, the researcher consulted with a systems analyst at the California Community Colleges Chancellor's Office (CCCCO) for assistance in retrieving the desired data and stripping it of personal student identifiers prior to releasing the information to this researcher. Arrangements were then made for the researcher to gain access to the disaggregated data. The researcher is an instructor at one of the CCC campuses. There was no contact with individual students for the purposes of this research; only categorical data was utilized for this study.

Data Analysis

Descriptive statistics and binomial logistic regression were used to analyze the data. The first step of data analysis involved descriptive statistics to examine the population of interest. Descriptive statistics were used to organize and summarize the data so that the information could be displayed in a meaningful context (Gall et al., 1996). Pearson's Chi Square test was used to measure how well the observed distribution

of data fit with the distribution that was expected with the independent variables (Field, 2009). Because the Chi Square test relies on frequency data, it is appropriate in this study to answer questions about data that are nominal and ordinal (Carroll, 2012). Next, binomial logistic regression models were constructed to address research questions two and three. The mainstay of statistical analysis in education research is regression (Howell, 2008). Regression comes in many different forms, owing mainly to the fact that dependent variables may be measured at a variety of different levels of measurement. Logistic regression allowed the researcher to estimate the relationship between each independent variable and the two dependent variables, course persistence and course success while controlling statistically for the other independent variables. This analysis method was appropriate because it allowed for the analysis of a dichotomous outcome variable (Peng & Ingersoll, 2002). The dependent variables of this study, course persistence and course success, were coded with only two outcomes. For course persistence, either a student completed the course or they did not. For course success, a student either earned a C or higher grade or they did not. Kleinbaum, Kupper, Nizam and Muller (2008) suggested, "Logistic regression analysis is the most popular regression technique available for modeling dichotomous dependent variables" (p. 604). According to Hosmer and Lemeshow (2000) whenever the researcher is focused on data analysis describing a relationship between variables that are dichotomous, "Over the last decade the logistic regression model has become, in many fields, the standard method of analysis" (p. 1). In logistic regression the coefficients themselves are not directly interpretable. They indicate that, for a one-unit change in x , the logged-odds of the probability that y will be equal to 1 change (either positively or negatively) by the amount

of the slope coefficient (b). For the purposes of this research, we have focused on the p -values of the coefficients (i.e., a statistically significant difference between two groups or no statistically significant difference), the signs (+/-) of the coefficients (i.e., when x increases, the probability of y either increases or decreases), and the logged odds ratio, that is the probability of achieving the outcome (the probability that the outcome variable equals 1) divided by the probability of not achieving that outcome (the probability that the outcome variable equals 0). Because regression analysis can be cumbersome to compute by hand, Statistical Package for Social Sciences (SPSS), a computer software statistical program, was used to analyze the data.

Summary

Public higher education in America is in a state of transformation driven by economic stress due to shrinking public fiscal support and rise of emergent technologies. Concurrently, the demographic composition of the undergraduate student population continues to evolve with more adult students attending degree granting institutions and more students enrolling in online course delivery formats. Against this landscape of change, this study sought to explore the relationship between participation in online developmental English courses with course persistence and course success at the community college. Examining this relationship from a construct of student characteristics is important as the undergraduate population continues to evolve and enrollments in distance education continue to increase.

CHAPTER FOUR: RESULTS

The primary purpose of this research was to investigate differences between selected individual and situational variables and student success factors among online-based and campus-based first year students enrolled in developmental English courses at the community college.

This chapter details the results of the data analyses performed for this study. Data were obtained from the Chancellor's Office of the California Community Colleges to explore the research questions. The literature review served as the preliminary step for selecting variables associated with student success and the online course delivery format.

The current study collected data from 145,601 first year community college students enrolled in a developmental English course from 2008-2011. The original dataset contained 188,204 observations. After eliminating students with missing values, the dataset contained 161,631 students. A further decision was made to eliminate data on students under the age of 18 and those enrolled in summer term courses. The final dataset resulted in 145,601 observations ($n = 145,601$). Of particular interest to this study, it is relevant to note of the students who comprised the sample, 99% or 144,206 took a campus-based developmental English course while 1% or 1395 indicated they had self-selected into an online-based course. These proportions are similar to a recent study (Davidson, 2011) comparing course delivery formats of developmental math classes that indicated over ninety-five percent of study participants were enrolled in a campus-based format, and less than 5 percent were enrolled in an online-based course delivery format. This is also a predictable distribution of students considering that less than 9% of CCC

courses are offered online, and of the developmental courses, less than 3% of these are offered online.

Research Question One

Are there significant differences between online-based and campus-based first year developmental English students and selected individual characteristics of age, gender, and race, and situational variables of enrollment status and eligibility for tuition fee waiver?

Course Delivery Format and Student Variables

To test this first research question, the researcher created multiple hypotheses grouped around student characteristics that have previously been used to predict persistence. These hypotheses are used to identify results that answer the first research question. Findings related to each group of hypotheses are listed below. Frequency distributions of each variable were examined to identify if first year developmental English students differed significantly in individual characteristics by instructional format. Based on the observed differences in frequency distributions, Chi-square tests were also performed to measure the likelihood that the observed association between course delivery format and selected student characteristics were caused by chance. Significant differences were found between course delivery format and each of the five student characteristics: age, gender, race, enrollment status, and eligibility for tuition fee waiver. Table 4.1 presents the relationship between course delivery format and the student variables.

Table 4.1

Pearson Chi Square - Course Delivery Format by Independent Variables

	Value	df	sig
Age	869.014	5	0.000
Gender	445.159	1	0.000
Race/Ethnicity	121.185	7	0.000
Enrollment Status	63.025	1	0.000
Eligibility for tuition fee waiver	6.913	1	0.009

Course delivery format and gender. Table 4.2 indicates that females enrolled in proportionately more online developmental English courses than male students. While 52.3% of all developmental English courses were enrolled in by female students, 60.8% of the online-based courses were enrolled in by female students. This finding is in agreement with the latest national distribution of college students by gender. In the span of a single generation, undergraduate enrollment has switched from predominantly male to predominantly female. The gender gap is even wider among students from low-income families and among underrepresented minorities (Holder, 2009). The distribution of course delivery format by gender in the current study also indicates that female students enrolled in both campus-based (51.8%) and online (60.8%) developmental English courses in greater percentages than male students (Table 4.2). Thus, the null hypothesis, H_{01} : There is no significant difference based on gender in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course, was rejected.

Table 4.2

Cross-tabulation – Course Delivery Format by Gender

Gender	Campus-based		Online-based	
	Count	%	Count	%
Male	69572	48.2%	547	39.2%
Female	74634	51.8%	848	60.8%
Total	144206	100%	1395	100%

Course delivery format and age. The null hypothesis, H_{012} , stated that there is no significant difference based on age in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course. A review of frequency cross-tabulation results indicates that every age group but the youngest students (age 18-19) enrolled at a higher rate in the online courses. Though 18-19 year old students enrolled in 76.5% of campus-based developmental English courses, they enrolled in only 48.6% of the online courses (Table 4.3). This finding may be interpreted as consistent with the literature by Knowles (1970), that suggests older students utilize different learning approaches than younger students. Therefore, the null hypothesis for this student variable was rejected.

