ACADEMIC SELF-EFFICACY AMONG STUDENTS ENROLLED IN DEVELOPMENTAL EDUCATION: THE ROLE OF SOCIAL MODELING

by

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ABSTRACT

KRISTIN DEANGELIS. Academic self-efficacy among students enrolled in developmental education: The role of social modeling (Under the direction of DR. CLAUDIA FLOWERS)

Students in developmental education face three types of barriers: institutional, situational, and affective. Current interventions focus on addressing institutional barriers; however, continuing low success and retention rates indicate a need for additional measures. Bandura's theory of academic self-efficacy provides a way to address the affective barriers faced by this student population. This study examines the impact of a series of three five-minute student success videos, based on the social modeling aspect of self-efficacy theory and developed using the Dick and Carey instructional design model, on the academic self-efficacy, retention, and success of developmental education students. A quasi-experimental research design was used to examine the effectiveness of the social modeling intervention.

Results from this study indicate that an intervention designed using academic self-efficacy as an underlying theory and the Dick and Carey model of instructional design as a creation and implementation guide did not have a significant impact on the academic self-efficacy of students enrolled in developmental education courses. Moreover, the intervention did not have an impact on success and retention rates. Additional analysis indicates that academic self-efficacy was not a significant predictor of either student success or retention. Further research regarding the link between academic self-efficacy and student success and retention at the developmental level is necessary.

DEDICATION

Dennis – It’s your turn now.

Anthony – Thank you for helping me build my time management skills and for reminding me of what’s important.

Dad – You’ve always believed in me. As usual, you were right. Congratulations! You’ve got two doctors now.

Dave - Thanks for being my favorite brother, Dr. DeAngelis. From, Dr. DeAngelis.

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CHAPTER 1: INTRODUCTION

The field of developmental education is currently under close scrutiny. According to a national survey, up to 72% of community college students placed into at least one developmental course in 2011 (Center for Community College Student Engagement 2011). Furthermore, the pass rates for students taking developmental education sequences are low; for instance, only 8% of North Carolina community college students who place into the lowest two levels of Developmental Math successfully complete a college level math course (Developmental Education Initiative: DEI Update, 2011, p. 1). Nationwide, the numbers are similar; 46% of students do not complete the first course in their assigned developmental sequences (Achieving the Dream, 2008).

The Developmental Education Initiative: Accelerating Achievement offers a bleak description of the current state of the field: "It is estimated that nearly 60 percent of students enrolling in community college must take remedial classes to build their basic academic skills. For low-income students and students of color, the figure topped 90 percent at some colleges. Through remedial classes cost taxpayers more than $2 billion a year, many of these students do not complete remedial classes or continue on to graduate," (Truheart and Dodson, 2012).

The large population of students enrolled in developmental education combined with the low pass rate for developmental course sequences contributes to the low overall success rate for community college students. A national survey found that only 45% of

community college students meet their educational goal within six years (U.S. Department of Education, 2001). Clearly, steps must be taken to improve the success and retention of community college students in developmental education courses, in turn improving these measures for the community college student population as a whole.

The low retention and pass rates among students in developmental education indicate that this group tends to have specific needs beyond those of the traditional student population. Previous research has identified several barriers to the success of students in developmental education; including personal barriers, divided into situational and affective categories, and institutional barriers (Bailey, Jeong, & Cho, 2010; Center for Community College Student Engagement, 2012; Central Piedmont Community College, 2011; Completion by Design, 2012; DiTommaso, 2011; Hawley & Harris, 2005; Hirsch, 1994; Mealey, 1990; Rouche & Rouche, 1993). Current research in the field tends to focus on helping students overcome institutional barriers; in particular, recent studies have focused on course sequence, course content, supplemental software, and delivery method as potential interventions (Ashby, Sadera, & McNary, 2011; Bailey, Jeong, & Cho, 2010; Carpenter, Brown & Hickman, 2004; Cederholm, 2010; Cooper, 2011; Corey Legge, 2010; Developmental Education Initiative, 2011; Gravitt, 2009; Mireles, Offer, Ward, & Dochen, 2011; Sheldon & Durdella, 2009; Yopp & Rehberger, 2009; Zavarella & Ignash, 2009). Studies focusing on the situational and affective barriers faced by students in developmental education are less common.

Literature suggests that community college students who place into developmental education courses need help overcoming affective barriers to success, yet current interventions do not address this need. Bandura's theory of self-efficacy provides

a way to address the affective barriers faced by this student population. When applied to education, this theory indicates that students who believe in their success are more likely to engage in behaviors which will result in their success (Bandura, 1994; Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). While little research has been conducted about self-efficacy and students in developmental education, high self-efficacy has been linked with higher student retention and successful adaptation to college among other student populations, including first generation college students (Majer, 2009; Ramos-Sanchez & Nichols, 2007; Vuong, Brown-Welty, & Tracz, 2010). In the student population enrolled in developmental education, high self-efficacy has been linked with a tendency to participate in optional supplemental instruction (Visor, Johnson, & Cole, 1992).

Systems theory can guide development and implementation of an intervention designed to increase students' academic self-efficacy in order to address one of the personal barriers faced by this student population. One of the initial steps in this structured, systematic approach to instructional design is to analyze learners and contexts (Dick, Carey, & Carey, 2005). A systems approach acknowledges that such an analysis is essential to developing a strong curriculum which will meet the needs of the target population. Systems theory then offers a framework for developing and evaluating an intervention specifically targeted to meet the affective needs of students in developmental education.

Statement of Problem

In broad terms, this study addressed the low success and retention rates for community college students enrolled in developmental education through a focus on the

lack of available support to help this group overcome the affective barriers which inhibit success. In particular, this study examined the social role modeling aspect of Bandura's self-efficacy theory in an attempt to increase students' academic self-efficacy.

Purpose

The purpose of this research was to document the effects of a social modeling intervention designed to increase success and retention among community college students in developmental education. The intervention consisted of a series of three five-minute edited video recordings of interviews with students who have previously completed developmental education courses and who are now successful in their academic programs. This intervention was designed using the principles of systems theory and intended to increase academic self-efficacy among community college students in developmental education English and reading courses. Anticipated benefits include increased retention and success within this student population, demonstration of the importance of addressing affective barriers to student success, and a well-planned intervention that can be used in future courses.