Table 4.3

Cross-tabulation – Course Delivery Format by Age

Age	Campus-based		Online-based	
	Count	%	Count	%
18-19	110339	76.5%	678	48.6%
20-24	18571	12.9%	246	17.6%
25-29	6042	4.2%	160	11.5%
30-39	4964	3.4%	171	12.3%
40-49	2970	2.1%	94	6.7%
50+	1320	0.9%	46	3.3%
Total	144206	100%	1395	100%

Course delivery format and race/ethnicity. Instructional format distribution by race/ethnicity shows that of all eight sub-groups in this study, Hispanic students enrolled in the largest proportions in both campus-based and online developmental English courses. While one goal of developmental education is to resolve barriers that impede access to a college degree (Bahr, 2010), there is an overrepresentation of Hispanic students in remedial coursework (e.g., Bettinger & Long, 2005; Grimes & David, 1999; Penny, White, & William, 1998). As it relates to the current study, Hispanic students enrolled in online courses (35.6%) significantly less than campus-based courses (48.2%). This agrees with a study by Smith Jaggars and Xu (2010) that reported Black students and Hispanic students were significantly less likely to take an online course both in the

first semester and first year than were White students (Smith Jaggars & Xu, 2010). Of the eight groups in the race category, Table 4.4 indicates that White students enrolled in more online-based developmental English courses than the other race sub-groups. Due to these observed differences between races/ethnicities, the null hypothesis, H_{013} : There is no significant difference based on race/ethnicity in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course, was rejected.

Table 4.4

Cross-tabulation - Course Delivery Format by Race/Ethnicity

Race/Ethnicity	Campus-based		Online-based	
	Count	%	Count	%
White	39092	27.1%	544	39.0%
Black	14098	9.8%	148	10.6%
Hispanic	69439	48.2%	496	35.6%
Asian	11242	7.8%	97	7.0%
Pacific Islander	1298	0.9%	16	1.1%
Filipino	5268	3.7%	53	3.8%
Native American	1106	0.8%	12	0.9%
2 or more	2663	1.8%	29	2.1%
Total	144206	100%	1395	100%

Course delivery format and enrollment status. The results of the analysis to determine what, if any, differences existed among course delivery formats by situational factors indicated significant differences of participation in distance education by enrollment status. Table 4.5 displays a cross-tabulation of frequency data on student enrollment status and course delivery format. For those students who were enrolled in less than twelve total semester credits, a higher percentage (50.3%) were enrolled in online courses than in campus-based courses (39.9%). The opposite held true for those enrolled in 12 or more units. 60.1% preferred campus-based courses as compared to 49.7% that enrolled in online courses. Wasley (2007) suggested that, “Students who attend college part time are at a disadvantage relative to their fulltime peers (p.A25)”. This is true for many reasons. Part time students cannot receive the full financial aid award of full time students, increasing their school-related expenses (Weaver, 2005). In addition, many part time students are employed full time, reducing the time they can allocate to school-related responsibilities. part-timers typically work full time (47 percent work 35 or more hours a week) and take half the credit hours of full-time students. In 2005, 85 percent of college part-timers were employed while cracking the books, compared with just half of full-time students (Mantey, 2007). As well, part time students are likely to have other responsibilities outside of school, such as children or dependents (Edgecombe, 2011).

The null hypothesis, H_{014} , stated that there is no significant difference based on enrollment status in the likelihood of first year community college students enrolling in an online developmental English course or a campus-based developmental English course. From the findings of the study, this hypothesis was rejected.

Table 4.5

Cross-tabulation - Course Delivery Format by Enrollment Status

Enrollment Status	Campus-based		Online-based	
	Count	%	Count	%
12+ units	82986	60.1%	754	49.7%
<12 units	61220	39.9%	641	50.3%
Total	144206	100%	1395	100%

Course delivery format and eligibility for tuition fee waiver. Regarding the relationship between course delivery format and eligibility for a tuition fee waiver, results from this study indicate that students that were eligible for the tuition fee waiver enrolled in proportionately less online courses than students that were ineligible for the fee waiver (Table 4.6). The distribution of students who were not eligible for the Board of Governor’s tuition fee waiver indicated that 45.9% of ineligible students enrolled in online developmental English courses as compared to 42.5% that enrolled in campus-based courses. The opposite held true for eligible students. Fifty-seven point five percent of those students enrolled in campus-based developmental English courses as opposed to 54.1% that enrolled in an online course. Perhaps one reason for this discrepancy is that many students may have limited eligibility for federal financial aid for remedial coursework (30 credit hours). As a result, they often receive the maximum financial aid they are eligible for before completing their academic goals (Reichert, 2012). Based on these findings, the null hypothesis H_0 15: there is no significant difference based on eligibility for tuition fee waiver in the likelihood of first year community college students

enrolling in an online developmental English course or a campus-based developmental English course, was rejected.

Table 4.6

Cross-tabulation - Course Delivery Format by Eligibility for Tuition Fee Waiver

Eligibility status	Campus-based		Online-based	
	Count	%	Count	%
Eligible for waiver	82986	57.5%	754	54.1%
Not eligible	61220	42.5%	641	45.9%
Total	144206	100%	1395	100%

Research Question Two

Does course delivery format influence course persistence rates between students enrolled in developmental English courses?

Course Persistence and Student Variables

An exploratory analysis was conducted of the relationship between course delivery format and course persistence. Through frequency cross-tabulation, it was observed that 86.9% of campus-based students that enrolled in a developmental English course persisted in their course to the end of the academic term. Of students enrolled in online courses, three percent less or 83.9% completed their course. This rate of persistence was very high when compared to other studies in the literature. One survey of community college administrators indicated that course retention was 65% for distance-education courses compared to 72% for campus-based courses (Lokken, 2009). Table 4.7 contains the cross-tabulated frequency information on course persistence and course delivery format.

Table 4.7

Cross-tabulation - Course Persistence by Course Delivery Format

Persistence	Campus-based		Online-based	
	Count	%	Count	%
Completed	125348	86.9%	1170	83.9%
Not complete	18858	13.1%	225	16.1%
Total	144206	100%	1395	100%

As part of the analysis, Pearson chi-square tests were performed to compare observed data with data we would expect to obtain according to the null hypothesis that course delivery format does not influence course persistence. Results indicated significant differences between course delivery format and course persistence. The chi-square value of 11.3 with a df of 1 rejects the likelihood of random chance creating the differences between the variables. Table 4.8 illustrates the relationship between course persistence and all student variables.

Table 4.8

Pearson Chi Square - Course Persistence by Independent Variables

Variable	Value	df	sig.
Instructional format	11.300	1	.001
Age of Student	643.474	5	.000
Sex of Student	298.127	1	.000
Race/Ethnicity	864.746	7	.000
Enrollment Status	998.603	1	.000
Fee Waiver Status	67.695	1	.000

Course persistence and course delivery format. Logistic regression analysis was performed to test the null hypothesis that course delivery format does not influence course persistence of developmental English courses, by determining the logged-odds probability of online students persisting in their developmental English courses. Statistical significance was determined to be $<.05$. Overall, there was a statistically significant relationship found between course persistence and course delivery format. A coefficient of $-.187$ indicates a lower probability of students in online courses (included category) persisting in the course until the end of the academic term as compared to students in campus-based courses (reference category). The relationship is significant, as indicated by a p -value of 0.012 . Statistically controlling for the other independent variables (gender, age, race, enrollment status, eligibility for tuition fee waiver), the logistic regression analysis determined that the odds of online developmental English students completing the course were $.829$ times lower than students in campus-based

courses (Table 4.9). Thus, the null hypothesis for research question two: Course delivery format does not statistically significantly influence course persistence rates between first year community college students enrolled in developmental English courses was rejected.

Table 4.9

Logistic Regression – Course Persistence by Independent Variables

Variable	Odds Ratio	Coefficient	p-value (sig.)
Online	.829	-.187	.012
Female	1.35	.301	.000
20-24	.766	-.266	.000
25-29	.977	-.023	.537
30-39	1.01	.006	.876
40-49	.948	-.053	.299
50+	.784	-.243	.001
Black	.629	-.464	.000
Hispanic	.991	-.009	.662
Asian	1.40	.336	.000
Pacific Islander	.661	-.414	.000
Filipino	1.30	.264	.000
Native American	.654	-.424	.000
2 or More	.847	-.166	.005
12+ units	1.54	.433	.000
Eligible for waiver	.850	-.163	.000

Cross-tabulated frequency distributions and logistic regression analysis were also conducted to examine the relationship between course persistence and the other student characteristics in the current study.

Course persistence and gender. As was mentioned under the discussion on research question one, more female students enrolled in both course delivery formats of the developmental English courses. As it relates to persistence, results indicate that female students persisted in their developmental English courses at a higher rate than male students. Females accounted for 52.7% of all course completions and males persisted in 47.3% of their developmental English courses (Table 4.10). The logistic regression coefficient of .039 indicated a greater probability for females to persist in their courses than male students. A *p*-value of 0.000 indicated the probability to be significant (Table 4.9). After controlling significantly for the relationships between course persistence and the other independent variables (instructional format, race, age, enrollment status, and eligibility for tuition fee waiver), analysis indicated that the odds of females completing their developmental English courses was 1.35 times higher than males odds.

Table 4.10

Cross-tabulation – Course Persistence by Gender of Student

Gender	Persistence-Yes		Persistence-No		Total	
	Count	%	Count	%		
Male	59818	46.0%	10301	54.0%	70119	100%
Female	66700	52.7%	8782	47.3%	75482	100%
Total	126518		19083		145601	

Course persistence and age. The highest observed percentage of students who completed their developmental English course by age were students ages 18-19 (Table 4.11). 88.1% completed the course, while 11.9% of that age group were non-completers. The lowest completion rates by age were students' ages 50+, with 80.5% persistence. For the age groups of 25-29, 30-39, and 40-49, it was found that course persistence did not differ significantly from the reference group of students who were 18-19. However, data analysis did show a positive influence of age and course persistence in two age sub-groups, those ages 20-24 and those 50+ years of age. Considering the logistic regression analysis for course persistence by age, it is noted that four of the sub-groups in the age category, 20-24, 25-29, 40-49, and 50+ had negative coefficients, and the sub-group 30-39 had a positive coefficient. However, only the age sub-groups of 20-24 and 50+ had *p*-values below 0.005. Therefore, results indicate that the odds of students ages 20-24 and 50+ to persist through their developmental English courses was .766 times and .784 times, respectively, lower than 18-19 year old students (see Table 4.9).

Table 4.11

Cross-tabulation – Course Persistence by Age of Student

Age of Student	Persistence-Yes		Persistence-No		Total	
	Count	%	Count	%		
18-19	97780	88.1%	13237	11.9%	111017	100%
20-24	15426	82.0%	3391	18.0%	18817	100%
25-29	5277	85.1%	925	14.9%	6202	100%
30-39	4367	85.0%	768	15.0%	5135	100%
40-49	2569	83.8%	495	16.2%	3064	100%
50+	1099	80.5%	267	19.5%	1366	100%
Total	126518		19083		145601	100%

Course persistence and race/ethnicity. There were eight sub-groups of race/ethnicities for the current study. Course persistence was observed to have a statistically significant relationship in seven of the eight groups. The exception was the Hispanic sub-group. Hispanic students did not differ significantly from the reference group of White students, in terms of their course persistence. Table 4.12 shows course persistence by race/ethnicity. Analysis indicated that the lowest persistence rates were from Black (80.1%) and Native American (81.1%) students. Asians (90.7%) and Filipinos (90.3%) had the highest completion rates. In the race/ethnicity variable, logistic regression analysis observed that students in five of the seven sub-groups had a lower probability of completing their developmental English courses than the reference group of White students. A *p*-value of .000 indicates that the likelihood is statistically

significant for three sub-groups - Black, Pacific Islander, and Native American students. The odds of Black, Pacific Islander and Native American students completing their developmental English courses was .629, .661, and .654, respectively, times lower than White student odds. The analysis also indicated that Asian (1.40) and Filipino (1.30) students have greater odds of course persistence than White students. The *p*-values of .000 for these student sub-groups indicate statistical significance (Table 4.9).

Table 4.12

Cross-tabulation – Course Persistence by Race/Ethnicity

Race/Ethnicity	Persistence-Yes		Persistence-No		Total	
	Count	%	Count	%		
White	34776	87.7%	4860	12.3%	39636	100%
Black	11410	80.1%	2836	19.9%	14246	100%
Hispanic	60931	87.1%	9004	12.9%	69935	100%
Asian	10282	90.7%	1057	9.3%	11339	100%
Pacific Islander	1076	81.9%	238	18.1%	1314	100%
Filipino	4804	90.3%	517	9.7%	5321	100%
Native American	907	81.1%	211	18.9%	1118	100%
Two or More	2332	86.6%	360	13.4%	2692	100%
Total	126518		19083		145601	100%

Course persistence and enrollment status. In the current study, being enrolled full time had a statistically significant relationship with course persistence. Eighty-nine point two percent of full time students completed their courses while 83.5% of part time students persisted to the end of the academic term (Table 4.13). With a positive

coefficient on the logistic regression analysis, and a significance level (p -value) of .000, it was determined that students enrolled in 12+ units have a greater probability for completing their developmental English courses than students enrolled in less than 12 semester units. (Table 4.9). After controlling significantly for the relationships between course persistence and the other independent variables (instructional format, race, age, gender, and eligibility for tuition fee waiver), analysis indicated that the odds of full time students completing their developmental English courses are 1.54 times greater than part time students' odds.

Table 4.13

Cross-tabulation – Course Persistence by Enrollment Status

Enrollment Status	Persistence-Yes		Persistence-No		Total	
	Count	%	Count	%		
< 12 units	48565	83.5%	9619	16.5%	58184	100%
12+ units	77953	89.2%	9464	10.8%	87417	100%
Total	126518		19083		145601	100%

Course persistence and eligibility for tuition fee waiver. From Table 4.14, it can be observed that students who were eligible for a tuition fee waiver did not persist at a higher rate than students who were ineligible for the waiver. Eighty-six point three percent of those eligible completed their courses and 87.7% of those not receiving the waiver persisted to the end of their developmental English course. Students who were eligible for the California Community Colleges BOG tuition fee waiver, therefore, had a lower probability for course persistence than students ineligible for the fee waiver. A p -value of .000 indicates statistical significance that eligible students have less likelihood of

completing their developmental English courses (Table 4.9). After controlling significantly for the relationships between course persistence and the other independent variables (instructional format, race, age, enrollment status, and enrollment status), analysis indicated that the odds of eligible students completing their developmental English courses was .850 times lower than ineligible students' odds.