Research Questions

Three specific research questions were addressed in this study. One primary research question was addressed:

1) To what extent does a series of three five-minute videos consisting of interviews with students who have previously completed developmental education coursework and who are now succeeding in their academic programs, designed using a systems theory approach and based on the social

modeling aspect of self-efficacy, impact the academic self-efficacy of community college students in developmental English and reading courses?

Two secondary research questions were addressed:

1) To what extent does an intervention designed to increase academic self-efficacy relate to student retention among community college students in developmental English and reading courses?
2) To what extent does an intervention designed to increase academic self-efficacy relate to student success among community college students in developmental English and reading courses?

Delimitations

This study was conducted at a large community college in the Southeastern region of the United States. The sample for this study consisted of students in 10 course sections of the Developmental Reading and English (DRE) courses offered at this institution. The course curriculum (at each level) and delivery method for each course was the same although five different instructors participated.

The quasi-experimental design used a repeated-measures ANOVAs with one between-subjects factor (intervention and control groups) and one within-subjects factor (pre- and post-surveys). The dependent variables were academic self-efficacy, performance in course, and retention. The intervention was delivered electronically, as a supplement to the course, and lasted for 15 total minutes. This intervention was created prior to the beginning of the course and was implemented as a stand-alone entity. The intervention focused on social modeling, one of the four methods through which self-efficacy can be developed (Bandura, 1994). In addition, nominal outcome measures

recording student success and student retention were also gathered. Nominal data were analyzed using chi-square tests of independence. As an additional analysis, a logistic regression was run to determine whether academic self-efficacy scores were a predictor of student success or retention.

Limitations

One limitation of this study was the potential threat to internal validity. Researcher bias was a possibility as the researcher was also the instructor for two course sections. External checks to ameliorate this threat included the use of a static intervention created prior to the start of the course sections and the use of automated data collection through Blackboard and Google Docs. The intervention and survey delivery were conducted online, through methods in place prior to the beginning of the courses. Once the courses began, neither the instructors nor the researcher accessed the intervention, surveys, or data until the end of the study.

Another limitation was the focus on a narrow aspect of the theory. Rather than incorporating all four methods indicated to increase self-efficacy, this intervention focused on just one – social modeling. This decision was made to decrease the time which students invest in the intervention in an effort to prevent high attrition rates. With a narrower focus, the intervention was shorter, which in turn allowed for greater participation and completion.

A third limitation was the condensed time in which the experiment was conducted. The entire experiment occurred over a three week period. While this limited the ability to draw conclusions about the long-term impact of the intervention, it helped to ensure a low rate of attrition.

As this was an intervention study, treatment fidelity was also a concern. Measures to encourage full participation included a condensed time frame for the study and a time conscious intervention.

Assumptions

1. It was assumed that all participants were students actively enrolled in Developmental Reading and English.
2. It was also assumed that students assigned to treatment groups were fully engaged in the intervention during the appropriate time frame.
3. Furthermore, it was assumed that students would be honest when self-reporting on the academic self-efficacy surveys used for data collection.

Definitions of Key Terms

Academic self-efficacy. Academic self-efficacy concerns how students' beliefs about their ability to master the curriculum and regulate learning activities affect their academic motivation and interest, which in turn has a real impact on their ability to master the curriculum. (Zimmerman and Bandura, 1994).

Affective barriers. Affective barriers are personal barriers related to students' emotional states. Factors may include "difficulties with anxiety, fear of failure, self-confidence, social skills, cooperativeness, classroom management, and goal setting" (DiTommaso, 2011, page 6).

Developmental education. The field of developmental education consists of the students who enroll in college unable to complete college level coursework, in accordance with the placement procedures in place at their respective institutions. The

field also encompasses the faculty, support staff, technology, institutional resources, outside initiatives and agencies, and research base dedicated to these students.

Dick and Carey Model. A systems approach for the design, development, implementation, and evaluation of instruction is a procedural system consisting of "a series of steps all of which will receive input from the preceding steps and will provide output for the next steps," and in which "all of the components work together in order for the user to produce effective instruction," (Dick, Carey, & Carey, 2005, page 3).

Instructional Design (ID). Instructional Design is "a system of procedures for developing education and training programs in a consistent and reliable fashion" and consists of five stages: analysis, design, development, implementation, and evaluation, (Gustafson & Branch, 2002).

Institutional barriers. Institutional barriers are "tangible barriers such as policies and procedures related to registration, enrollment, and access over which the institution has primary control," (Brennan, Showers, & Subbarao, 2012).

Self-efficacy. Self-efficacy is people's "beliefs in their capabilities to exercise control over their own functioning and over events that affect their lives," (Bandura,1994, p. 14).

Situational barriers. Situational barriers are personal barriers related to students' physical states. Factors may include family responsibilities, financial responsibilities, a lack of reliable transportation, and lack of access to technology.

Social modeling. Social modeling, as used in Bandura's self-efficacy theory, refers to the vicarious experiences of others, ideally a person who is similar to the observer.

Student retention. Student retention, for the scope of this project, is operationalized as maintaining active enrollment in the course throughout the semester up to and including completion of the final assignment.

Student success. Within the scope of this project, student success is demonstration of mastery of course objectives at a level indicating readiness for advancement. This is operationalized as a passing grade of "P" in a Developmental Reading and English course.

Treatment fidelity. In the context of this study, treatment fidelity is operationally defined as a participant's active engagement in and completion of the fifteen-minute intervention within the appropriate period designated..

Summary

This study addressed the affective barriers faced by students in developmental education in an effort to increase success and retention among this student population. A targeted intervention guided by the principles of systems theory and based on the social modeling aspect of Bandura's theory of self-efficacy was implemented in an experimental study. The following chapters of this dissertation offer a review of literature and the theory upon which the study was based, the method used for the study, the results of the study, and a discussion.

The next chapter begins with a description of the current state of developmental education, introduces barriers faced by students at the developmental level, moves on to explore current redesign initiatives and interventions, introduces self-efficacy theory as a potential way to address previously unaddressed barriers, and situates the Dick and Carey

Instructional Design model as a framework for constructing an intervention focused on said theory.

CHAPTER 2: LITERATURE REVIEW

This chapter includes a definition and description of developmental education as well as an overview of current discussions occurring in the field. Following contextual information, barriers to success for students in developmental education are introduced as well as current interventions focused on ameliorating these barriers. Self-efficacy is introduced as a theoretical approach to improving the success of students in developmental education and specific instructional design approaches are explored as potential frameworks for implementation.