Table 4.14

Cross-tabulation – Course Persistence by Eligibility for Tuition Fee Waiver

Eligibility Status	Persistence-Yes		Persistence-No		Total	
	Count	%	Count	%		
Not eligible	54277	87.7%	7584	12.3%	61861	100%
Eligible	72241	86.3%	11499	13.7%	83740	100%
Total	126518		19083		145601	100%

Research Question Three

Does course delivery format influence course success rates between students enrolled in online and campus-based developmental English courses?

Course Success and Student Variables

To explore this research question, data analysis focused on differences in the rates of course success among first year developmental English students by each independent variable. Initially, cross-tabulation of frequency data was examined. Pearson's Chi-Square test was also performed to measure the likelihood that the observed association between course success and the independent variables was caused by chance. A chi-square value of 100.352 with a df of 1 for course delivery format and course success suggests that the observed differences in the data are not random. Because the results for

the chi-squared test for each variable indicate that the significance is $< .05$, the possibility that no association exists between course success, course delivery format, and the other student variables noted below in Table 4.15 can be rejected with confidence.

Table 4.15

Pearson Chi Square – Course Success and Independent Variables

Independent Variable	Value	df	sig
Course Delivery Format	100.352	1	.000
Sex of Student	976.651	1	.000
Age of Student	504.876	5	.000
Race/Ethnicity of Student	2175.037	7	.000
Enrollment Status	1345.681	1	.000
Eligibility for Fee Waiver	198.234	1	.000

Course success and course delivery format. As noted on Table 4.16, there were a significantly higher proportion of campus-based students who experienced course success than online developmental English students. 64.1% of campus-based students earned a C or higher grade. 51.2% of the online students were academically successful.

Table 4.16

Cross-tabulation – Course Success by Course Delivery Format

Course Format	Success-Yes		Success-No		Total
	Count	%	Count	%	
Campus-based	92464	64.1%	51742	35.9%	144206
Online	714	51.2%	681	48.8%	1395
Total	93178		52423		145601

Binary logistic regression was conducted to test the null hypothesis that course delivery format does not influence course success. The results of this analysis indicated a statistically significant relationship between course success and course delivery format, thus rejecting the hypothesis: Course delivery format does not influence course success rates between students enrolled in online and campus-based developmental English courses. The coefficient of $-.596$ for the online course format refers to the average difference between campus-based and online students and their probability of successfully completing the course. With an odds ratio of $.551$, it is understood that the odds of students in the online format (the included category) having course success are less than the odds of students enrolled in the campus-based courses (the reference category) The p -value for this coefficient is 0.000 , which is less than 0.05 . Therefore, it is understood that online students have a significantly lower chance of completing a developmental English course successfully than do campus-based students. Statistically controlling for the other independent variables (age, sex, race, enrollment status, eligibility for tuition fee waiver), logistic regression analysis determined that students enrolled in online developmental English courses were significantly less likely to receive a final grade of C or higher than students in campus-based courses (Table 4.17).

Table 4.17

Logistic Regression – Course Success by Independent Variables

Variable	Odds ratio	Coefficient	p-value (sig.)
Online	.551	-.596	.000
Female	1.47	.385	.000
20-24	.859	-.153	.000
25-29	1.26	.230	.000
30-39	1.30	.259	.000
40-49	1.25	.221	.000
50+	1.12	.109	.058
Black	.530	-.635	.000
Hispanic	.829	-.187	.000
Asian	1.42	.354	.000
Pacific Islander	.763	-.270	.000
Filipino	1.39	.330	.000
Native American	.548	-.602	.000
2 or More	.816	-.203	.000
12+ units	1.47	.385	.000
Eligible for Waiver	.845	-.169	.000

Course success by gender. Table 4.18 delineates the information on the differences between course success and gender, with females experiencing significantly more course success than male students in their developmental English courses. Sixty-

seven point eight percent of female students earned a C or higher and 59.9% of males were academically successful. Logistic regression analysis indicates a coefficient of 0.39 that refers to the average difference between females and males in the logged-odds of the probability of successfully completing the course. The *p*-value for this coefficient is 0.000, which is less than 0.05. The odds of females completing their developmental English course successfully were 1.47 times greater than the odds of male students. In addition, after controlling statistically for the relationships between course success and instructional format, race, age, enrollment status, and fee waiver, it was found that females are significantly more likely than are males to complete their course successfully (see Table 4.17).

Table 4.18

Cross-tabulation – Course Success by Sex of Student

Sex of Student	Success-Yes		Success-No		Total
	Count	%	Count	%	
Male	42013	59.9%	28106	40.1%	70119
Female	51165	67.8%	24317	32.2%	75482
Total	93178		52423		145601

Course success by age of student. Results from this study indicated that students between the ages of 25-29 and 30-39 were the most likely to earn a C or higher in their developmental English course (65.4%). Students ages 20-24 were least academically successful (56.8%) (Table 4.19). For the logistic regression model, there were six sub-groups included in the category of age. The sub-groups 25-39, 30-39, 40-49, 50+ had positive coefficients in comparison with the reference group of 18-19 year old students.

In addition, the sub-groups 25-39, 30-39, and 40-49 had p -values of 0.000 indicating significance in their likelihood of course success. The age group 50+ had a p -value of 0.058 indicating no significance ($<.05$) between that group's likelihood of course success and 18-19 year old students. For the age group 20-24, an odds ratio of .859 indicates that this group has lower odds of course success than the reference group of 18-19 year old students. With a p -value of .000 for the 20-24 year old group, it is also understood that this is statistically significant. After controlling statistically for the relationships between course success and the variables of instructional format, gender, race, enrollment status, and fee waiver, it was found that 25-29, 30-39, and 40-49 year old students are significantly more likely than 18-19 year old students to complete their developmental English course successfully, and that 20-24 year old students are significantly less likely to experience course success. (see Table 4.17).

Table 4.19

Cross-tabulation – Course Success by Age of Student

Age of Student	Success-Yes		Success-No		Total	
	Count	%	Count	%		
18-19	72294	65.1%	38723	34.9%	111017	100%
20-24	10682	56.8%	8135	43.2%	18817	100%
25-29	4058	65.4%	2144	34.6%	6202	100%
30-39	3356	65.4%	1779	34.6%	5135	100%
40-49	1963	64.1%	1101	35.9%	3064	100%
50+	825	60.4%	541	39.6%	1366	100%
Total	93178		52423		145601	100%

Course success by race/ethnicity. As it relates to course success by race/ethnicity, Asian (74.1%) and Filipino (74.2%) students earned greater percentages of course success than the other races. Blacks (50.9%) and Native Americans (52.6%) were the least successful in their developmental English courses (Table 4.21). Logistic regression showed that Blacks, Hispanics, Pacific Islanders, Native Americans, and Two or more races, from the eight sub-groups of race/ethnicity, had less likelihood of course success when compared with the reference category of White students. The *p*-value of the coefficients for those sub-groups was significant (<0.05) at 0.000. In addition, the odds ratio for each of these sub-groups was less than 1 indicating that Black, Hispanic, Pacific Islander, Native American, and students of Two or more races have lower odds for course success than the odds of the reference group of White students. Asian and Filipino

students, on the other hand, had an odds ratio greater than 1 with a p -value of 0.000. Therefore, the odds of course success in a developmental English course for Asian and Filipino students were 1.42 and 1.39, respective, times greater than the odds of White students. Again, after controlling statistically for the relationships between course success (the dependent variable) and instructional format, gender, age, enrollment status, and fee waiver, it was found that Black, Hispanic, Pacific Islander, Native American, and Two or more races students are significantly less likely than are White students to complete their developmental English course successfully. Asian and Filipino students, however, have significantly greater likelihood of course success than White students. (see Table 4.17).

Table 4.20

Cross-tabulation – Course Success by Race/Ethnicity

Race/Ethnicity	Success-Yes		Success-No		Total
	Count	%	Count	%	
White	26839	67.7%	1279	32.3%	39636
Black	7258	50.9%	6988	49.1%	14246
Hispanic	43627	62.4%	26308	37.6%	69935
Asian	8397	74.1%	2942	25.9%	11339
Pacific Islander	798	60.7%	516	39.3%	1314
Filipino	3946	74.2%	1375	25.8%	5321
Native American	588	52.6%	530	47.4%	1118
Two or more races	1725	64.1%	967	35.9%	2692
Total	93178		52423		145601

Course success by enrollment status. Table 4.21 indicates that 67.8% of full-time students in the current study were academically successful in their developmental English courses in contrast to 58.3% of the part-time students. The odds ratio of 1.47 is understood to mean that full-time students have 1.47 times greater odds of course success than part-time students' odds. A *p*-value of 0.000 for this variable determines significance (<0.05) with this result. Controlling statistically for the relationships between course success and instructional format, age, gender, race, and fee waiver, it was found that full-

time students enrolled in developmental English courses are significantly more likely than part-time students to earn a C or higher grade. (see Table 4.17).

Table 4.21

Cross-tabulation – Course Success by Enrollment Status

Enrollment Status	Success-Yes		Success-No		Total
	Count	%	Count	%	
<12 units	33944	58.3%	24240	41.7%	58184
12+ units	59234	67.8%	28183	32.2%	87417
Total	93178		52423		145601

Course success by eligibility for tuition fee waiver. In the current study, higher course success rates were found in students not receiving the Board of Governor’s (BOG) tuition fee waiver (Table 4.22). Sixty-six point one percent of ineligible students received a final grade of C or higher as opposed to 62.5% of those receiving the tuition fee waiver. The results indicate that students who received the BOG fee waiver were less likely to experience course success than students who were not eligible for the tuition fee waiver. The coefficient of -169 refers to the average difference between eligible and ineligible students in the logged-odds of the probability of successfully completing the course. The odds ratio of .845 indicates that students that received the tuition fee waiver (the included category) have a lower odds probability of course success than do those that did not receive the waiver (the reference category). The *p*-value for this category is 0.000 indicating significance of the results. In addition, controlling for the other variables (instructional format, age, sex, race, enrollment status), it is understood that students

eligible for the tuition fee waive have a significantly lower likelihood of course success than students that were ineligible for the fee waiver.

Table 4.22

Cross-tabulation – Course Success by Eligibility for Tuition Fee Waiver

Eligibility	Success-Yes		Success-No		
	Count	%	Count	%	
Eligible	52315	62.5%	31425	37.5%	83740
Not Eligible	40863	66.1%	20998	33.9%	61861
Total	93178		52423		145601

Summary of Results

This chapter presented the findings from the data analyses outlined in Chapter 3. The research questions and null hypotheses directed the analysis between several independent variables and student success among first year online and campus-based developmental English students at California community colleges between 2008-2011.

Research question one asked if there were statistically significant differences in specific student characteristics between students enrolled in online and campus-based developmental English courses. Frequency distributions and Chi-squared tests indicated that there were statistically significant differences for each of the five student variables considered for this study, and the null hypothesis was rejected.

Research question two asked if the course delivery format influenced the course persistence rate for developmental English students at California community colleges. Statistically controlling for all other independent variables, logistic regression analysis showed that the odds of online students completing their courses was significantly lower

than the odds of campus-based students. The null hypothesis that there were no statistically significant differences in persistence rates between students in the two course delivery formats was rejected.

Research question three asked if the course delivery format influenced course completion rates of students enrolled in developmental English courses. Logistic regression analysis demonstrated that the odds of online students earning a final grade of C or higher were significantly lower than the odds of campus-based students, when statistically controlling for the other student variables. The null hypothesis for this research question, that there were no differences in course success rates between students in the two course delivery formats was rejected.

The next chapter includes a summary discussion of these findings, implications for future research and conclusions.

CHAPTER FIVE: DISCUSSION

The purpose of this study was to examine the impact of course delivery format on selected individual characteristics and situational factors on student success among first year developmental English students at California community colleges from 2008-2011. Specifically, this study sought to examine what, if any, differences existed among these characteristics, the statistical significance of any differences, and the capacity of these characteristics to predict course persistence and course success. Data derived from the CCCC Management Information System provided the population of interest, developmental English students. The subpopulation of interest included first year students enrolled in online and campus-based courses between the academic years 2008-2011. Descriptive statistics and binary logistic regression were used to explore characteristics of students in online and campus-based developmental English courses and the influence of these variables on student success. The intent of this chapter is to summarize the study and findings within the context of the literature, and discuss the implications for contemporary policy and practice. The chapter concludes with a discussion of recommendations for future research.

Research Question One

Are there statistically significant differences in student characteristics and situational factors between first year community college students enrolled in online and campus-based developmental English courses?

Online Course Delivery Format and Student Variables

Differences between online and campus-based students were examined for this study. The student characteristics included for the purposes of this study were age, sex,

and race. Two situational variables, enrollment status and eligibility for tuition fee waiver, were also analyzed. Results from descriptive statistics indicated that among first year students who enrolled in a California community college from the academic years of 2008-2011, significant differences exist between students engaged in online and campus-based developmental English courses. Online developmental English courses were undertaken more often by female students, students over the age of 19, White students, fulltime students, and students eligible for the tuition fee waiver. This finding is in agreement with other studies from the literature. For example, Smith Jaggars and Xu (2010) reported on a study concerning first year community college students, and which demographic characteristics had a statistically significant impact on online courses taken in the first year. Results indicated that in terms of the first year, online courses were significantly more popular among females, those who applied and were eligible for financial aid, never enrolled in remedial education, and were above 25 years old at college entry. As it relates specifically to developmental students, we know that they are often older, are from a minority race/ethnicity, and have multiple responsibilities such as work, family and school (Edgecombe, 2011; Russell, 2008). In California, however, developmental education students may not necessarily be older students but more likely are “traditional” age students who arrive at the community colleges underprepared for college-level work (CCC Student Success Task Force, 2012). Thus, the developmental online student has significant differences in student characteristics from their campus-based peers.

Research Question Two

To what extent does course delivery format influence course persistence rates between students enrolled in online and campus-based developmental English courses?