Developmental Education

The field of developmental education focuses on meeting the needs of students who enroll in post-secondary institutions unable to complete college level coursework, in accordance with the placement procedures in place at their institutions. The field also encompasses the faculty, support staff, technology, institutional resources, outside initiatives and agencies, and research base dedicated to these students. An operational definition of the term, encompassing each of these aspects, appears in Chapter 1. While this definition seems fairly straightforward, a closer examination of the field indicates more complexity.

A survey of traditional, four year college students found that 40% of enrollees required at least one remedial course (Attewell, Laving, Domina, & Levey, 2006). While students with a lower socioeconomic status were more likely to require developmental

education courses (52% of students in lowest quartile), students with a higher socioeconomic status were not immune (24% of students in highest quartile). A similar trend holds true when students are categorized by the rigor of their high school programs: 10% of the top quartile required developmental education coursework, as did 25% of students in the second quartile. The researchers very clearly state that developmental education is not reserved solely for low socioeconomic students with a non-rigorous academic background.

More current numbers focused on community colleges indicate that a much larger percentage of enrollees require developmental education coursework: according to one national survey, 72% of community college students placed into at least one developmental course in 2011 (Center for Community College Student Engagement 2012, pg. 7). As an indicator of the complexity of this field, sources disagree about the percentage of students enrolled in developmental education. An NCES study using data from 2000 claims that 42% of community college students need at least one developmental education course (U.S. Department of Education, NCES, 2003, pg. 17). A third study offers a number between the two extremes: 60% (Bailey & Cho, 2010, pg. 1), Despite the inconsistency in exact percentages, it is clear that a large percentage of community college students require at least one developmental education course.

Not only are large numbers of community college students placing into developmental education courses, the pass rates for developmental education sequences are low. For instance, only 8% of North Carolina community college students who place into MAT 050 or MAT 060, three levels below college level math courses, successfully complete a college level math course (Developmental Education Initiative, 2011).

A study conducted by Yates (2010) comparing the pass rates of first-time, full-time community college students who were prepared for college-level work, as opposed to unprepared and required to complete developmental courses, found that students who were unprepared were significantly less likely to graduate within three years than students who were prepared. Out of 2,326 participants, 1,578 required at least one developmental course. Out of the 1,578 participants placed in developmental education, 1,324 (84%) did not graduate within three years. This compares to 67% of the students who were deemed college-ready who did not graduate within three years.

The Developmental Education Initiative: Accelerating Achievement offers a bleak description of the current state of the field: "It is estimated that nearly 60 percent of students enrolling in community college must take remedial classes to build their basic academic skills. For low-income students and students of color, the figure topped 90 percent at some colleges. Through remedial classes cost taxpayers more than $2 billion a year, many of these students do not complete remedial classes or continue on to graduate," (Truheart & Dodson, 2012).

Emerging Need for Research and Change

The current success and retention rates in developmental education have identified the field as a fertile area for improvement, and the field is currently undergoing close scrutiny and radical change. For example, issues related to identifying these students are a source of concern as, depending on the institution, students become part of the developmental student population by placing into this level in different. Hughes and Clayton (2011) argue that the use of standardized placement tests such as ACCUPLACER and COMPASS to determine a student's course level is ineffective and

that more holistic methods must also be incorporated in order for accurate placement to occur. On the other hand, Sullivan and Nielsen (2009) establish that student writing samples, which would be a move to a more holistic placement process, do not have a large impact on student placement. This controversy over placement is an important issue, as the developmental student population is defined through these placement measures.

Large Scale Initiatives

The focus on developmental education is evident at many levels, including nationwide initiatives with external funding and statewide programs. For instance, on a statewide level, the North Carolina Community College System is currently working to increase success rates at two year colleges with SuccessNC. The goal for this initiative is to increase the baseline 45% success rate for community college students in North Carolina to 59% by 2014. A large portion of this initiative focuses on the statewide redesign of developmental education (North Carolina Community College System, 2012).

SuccessNC, the North Carolina statewide initiative is based on the framework of Completion by Design, a nationwide initiative funded by the Bill and Melinda Gates Foundation. The goal for this initiative is to significantly increase completion and graduation rates for low-income students under 26 (Completion by Design, 2011).

Achieving the Dream, funded by the Lumina Foundation, is a larger nationwide initiative which spans 200 community colleges and 3.75 million students. Achieving the Dream hopes to accelerate student success and close achievement gaps using evidence-based and student-centered methods. A large portion of this initiative is focused on

developmental education – the Developmental Education Initiative: Accelerating Achievement (Achieving the Dream, 2012).

Barriers to Post-Secondary Success

The nationwide focus on developmental education highlights the emerging need for research and change. Before designing and implementing change, however, it is essential to understand students in developmental education and the barriers which they face. Developmental student populations tend to have specific needs beyond those of the traditional student population, as illustrated by low retention and pass rates. Both personal and institutional barriers inhibit success for developmental students. The following paragraphs will describe institutional barriers and personal barriers, categorized as situational and affective, specific to students in developmental courses.

Institutional barriers. Institutional barriers include barriers over which the student has no direct control, including placement test procedures, course sequences, and course offerings. An operational definition of this term appears in Chapter 1. Additional institutional barriers, identified by students participating in focus groups at Central Piedmont Community College as part of the Achieving the Dream data collection process, include the lack of "required orientation, required computer skills, standardized curriculum, understanding of poverty, and flexibility in making changes," (Central Piedmont Community College, 2011, p. 1).

A Completion by Design study (2012) concludes that one of five themes inhibiting community college success revolves around developmental education: most students "believed that the student success and Developmental Education courses intended to bring them up to speed were not offered in a way that helped them succeed,"

(pg. 4). This study involved focus groups with 161 participants from five different states. Participants were a mix of current community college students, community college graduates, and community college non-completers. In particular, students felt that developmental education courses required a large investment of both time and money.

Institutional barriers directly related to developmental education include course length and sequences. Bailey, Jeong, and Cho (2010) offered more insight into the lack of completion, analyzing student success in developmental education in terms of sequence rather than course. While a developmental course is bounded by credit hours and semesters, a developmental sequence begins with an initial assessment and continues until the student passes all required developmental courses and is deemed college ready. Bailey, Jeong, and Cho use a sample including 250,000 students from 57 colleges gathered through Achieving the Dream: Community Colleges Count. They conclude that the current approach to developmental sequences can be viewed as an ineffectual and daunting "obstacle course" (p. 267) of a "complicated and time-consuming set of services that have uncertain value" (p. 269). They also conclude that many students do not complete the full sequence, despite successful completion of individual courses.