Course Persistence and Student Variables

At the community college level, measuring a student's success or nonsuccess in terms of course completion is appropriate. The Research and Planning Group for California and the Transfer and Retention Urban Community College Students Project (TRUCCS) support the use of measuring success through course completion ratios (Hagedorn, 2005). Past research of primarily traditional education has repeatedly found that student persistence is associated with an individual's background (Astin & Oseguera, 2005). The persistence rate of students in this study was higher than other studies found in the literature. Eighty-six point nine percent of the campus-based students and 83.9% of the online developmental English students in this study completed their course. One of the contributing factors for the high persistence rates observed in this study may be due to the decreasing availability of courses offered through the California Community Colleges system wide. The state-subsidized higher educational system is but one of many casualties of the poor economic times in California. Thus, students are currently not as likely to withdraw from one course when there are no other courses to transfer into. Even with the high persistence rate in this study, logistic regression analysis determined that students enrolled in online developmental English courses were statistically less likely to complete their courses than students in campus-based courses.

Course persistence and gender. In terms of course persistence, female students differed significantly from male students, with 52.7% of females completing their courses

as opposed to 46.0% of male students. As the shift in undergraduate enrollment has moved to a female majority, studies on persistence are reflecting these changes. Studies from the 1980s and 1990s indicated that females were more likely to withdraw from a college course than male students (Tinto, 1975; Bean & Metzger, 1985). More recent studies indicate greater persistence by females than males. For example, Aragon and Johnson (2008) researched demographic characteristics and found significant difference in gender with female completion rate of 66% compared to male completion rate of 52%.

Course persistence and age. Regarding course persistence by age, there were differing levels of significance in the current study. The youngest students had the highest persistence rates and the oldest students, the lowest rates. These results support a study by Hagedorn (2001) on community college students and persistence. His study demonstrated that as student age increased, persistence rates reduced significantly. In the current study, those students age 20-24 had the second lowest persistence rate which is in contrast to Hagedorn's findings. An additional factor to consider is that older students are more likely to be enrolled part-time rather than fulltime, which is a risk factor for lower persistence rates (Bean and Metzger, 1985).

Course persistence and race/ethnicity. Nationally, minority students make up 23% of the enrollments in 4-year institutions and 33% in 2-year institutions (Ryu, 2008, p. 17). In the current study, minority students enrolled in 34% of the developmental English courses. It is widely understood that low-income and minority students are "overrepresented in terms of enrollment" in community colleges but "underrepresented among completers" of community college (Chen, 2009). A study by Rodriguez (2011), that found being Hispanic or Black were strong significant predictors of dropping out of

online classes. I don't believe this factor is limited to the color of one's skin but the multitude of associated factors that contribute to a person's status. For example, in a study by Crisp and Nora (2010), the number of hours worked, financial aid, and enrollment status were found to significantly influence the success of Hispanic developmental students. In the current study, Hispanic students had the equivalent persistence rates as White students (87%) while Black students had the lowest persistence rates (80%).

Course persistence and enrollment status. According to the Community College of Student Engagement (2005), one of the non-cognitive risk factors that threaten persistence and graduation from college is attending college part time. Research indicates that there is a high correlation between full-time enrollment and students achieving their educational objectives (Aragon & Johnson, 2008; Fike & Fike, 2008; Moore, Bartkovich, Fetzner & Ison, 2008; Rajasekhara & Hirsch, 2000). The results from the present study support these findings, as 89% of the full time students remained in their developmental English courses, and 84% of the part time students persisted. However, for many community college students, enrolling part time is their best option towards achieving an educational goal while meeting their financial and family responsibilities. I believe the community college must consider the needs of the part time student enrolled in developmental courses as they develop academic and institutional resources.

Course persistence and eligibility for tuition fee waiver. "It is important to note that many financial aid research studies have found significant relationship exists with student persistence," (Rogers, 2006, p.111). For example, Dynarski (2007) found that the merit-based state aid programs of Arkansas and Georgia reduced the college dropout rate.

The results from the present study did not support the findings from the literature. One suggestion is that the BOG tuition fee waiver provided to California community college students is not merit-based as the financial aid in Dynarski's (2008) research was. Rather the BOG is a need-based state financial aid award. The current study found that students that were eligible for the tuition fee waiver had a lower probability of completing their developmental English course than those that were ineligible for the waiver. While eighty-six point three percent of the eligible students persisted in their courses, 87.7% of ineligible students completed their courses.

Research Question Three

To what extent does course delivery format influence course success rates between students enrolled in online and campus-based developmental English courses?

Course Success and Student Variables

In the current study, student characteristics were analyzed to look for differences between developmental English students enrolled in two course delivery formats and completing their course with a C or higher grade. Data indicated a significantly higher proportion of campus-based students experienced course success than online students. Sixty-four point one percent of campus-based students earned a C or higher grade in contrast to 51.2% of online students. The results of the logistic regression analysis indicated a statistically significant relationship between course success and course delivery format. The analysis by individual and situational factors yielded significant and interesting results. These results reject the null hypothesis and confirm the results of other studies in the literature.

Course success and gender. In similar fashion to course persistence, results indicated that female students were more successful than male students in this study. Sixty-seven point eight percent of female students completed their developmental English courses with a C or higher grade as opposed to 59.8% of male student. This higher education trend of female students becoming more successful than male students has many contributing factors, including academic preparedness and family support (Sheldon & Durdella, 2010; Supiano, 2013). The gender gap is even wider among students from low-income families and among underrepresented minorities (Holder, 2009). Yukselturk and Bulut (2007) suggest females view Internet-based communication as a medium to develop higher collaboration in online learning, and are more supportive of networks to increase learning and communication for the group. While the communication preferences of males and females may be different, with the continuing demand for online courses, male students may need to adapt to the more collaborative communication style of online-based course delivery format to increase their rates of course success.

Course success and age of student. An interesting finding from the current study indicates that there exists a statistically significant relationship between course success and all sub-groups of the age variable. This is in contrast to the findings on course persistence that did not indicate significant relationships with three of the six sub-groups. Thus, while many students over the age of 19 did not persist in their developmental English courses, those that persisted to the end of the academic term were likely to earn a C or higher as their final grade. In addition, cross-tabulated frequency data indicates that while students ages 18-19 are the most likely age group to persist in their developmental

English courses, this age group is less likely to be successful than students aged 25-29 and 30-39. It is also interesting to note that students ages 20-24 experienced the lowest academic success rates of any age group in their developmental English courses. One of the principal findings of a study by Newell (2007) is that there is a direct, positive correlation between age and successful online course completion. The analysis found that older students were significantly more likely to successfully complete their online courses. Wojciechowski and Palmer (2005) also found that a statistically significant relationship exists within the online student population between the student's grade and age. The focus of the current study was on first year community college students. Eighty-nine percent of the study's participants were 18-24 years old. This population had an average course success rate of 61%, as opposed to a 63.8% average course success rate of students 24 years and older. I wonder if the older students were more likely to successfully complete their online courses because of the maturity, responsibility, and experiences that usually accompany the process of aging. Younger, traditional students may find it more difficult to fully commit to their studies, as they may be unsure of their future plans. This finding may be contrary to the assumptions that many people have regarding age and the use of technology. Some may expect younger, traditional students to be more successful in online courses because they may be more knowledgeable, experienced, or comfortable with the Internet, computers, and the entire online environment. This assumption was proven to be incorrect in the current study, as older students were more successful than younger students.