A link between developmental coursework and student retention has been suggested. Through a statistical analysis of first year, first time community college students, Hawley and Harris (2005) found that, "Among the highest predictors of dropout is the amount of developmental coursework that students are required to complete," (p. 130). As students' required number of developmental courses increases, their one-year retention rate decreases significantly.

Personal barriers. While institutional barriers are under the control of the institution, personal barriers are much more difficult to address through policies and procedures. Personal barriers accompany the student, whether externally as situational barriers or internally as affective barriers. Personal barriers include situational factors, such as financial and childcare obligations, as well as affective factors, such as a lack of confidence and time management skills.

Situational barriers. Factors that are outside of student control such as transportation and lack of childcare options are a large concern for many community college students. An operational definition of this term appears in Chapter 1. For instance, 19% of full-time students and 42% of part-time students work at least 30 hours a week. The vast majority of students, 67% of full-time and 78% of part-time students, work at least one hour per week. In addition to work and college commitments, 29% of full-time students and 37% of part-time students care for dependents at least eleven hours per week (Center for Community College Student Engagement, 2012). These continuing challenges of situational priorities have a direct impact on students in developmental education, who make up 72% of entering community college students (Center for Community College Student Engagement, 2012).

Affective barriers. Challenges related to personal beliefs, such as poor self-image and a lack of viable role models, also inhibit the success of students in developmental education. An operational definition of this term appears in Chapter 1. Affective barriers have been studied for over a decade. As early as 1990, Mealey attributes the low success rate in developmental courses to students' low academic motivation and self-concept, concluding that students must "take responsibility for their own learning [and] attribute

their success to their own efforts" (p. 598) in order to be successful. A list of at-risk student characteristics created by Rouche and Rouche includes factors such as "poor self-image, failure/self-defeatism/unreachable goals, pathways to success unknown" (1993, p. 39).

Hirsch (1994) acknowledges the affective barriers which have a negative impact on students with difficult learning histories, concluding that: "Just as developmental students need to remediate deficiencies in academic work, so must they remediate the damaging educational and personal experiences which have negatively affected their academic progress," (p. 14). After in-depth interviews with both successful and unsuccessful students in developmental education, Yaworski, Weber, and Ibrahim (2000) conclude that developmental students need specific support designed to "help students increase their ability to self-regulate, set goals, develop a positive academic self-concept, and feel a sense of self-efficacy," (p. 218) in order to succeed. DiTommaso (2011) defines these affective factors as "difficulties with anxiety, fear of failure, self-confidence, social skills, cooperativeness, classroom management, and goal setting," (p. 6).

Based on the literature cited above, institutional and personal, divided into situational and affective, barriers influence a student's ability to reach his or her goals. The categories and representative samples are illustrated in table 1 below. The current state of developmental education indicates that a combination of these barriers prevent many students from being successful. Therefore, developmental education redesign should assiduously address both types of barriers. An examination of current interventions in developmental education indicates that this is not the case.

Table 1. Barriers faced by students in developmental education and representative examples

Type of Barrier	Representative Examples
Institutional Barriers	Placement test procedures, course sequences, course offerings, access to technology, lack of standardized curriculum, lack of flexibility
Personal Barriers	
Situational	Unreliable transportation, childcare responsibilities, financial obligations, employment commitments
Affective	Low academic motivation, poor self-image, unknown pathways to success, anxiety, lack of social skills, fear of failure

Current Interventions in Developmental Education

Although the specific categories of barriers for students in developmental education have been documented - institutional barriers and personal barriers, divided into situational barriers and affective barriers - the current interventions in developmental education focus primarily on alleviating only the institutional barriers to success. The following section explores several current interventions in the field of developmental education. The section ends with several promising practices.

Course sequence. One intervention currently being tested is the length of developmental course sequences. Bailey, Jeong and Cho (2010) view the current predominant system of sequenced, mandatory, semester long courses as an "ineffectual and daunting obstacle course" (p. 267). Sheldon and Durdella (2009) conducted a historical analysis of students in full semester developmental courses and students in compressed developmental courses, concluding that compressed courses result in higher levels of student success.

Another possible way to shorten the developmental sequence is to offer 'just in time' remediation. Cooper (2011) found that students identified as likely to be unsuccessful passed Intermediate Algebra at a rate of 73% (as opposed to the control group pass rate of 60%) when enrolled in a concurrent support course which reviewed key concepts and provided extra guided practice. Mireles, Offer, Ward, and Dochen (2011) found that students enrolled in a developmental math course which incorporated study strategies into the course content had stronger motivation, less math anxiety, and more positive attitudes than students who did not receive instruction in study strategies. Both of these studies indicate that alternative delivery timelines may accomplish the same purpose as the current predominant system of mandated remedial prerequisites.

Course content. Changes in course content are also being examined. Yopp and Rehberger (2009) found that students in a focus intervention developmental math course which emphasized high-priority learning objectives through the use of multiple, repetitive rounds of assessment, required mastery, and detailed feedback had higher scores on a standard final exam than students in a course which provided even emphasis for all concepts.

The North Carolina Community College System is implementing a statewide Developmental Math Redesign that focuses on five principles, one of which is "streamlining content and reducing curricular redundancies" (Developmental Education Initiative, 2011, pg. 2). By reviewing the course content and objectives for each Developmental education math course, main concepts can be streamlined, reducing the time for completion of the sequence.

Supplemental software. Some instructors have incorporated supplemental software into their developmental curriculum. Gravitt (2009) determined that no significant difference existed between final exam scores of developmental math students in a traditional course and a traditional course with supplemented by software. Cederholm (2010) conducted a similar study and found that students who used supplemental software had significantly higher scores in a developmental English course than students who did not use supplemental software, but that students who did not use the software had non-significantly higher scores in subsequent courses. These contradictions indicate that the use of software in developmental instruction is a strong area for further research, especially for longitudinal studies.