Course success and race/ethnicity. Minority students are enrolling in college at a higher rate than ever before. However, reports show that across the United States, minority

students are not completing degrees at the same rate as White students (Swail, 2003). In the current study, Black, Hispanic, Pacific Islander, Native American and Two or more race students were significantly less likely than the reference group of White students to complete their course successfully while Asian and Filipino students had a greater likelihood of course success than the reference group. From the eight race sub-groups in the current study, Black students were the least successful in their developmental English courses. This finding supports a recent study that reported the odds of persisting in online classes is lower for Black students (Rodriguez, 2011). My speculation on this finding is that there are most likely multiple reasons why Black students completed their online courses at lower rates than students of other race/ethnicities. One reason could be that access to computers with reliable Internet connections is likely to be more limited for minority students, who according to Rodriguez (2011) have a .312 lower odds of completing their online courses. Also, these students may not be as likely to have convenient Internet access at home, and may have to rely on access to public Internet terminals in order to participate in online distance education. Also, community and family support for educational pursuits may not be as strong in many minority communities where educational levels are traditionally low. If family members of students have never enrolled in college courses, they may not be as understanding and supportive of the students' efforts.

One interesting difference in this study's findings between course persistence and course success by race/ethnicity is for Hispanic students. The logistic regression analysis for course persistence did not identify a significant existing difference between this sub-group and the reference group of White students (coefficient $-.009$, $p=.662$). However,

when examining the logistic regression model for course success, a statistically significant relationship emerged (coefficient $-.187$, $p=.000$). This indicates that Hispanic students persist at a similar rate as White students, but are much less likely to complete the course with a final grade of C or higher. A recent qualitative study by Kaupp (2012) sought to understand the underlying reason for poor online success rates among Hispanic students. Interviews with Latino students enrolled in online courses provided insight into the importance of relationships to Latino student success. The absence of a strong student-instructor relationship was identified as the key difference between their campus-based and online educational experience (Kaupp, 2012). This course delivery format, therefore, may not be the most successful for this segment of the community college population.

Course success and enrollment status. Logistic regression analysis indicates that, as predicted in the literature, full-time developmental English students were more successful than part-time students. Sixty-seven point eight percent of students who received a C or higher were full-time students in comparison with 58.3% of part time students. According to the Complete College America report (2012), about 4 of every 10 public college students attend part time — and no more than a quarter of part-time students ever graduate. The issue of enrollment status is especially meaningful to Hispanic students who represented the majority race/ethnicity in developmental English (non-ESL) courses in this study (48.2% of all campus-based and 35.6% of online students). Research indicates that Latino undergraduates are more likely to be enrolled part-time than all other races/ethnicities. More than half of Latinos were enrolled part-time in a Lumina Foundation study, compared to 45 percent of all undergraduates

(Santiago & Cunningham, 2005). As the primary minority group represented at California community colleges, there is a need to strategically respond to the needs of the part time Hispanic college student, especially when the majority of them must undertake at least one developmental course in English or math.

Course success and eligibility for tuition fee waiver. Students who were eligible for tuition fee waivers were significantly less likely to be academically successful than those who did not receive the waiver. This finding supports the results of a study by Newell (2007) at a large technical college where students who were eligible to receive a particular federal need-based grant were less likely to successfully complete online courses than those students not eligible for the grant. However, the findings from the current study do not support the majority of other research results that demonstrate a positive correlation between financial aid, persistence, and college graduation (Cabrera, Stampen, and Hansen, 1990; Singell, 2004). I believe there are many factors that may have contributed to a student not being considered “eligible” for the particular tuition fee waiver in the current study. For example, the students in this study were enrolled in their first semester of college. Perhaps students that were unaware of the fee waiver did not apply for it their first semester of college. Additionally, in this study, eligibility for the tuition fee waiver grant was used as a variable rather than receipt of financial aid. Therefore, our findings may have been different given a student’s eligibility or actual receipt of the aid.

Implications for Policy and Practice

The findings of this study have practical implications for anyone involved in the planning, teaching, or supervision of online community college courses. By

understanding the personal characteristics of students which may place them at a higher risk of dropping out or otherwise unsuccessfully completing an online course, course modifications and other early interventions may be made. Everyone benefits when students persist in their studies and successfully complete their courses and their academic programs, so it is in the best interest of everyone involved to recognize potential predictors of student success and to be proactive in keeping students engaged and making academic progress.

Public higher education remains in a state of economic fiscal stress exacerbated by shrinking public fiscal support and an international economic downturn. At the same time, emergent technologies continue to stimulate increased undergraduate enrollments in distance education. Student achievement remains a core component of a national strategy to remain competitive in a global environment. This study sought to add to the literature on the relationship between student success and course delivery formats for developmental English courses to assist academic and support practitioners as they formulate and implement institutional policies. The findings of this study suggest that institutions should carefully consider the course design of online developmental courses to meet the special needs of this student population.

This research found a significant relationship between age and decreased levels of student success, and has implications for non-traditional students. A similar concern exists for students and race/ethnicity as identified in the literature. The results from a recent study in New Zealand determined that ethnicity was the most important factor separating successful from unsuccessful students (Kovacic, 2012). Bowen, Chingos and McPherson (2009) in their study of educational attainment contend the persistence and

course success rates for Black men in the United States in the age group 25-29 fall substantially below the rates for White and Asian students. In the current study, Black and Hispanic students were found to be statistically less likely to be successful in a developmental English course, regardless of course delivery format.

Next, this study suggests developmental community college students engaged in distance education may need the attention of academic and support practitioners responsible for student retention programs. Tyler-Smith (2006) posited attrition rates for adults engaged in distance education are substantially higher than traditional students reaching up to 80% at some institutions. Support practitioners could use the findings of this study to adapt retention strategies for the developmental English student enrolled in online courses. Future research could investigate additional individual variables, such as hours worked and family commitments to determine retention programs focused on the developmental learner. Institutional programs created to prepare students for distance education courses should recognize the implications of age, gender, and race/ethnicity, and perhaps incorporate additional elements for these groups into their programs. Consideration of situational factors should be recognized by postsecondary student support practitioners and incorporated into institutional retention strategies. These implications may have particular significance when considered from the construct proposed by Swail, Perna, and Redd (2009) to use distance education as a component of a strategy to retain community college students.

If possible, for students enrolled in online developmental courses, orientation sessions, either online or campus-based, could be held prior to the beginning of the academic term. These sessions could help to assess at-risk students' readiness for online

instruction by explaining course expectations, including such information as time requirements, technical skills needed, and minimum standards for computers, software, and connectivity. During these sessions, interactivity could be incorporated in order to learn as much as possible about each of the new students, so possible at-risk characteristics might be identified and intervention strategies incorporated as early as possible. Examples of possible intervention strategies are small-group projects involving diverse team members, mentoring programs in which experienced, successful online students are paired with new students and frequent online discussions in which all students are expected to participate.

Finally, this study's findings on the relationship between course delivery format and student success factors add to existing literature on distance education persistence. The current study contributes to the base of research by describing significant differences of individual and situational factors that relate to education outcome in a sample of students from California community colleges across multiple institutions. Further, these findings underscore the impact of these factors on student success among online developmental English students.