Other instructors are taking the idea of software instruction a step further. Corey Legge (2010) incorporated a third delivery into a similar study: computer-based individualized instruction which removes traditional instruction from the course, replacing it with synchronous computerized lessons. Corey Legge found that there were no significant differences between traditional courses and traditional courses supplemented with software, but that the computer-based individualized courses had significantly higher failure and drop rates than the other two methods. This study indicates that we are not yet ready to move to an entirely computer-based individualized instructional method in Developmental education and that further research is needed.

Delivery method. The impact of online and hybrid course delivery at the developmental level is also being examined. Ashby, Sadera, and McNary (2011) determined that traditional developmental math courses had the highest success rate, followed by online courses, and then hybrid. However, the results changed once attrition

was accounted for; online students were most successful, followed by hybrid, and then traditional. Carpenter, Brown, and Hickman (2004) found a similar contradiction. In an initial analysis of developmental writing courses, student retention and success were higher for traditional courses than online courses. However, once sex, ethnicity, age, load, placement test scores, and time of registration were controlled for, online students were significantly more likely to succeed while traditional students were more likely to be retained. Zavarella and Ignash (2009) found that developmental math courses with a traditional delivery method had higher retention rates than courses delivered in an online or hybrid format. The research indicates that an outcome of traditional delivery is retention while success is a strength of online delivery, when other variables are controlled for.

Promising practices. While interventions focusing solely on academic factors such as course delivery and sequence do not provide a clear framework for improving student outcomes at the developmental level, an exploration of several successful programs for students at this level may help provide more insight. One promising practice is the Pathways to Success program. This program incorporates support to help students overcome personal barriers in addition to institutional barriers.

Fowler and Boylan (2010) conducted an analysis of a Pathways to Success program for underprepared college students comparing underprepared students who participated in the program and those who did not. They found that participation in the program led to multiple positive outcomes, including higher GPA, higher one year retention rates, and higher success in developmental education courses. The Pathways program consisted of four hallmarks: “A) clear student guidelines, B) integrating first-

year transition coursework, C) intrusive academic advising to treat the nonacademic and personal factors, and D) traditional developmental education coursework and tutoring to address academic factors," (pg. 2). Clear student guidelines, Freshman orientation programs, and developmental education coursework are fairly widespread practices. However, the addition of an intensive advising component consisting of "prescriptive, developmental, and intrusive advising" (pg. 3) is less common. In this model, a single academic advisor works with a student throughout his participation in the program, changing roles as the student's needs change. In addition to offering academic advising, the advisor also works with the student to address underlying concerns, such as affective and situational barriers to success. The success of students in the Pathways to Success program indicates that helping students at the developmental level overcome personal barriers has a positive impact on their success. Bonham and Boylan (2011) underscore the importance of addressing the affective domain when redesigning developmental education. While the researchers focus on mathematics education, the conclusions are applicable to students in developmental reading and English courses as well. Bonham and Boylan emphasize that anyone involved in developmental mathematics education "need[s] to understand the influence of affective factors on students' success and retention in developmental mathematics. They should be familiar with and employ strategies to help alleviate mathematics anxiety, build self-confidence, and maximize student learning in mathematics," (pg. 4). The researchers list consideration of affective factors a best practice in redesigning developmental education.

While much consideration has been given to ameliorating the institutional barriers to success for students in developmental education, personal barriers have not received as

much attention. Current research in this area indicates that larger gains in student success can be made by directly addressing the situational and affective barriers faced by students than by solely addressing the institutional level barriers. Student development theory can play a key role in developing interventions designed to help students overcome affective barriers. In particular, Bandura's theory of self-efficacy offers a way to directly address the affective barriers faced by students in developmental education.

Self-Efficacy

This section introduces Bandura's theory of self-efficacy as a potential starting point for addressing the affective barriers faced by students in developmental education. Self-efficacy directly addresses the affective barriers facing students in developmental education, offering a framework through which to increase students' beliefs about their success and in turn influence this success.

Self-efficacy and self-concept. Academic self-efficacy and academic self-concept are two closely related constructs. A brief review of research will support the use of self-efficacy for this study.

Bong and Skaalvik (2003) explored the differences and similarities between academic self-efficacy and academic self-concept. The researchers conclude that both constructs "share important similarities such as their treatment of perceived competence as the most integral element in construct definition and assessment," (pg. 28). Bong and Skaalvik also conclude that the two constructs are distinct and separate. One of the more interesting findings of this study is that, while self-concept and self-efficacy are both based on past experiences, self-concept tends to refer to the past and self-efficacy refers to the future. In the researcher's terms, "self-concept better predicts affective reactions

such as anxiety, satisfaction, and self-esteem, whereas self-efficacy better predicts cognitive processes and actual performance," (pg. 28).

Ferla, Valcke, and Cai (2009) studied academic self-efficacy and academic self-concept among math students. This study supports Bong and Skaalvik's (2003) conclusion that the two concepts are different. In addition, the researchers' results confirmed that, "academic self-concept is a better predictor for affective-motivational variables, while academic self-efficacy is the better direct predictor for academic achievement," (pg. 502).

While academic self-efficacy and academic self-concept are closely related, the two constructs are distinct. As academic self-efficacy is a stronger predictor of academic performance, it has been chosen as the focus for this study.

Bandura's theory of self-efficacy. Self-efficacy can be defined as students' "beliefs in their capabilities to exercise control over their own functioning and over events that affect their lives," (Bandura 1994, p. 14). Self-efficacy is developed through "mastery experiences, seeing people similar to oneself manage task demands successfully, social persuasion that one has the capabilities to succeed in given activities, and inferences from somatic and emotional states," (Bandura 1994, p. 15). When applied to education, this theory indicates that students who believe in their success are more likely to be engage in behaviors which will result in their success. An operational definition of the term academic self-efficacy is available in Chapter 1.

Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004) conducted a meta-analysis of 109 studies to determine the relationship between psychosocial and study skills factors and student performance and persistence. The psychosocial and study skills

factors were organized into nine constructs: achievement motivation, academic goals, institutional commitment, perceived social support, social involvement, academic self-efficacy, general self-concept, academic-related skills, and contextual influences. The researchers found that academic self-efficacy is the strongest predictor of student performance with a correlation of .496. They also found that academic self-efficacy is the second strongest predictor of student persistence, with a correlation of .359. Out of the nine psychosocial and study skills constructs, academic self-efficacy stands out as a strong predictor variable of student performance and persistence.

Weissberg and Owen (2005) offer a response to the meta-analysis conducted by Robbins et al. (2004). They acknowledge the contribution made by the study, but question the generalizability of its conclusions to specific student populations. First, Weissberg and Owen note that only one of the 109 studies included in the meta-analysis contained data from a commuter institution, rendering the results difficult to apply to such institutions. Second, the authors criticize that the meta-analysis minimized the impact of the student characteristics of race, gender, and preparedness level. Both of these arguments indicate that, while the meta-analysis provides a strong justification for the relationship between academic self-efficacy and student persistence and performance, further investigation is necessary. Community college students in developmental education fit into both categories of exception.

Self-efficacy and first generation college students. Existing research about self-efficacy among students in developmental education is sparse, but examining studies involving the first generation college student population offers a relevant starting point as there is a large overlap between first-generation students and students in developmental

education. According to Chen (2005), 55% of first-generation students require at least one developmental education course.

Results are mixed, yet promising, regarding self-efficacy, success, and retention among first-generation students. Majer (2009) found that higher levels of self-efficacy correlate with higher student success to a statistically significant degree among first-generation college students in an urban community college.

Vuong, Brown-Welty, and Tracz (2010) concluded that higher self-efficacy results in higher student retention. The researchers also found that non-first-generation students had higher GPAs than first-generation students, but measured the same level of self-efficacy within both groups.

Ramos-Sanchez and Nicols (2007) found that non-first-generation college students had higher levels of self-efficacy as well as higher GPAs than first-generation students. In addition, the researchers found that higher levels of self-efficacy correlate with higher levels of adaptation to college, which may in turn result in higher retention rates

Self-efficacy in students in developmental education. Visor, Johnson, and Cole (1992) found that students with an internal locus of control and high self-efficacy were more likely to participate in optional supplemental instruction, which is often used as an intervention for at-risk students. This finding indicates that interventions aimed at increasing students' self-efficacy and locus of control may in turn influence students to take advantage of other resources which are already in place, in effect creating both a direct and an indirect path from increased self-efficacy to student success.

In an analysis of mathematical self-efficacy, students taking developmental Mathematics courses scored much lower than students taking Calculus (Hall & Ponton, 2005). Not only do higher level students have a stronger grasp of the content, but they also have a higher belief in their ability to successfully learn new content. According to Bandura's theory of self-efficacy, this lack of belief in ability among developmental math students leads to lower rates of success.

Evidence suggests that increased self-efficacy among students in developmental education courses may lead to higher student success and retention.

Teaching methods which impact students' academic self-efficacy. Margolis and McCabe (2006) offer guidelines for instructors interested in helping students develop the belief that they (students) can be successful. These suggestions include: planning moderately challenging tasks, using peer models, teaching specific learning strategies, capitalizing on student choice and interest, reinforcing effort and correct strategy use, encouraging students to try, stressing recent successes, and giving frequent, focused, task-specific feedback. These guidelines provide specific techniques which can result in higher self-efficacy among students, in turn resulting in higher success. Margolis and McCabe conclude that these techniques "improve struggling learners' self-efficacy, which in turn helps improve their motivation to succeed academically and their academic performance," (pg. 225).

Zimmerman, Bonner, and Kovach (1996) also offer suggestions to instructors. These suggestions focus more on ways that instructors can demonstrate the use of self-regulation, which, they argue, in turn increases self-efficacy. These techniques consist of demonstrating the use of self-regulated learning techniques, demonstrating the

effectiveness of self-regulatory techniques, keeping records of student progress, anticipating students' questions about self-regulated learning, planning for the integration of self-regulated learning, and refining teaching in light of experience with self-regulation. Again, many of these techniques fall into the four categories which Bandura lists for developing self-efficacy: mastery experiences, seeing others succeed, social persuasion, and emotional states. In particular, the suggestions from Zimmerman, Bonner, and Kovach center on modeling.

Fencl and Sheel (2005) examined self-efficacy of non-science majors in introductory science courses at four year colleges. ACT score and math background were positively correlated with self-efficacy scores while class size and gender were not significant. Once ACT score and math background were controlled for, 18% of variance in self-efficacy was attributed to teaching method. Furthermore, self-efficacy scores accounted for 37% of variance in student self-confidence at the end of the course. Four teaching strategies were found to be very effective at increasing students' self-efficacy: question and answer, collaborative learning, electronic applications, and conceptual problem assignments. The authors conclude that "self-efficacy is, indeed, an important attribute for understanding students' performances in introductory physics," (pg. 22).

Darnon, Buchs, and Desbar (2011) conducted a similar study, examining the impact of a jigsaw teaching technique on students' self-efficacy. Their population consisted of eighteen year old males participating in a vocational training program. They found that students in a classroom using a jigsaw teaching method had significantly higher final self-efficacy scores than students in a control classroom which did not use a jigsaw technique. Another interesting finding from this study is that "teaching students

strategies and helping them with class work do not seem to be sufficient to help them improve their sense of self-efficacy," (pg. 446). This claim was made because the initial and final self-efficacy scores of students in the control group did not differ significantly, despite the teaching of strategies and support with work which occurred in both the control and treatment groups. This indicates that instructors who are interested in increasing students' self-efficacy must consciously design their curriculum to include activities to support such growth.

Ramdass and Zimmerman (2008) also conducted a study on self-efficacy. Their population was fifth and sixth grade students, and they were specifically interested in the impact of self-correction training. The authors found no significant differences in students' self-efficacy between classes which received self-correction training and classes which did not receive self-correction training. While this study seems to contradict previous research, a closer examination reveals several flaws with the experimental design. First, the sample consisted of forty-two students spread over two grades and two experimental groups. With such a small sample, the results of any analysis do not have very large practical significance. A pretest-posttest design was used, with each test containing just four similar math problems. This indicates that desensitization to the test questions may interfere with the posttest.

Measuring self-efficacy. Self-efficacy scales tend to be very specialized. As Bandura (2006) explains, "Scales of perceived self-efficacy must be tailored to the particular domain of functioning that is an object of interest," (pg. 308). As self-efficacy among students in developmental education Reading and English courses has not been

studied, a new scale was created to measure the dependent variable for this study rather than implementing an established scale.