Assumptions and Limitations

One assumption of this study is that the results add to the literature about online learning, and indicate factors that advisors, faculty, and policymakers could note as they design developmental English courses for community college students. In addition, the ability to identify student success factors enables counselors to better advise students of the course delivery format they are best suited for.

A limitation of this study is that the students self-selected into the online and campus-based sections. Also, given the number of variables that could influence student success at a community college, an additional threat to internal validity is that this study focuses on a limited number of variables. There may be additional variables that were not tested for this study that could be statistically significant for course persistence and course success.

Another limitation is that the results cannot be generalized to individuals who do not have the characteristics of this study's participants, nor to individuals in other settings. Lastly, this study investigated student success factors in just one developmental area. Looking at course persistence and course success in developmental math, reading, and writing simultaneously may provide even more insight as to what factors affect student success.

Recommendations for Future Research

Further studies are needed in order to expand the body of knowledge on persistence and completion in online developmental courses. As described previously, there is a lack of empirical research that examines course persistence or success among nontraditional adult learners in the online course delivery format. Additional research is also needed to expand on the known factors that impact student success in developmental college courses, especially in light of our nation's goal to significantly increase the number of college graduates in this decade. While there is rich knowledge in the traditional student retention literature regarding what helps students succeed, we still do not have enough information about what helps developmental students at the community college succeed in an online environment.

As it relates to the current study, a replication of this current study could confirm or reject the specific findings concerning course success in students' that were eligible for the BOG tuition fee waiver and course success for students ages 20-24. Additionally, this study might be replicated in other community college systems in order to determine whether these same predictors are significant in online settings in those systems. It would be interesting to see a similar study done with another large developmental student population.

Research on additional student success variables is recommended, such as high school G.P.A., computer literacy, and self-efficacy. It would also be interesting to see how institutions that make available additional resources, such as online tutoring, for their online developmental students contribute to course persistence and course success. Another area that warrants further investigation is to look at student success factors from institutions that offer accelerated developmental courses. Does the acceleration process influence course persistence and course success when compared to the traditional pace of developmental courses?

Students fail to complete for a variety of reasons, not all of which can be measured statistically from demographic data. The use of personal interviews, case studies, and observations might also yield additional insight into the ongoing problem of student persistence, as these methods are able to assess motivational factors and barriers that are not discernible from statistical analyses of demographic data.

Conclusion

The primary aim of this research was to contribute to the body of student success literature by extending the research on selected characteristics of community college

students who participated in online courses. Specifically, the study sought to examine the positive or negative influence of the online course delivery format among first year developmental English students and the student success factors of course persistence and course success. Addressing the needs of developmental students is perhaps the most difficult and most important problem facing community colleges. With approximately sixty percent of incoming community college students demonstrating a lack of college readiness academically, student success is a huge concern for all community college stakeholders. Less than one quarter of community college students who enroll in developmental education courses complete a degree or certificate within eight years of enrollment in college. In comparison, while significantly less than the graduation rate of students in four-year colleges, almost 40 percent of community college students who do not enroll in any developmental education course complete a degree or certificate in the same time period (Attewell, Lavin, Domina, & Levey, 2006). The findings suggest that academic and support practitioners responsible for formulation and implementation of student retention programs should consider the influence of distance education on student success. Online education is a useful and powerful educational option but it is not the best course delivery format for all students at the community college. Data from California community colleges for the Spring 2012 academic term indicates a success rate of less than 50 percent in online developmental courses for most demographics (CCCCO, 2012). Therefore, all stakeholders - administrators, faculty, and students - need a broader understanding of the relationship between distance education and student success when distance education is a component of a retention strategy. These stakeholders should be aware of the association between student success and student characteristics, and address

these issues when planning, developing, and administering online courses. It could also assist them in setting realistic criteria for determining who should be admitted to an online course. Students without the characteristics that enhance success might avoid taking online courses, or, perhaps, the online instructors might provide these students with special attention (Yukselturk, 2009). Not all community college students are able to succeed in the online course delivery format, in particular those who struggle academically. Students in developmental courses already have so many obstacles to overcome educationally that perhaps the online format is not the best one for them. As well, with only 51% of the online developmental English students in the current study earning a C or higher grade, it seems that this format may not be a wise use of the limited economic and human resources available to the community college system.

Undergraduate enrollments in distance education are projected to increasingly contain adult students, and students with risk factors. At the same time, emergent technologies create access opportunities for institutions to deliver distance education through more cost effective systems. Given the importance of online learning in terms of student convenience and institutional flexibility, current system supports for online learning should be bolstered and strengthened in order to improve completion rates among online learners (Xu & Jaggars, 2011). Without a greater understanding of the relationship between distance education and student success, institutional policies may create unintended consequences for students who are already at risk to persist.

Historically, developmental education has been costly and not very effective. However, there is increasingly better understanding of the problems associated with developmental education, which is informing the many potential solutions that are currently being tested.

Bailey & Cho (2010) have outlined several programs that are striving to impact developmental education in the United States. For example, Bill and Melinda Gates Foundation and Lumina Foundation for Education have funded the Developmental Education Initiative (DEI) as an outgrowth of Achieving the Dream (<http://www.deionline.org/>). Sixteen colleges are participating in the DEI, the purpose of which is to help the colleges expand small or pilot programs that have been shown to be effective. Lumina Foundation has also funded an initiative titled Getting Past Go (<http://www.gettingpastgo.org>), which is focused on improving developmental education through enhanced state policy. The National Center for Postsecondary Research, funded by the Institute for Education Sciences in the U.S. Department of Education, is conducting rigorous evaluations of developmental education models and interventions, including studies of six learning communities and a study of intensive summer bridge programs designed to help students become college-ready in a compressed time period the summer after high school graduation. These programs appear to have potential, but most of them are at early stages (Bailey & Cho, 2010). Programs and initiatives of this nature are important to community colleges in the United States, so that attainment and persistence goals are increased, and academically underprepared students can achieve their educational goals.

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Appendices

Appendix A. Letter of IRB Approval from Liberty University

Appendix B. Letter of Approval from California Community Colleges

APPENDIX A. LETTER OF IRB APPROVAL FROM LIBERTY UNIVERSITY

December 10, 2012

Camilla Bantum

IRB Exemption 1478.121012: The Comparison of Online and Campus-Based Basic Skills English Students on Course Completion and Academic Success at California Community Colleges

Dear Camilla,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and that no further IRB oversight is required. Your study falls under exemption category 46.101 (b)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and that any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption, or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

Fernando Garzon, Psy.D. *Professor, IRB C*

APPENDIX B. LETTER OF APPROVAL FROM CALIFORNIA COMMUNITY COLLEGES

November 15, 2012

Institutional Review Board

Liberty University

1971 University Boulevard

Lynchburg, VA 24502

Dear Members of the Committee:

On behalf of the California Community Colleges, I am writing to formally indicate our awareness of the research proposed by Camilla P. Bantum, a doctoral student at Liberty University. We are aware that Ms. Bantum intends to conduct her research by analyzing existing data comparing online and campus-based developmental English students.

I am responsible for research and technology at the California Community Colleges. I give Ms. Bantum permission to conduct her research utilizing data from our MIS system.

If you have any questions or concerns, please feel free to contact my office at (916) 327-5912.

Sincerely,

Patrick Perry

Vice Chancellor of Technology, Research and Information Systems

California Community Colleges Chancellor's Office