Self-efficacy scales have been created for a broad range of fields, ranging from education and teaching to nursing and psychology. Even within the field of education, existing self-efficacy scales vary widely, and many are too specific to be applicable to this study. For instance, the Academic Self-Efficacy Scale developed by Schoen & Winocur (1988) includes items such as "Writing journal articles" and "Delivering research findings at seminars". These two items are clearly not relevant to a study sample of community college students in Developmental education courses.

On the other side of the spectrum, some academic self-efficacy scales are too broad to be applicable to this study. For instance, the Student Self-Report of Academic Self-Efficacy (2005) scale developed by Hoover-Dempsey and Sandler includes just three Likert-scale items: "1. I can do even the hardest homework if I try, 2. I can learn things taught in school, and 3. I can figure out difficult homework." While these three items are applicable to this study, they are a bit too broad; the items refer to three aspects of developmental education courses but do not apply directly to the intended audience.

As a self-efficacy scale pertinent to this study was not available, a new scale was created. In "Guide for Constructing Self-Efficacy Scales", Bandura (2006) offers advice for creating a self-efficacy scale. First, "items should be phrased in terms of *can do* rather than *will do*," (pg. 308). This helps to ensure that answers reflect respondents' beliefs about capability rather than intent. Second, "Perceived self-efficacy is a judgment of capability to execute given types of performances," (pg. 309). Items on a self-efficacy scale should be concrete outcomes, whether behavioral, cognitive, or affective (pg. 313).

Third, participants should record their responses "on a 100-point scale, ranging in 10-unit intervals from 0 ("Cannot do"); through intermediate degrees of assurance, 50 ("Moderately certain can do"); to complete assurance, 100 ("Highly certain can do")," (pg. 312). A wide-ranging scale provides stronger reliability and sensitivity. Fourth, "If the scale is labeled, use a nondescript title such as '*Appraisal Inventory*' rather than *Self-Efficacy*", (pg. 314). Using a non-identifying label helps to prevent response bias. The scale developed for this study incorporates all four of these points.

Social modeling aspect of self-efficacy. The intervention designed for this study focuses on the social modeling aspect of Bandura's theory. An operational definition of this term appears in Chapter 1. Social modeling can have a positive or negative impact on the subject, depending on whether the model succeeds or fails. If the model makes an effort and fails, the subject's perception of potential success is negatively impacted; conversely, a model who makes an effort and succeeds has a positive impact on the subject's self-efficacy. Social modeling hinges upon the perception of similarity between the model and the subject. The more closely the subject identifies with the model, the more influence the model's success or failure has upon the subject. Furthermore, Bandura emphasizes that social modeling is more than simply a standard for comparison: "Through their behavior and expressed ways of thinking, competent models transmit knowledge and teach observers effective skills and strategies for managing environmental demands," (Bandura, 1994, pg. 3).

Three other aspects of the theory have a direct impact upon the design of the intervention (Bandura, 1977). First, a stronger benefit occurs when the model in question succeeds through effort and persistence rather than through personal ability. Second,

explicit demonstration of the model's success creates a larger impact than implicit or ambiguous success. Third, a larger impact is seen when several different models demonstrate success than when an individual model demonstrates success multiple times.

Social modeling, one of the four core components of Bandura's self-efficacy theory, offers a potential framework for addressing the affective barriers faced by students in developmental education

Instructional Design Models

Social modeling alone is not enough to fully address the affective barriers. The manner in which this theory is incorporated into the course curriculum must also be explored. Instructional design approaches offer a framework for developing, implementing, and evaluating course content. The next section defines Instructional Design, offers an overview of four common Instructional Design approaches, and discusses the model chosen for this study.

As stated in the definitions section of Chapter 1, Instructional Design is "a system of procedures for developing education and training programs in a consistent and reliable fashion" and consists of five stages: analysis, design, development, implementation, and evaluation, (Gustafson & Branch, 2002). Several different Instructional Design models exist. This section introduces four popular models (ADDIE, ASSURE, Dick and Carey Model, and Rapid Prototyping) and supports the use of the Dick and Carey Model for this project.

ADDIE. ADDIE (an acronym for Analyze, Design, Develop, Implement, and Evaluate) is a theoretical model which is cyclical in nature and demonstrates the non-linear, interconnected relationship between the analysis, design, development,

implementation and evaluation stages of Instructional Design. This model emphasizes the repetitive, iterative nature of the design process, depicting the manner in which each stage influences each of the other stages while at the same time being influenced by them (Gustafson & Branch, 2002). A visual representation of the ADDIE model, adapted from Gustafson and Branch (2002), is provided in figure 1.

The continual revision and evaluation are strong features of the model. Both revision and evaluation of instruction are essential in Developmental education, which largely consists of nontraditional students. While the ADDIE model offers a strong theoretical approach to Instructional Design, it does not provide a high level of detail for each step. The ASSURE model, along with several other Instructional Design models, is built on the ADDIE framework, adding more specificity.

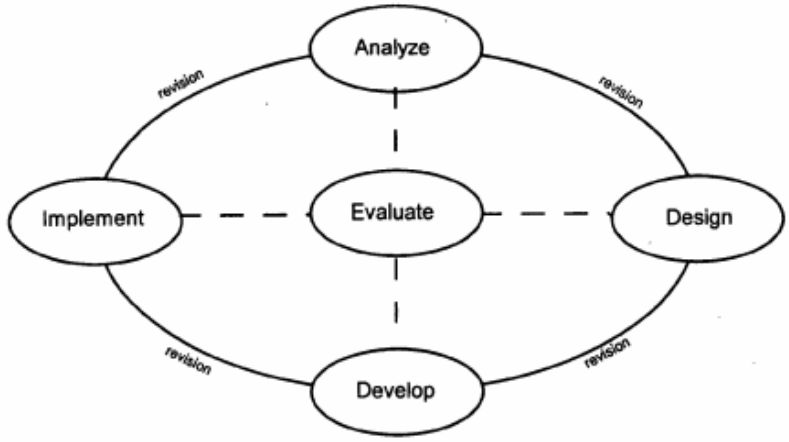

Figure 1. The ADDIE Instructional Design model. The ADDIE model of Instructional Design includes the Analyze, Design, Develop, and Implement phases with a continual emphasis on Evaluation. Adapted from "*What is instructional design"* (p. 18), by K. L. Gustafson and R. M. Branch, 2002, *Trends and issues in instructional design and technology*.

ASSURE. ASSURE (an acronym for analyze learners, state objectives, select methods and materials, utilize media and materials, require learner participation, and evaluate and revise) is an Instructional Design model based off of the ADDIE concepts. The stages of this model include analyze learners; state objectives; select methods, media, and materials; utilize media and materials; require learner participation; and evaluate and revise. This model emphasizes the selection of materials rather than creation. In addition, the model emphasizes the repetitive and nonlinear nature which is a hallmark of the ADDIE model (Heinich et al., 2002). Figure 2 offers a diagram, adapted from Smaldino, Russell, Heinich and Molenda (2005), of the ASSURE model.

One feature of ASSURE is that it explicitly states the requirement of student participation. This is essential, especially for students in Developmental education, who are facing a plethora of affective barriers which may inhibit their engagement. Another feature of the ASSURE model is the selection of materials. This saves time and expense when compared to creating materials, yet it may not result in materials tailored specifically for the developmental education student population.

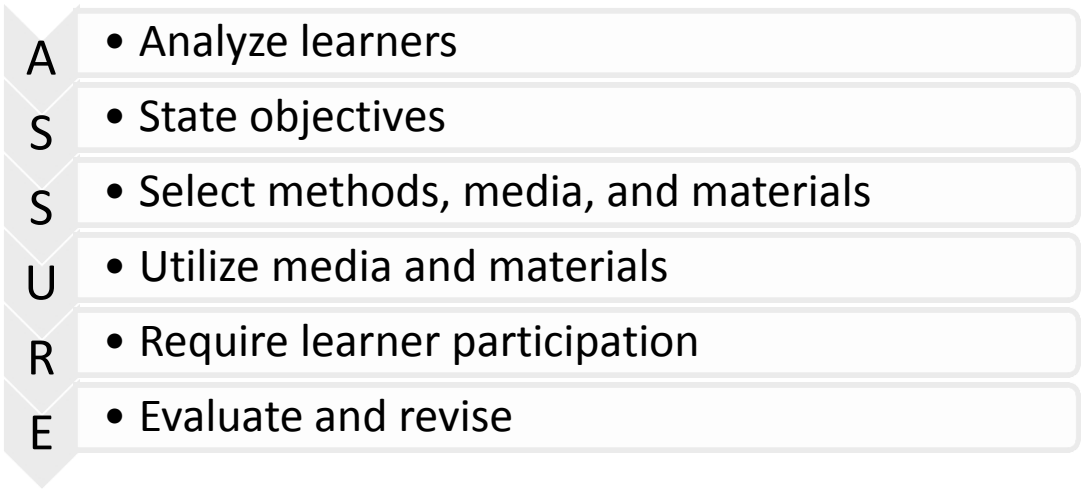

Figure 2. The ASSURE Instructional Design model. The ASSURE model of Instructional Design builds upon the ADDIE model, adding more detail. Adapted from *Instructional technology and media for learning,* by S. E. Smaldino, J. D. Russell, R. Heinich, and M. Molenda (2005).

Rapid prototyping. Rapid prototyping has a unique affiliation with instructional design in that researchers disagree about its relationship to the field. It has been categorized as "a completely new paradigm, a new model within the traditional Instructional Design paradigm, or simply a new technique for formative evaluation" (Nixon & Lee, 2001, pg. 8). Hallmarks of this approach include a non-linear process, cost-efficiency, and a quick timeline (Nixon & Lee, 2001). The approach has been described as the "process of quickly building and evaluating a series of prototypes," (Jones et al., 1992, pg. 96).

While rapid prototyping has several benefits, it lacks a strong initial assessment of learners, contexts, and needs. Emphasis is placed on speed of delivery and a repetitive improvement process rather than an investment in a high quality initial product. This method is not very well suited to an educational environment in which all students deserve access to high quality, thoughtful educational experiences.

Dick and Carey model. The Dick and Carey Model retains the nonlinear, repetitive hallmarks of the ADDIE and ASSURE models while adding two additional features. A definition of this term appears in Chapter 1. First, this model emphasizes the evaluation stage, specifying both an instructional analysis and an analysis of learners and contexts. This distinction highlights the importance of acknowledging the gap between learners' current knowledge and the intended goal of the instruction. Second, the Dick and Carey Model divides the analysis stage into a formative evaluation and a summative evaluation. This distinction highlights the need for ongoing evaluation throughout implementation of instruction as well as the need for holistic evaluation at the end of an instructional period (Dick et al., 2005). An illustration of the Dick and Carey model, adapted from Dick and Carey (1990), is available in figure 3.

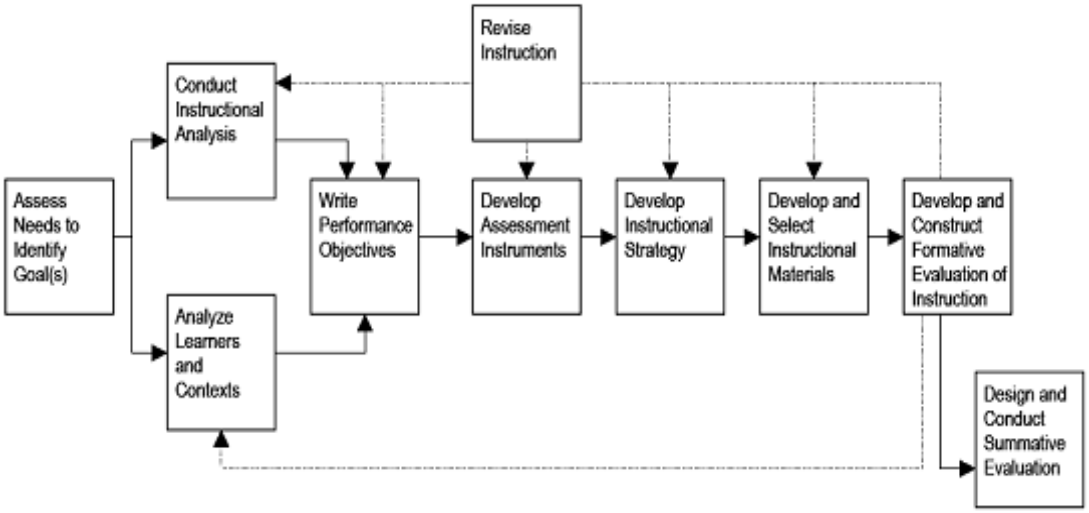

Figure 3. The Dick and Carey Instructional Design model. The Dick and Carey model of Instructional Design includes a focus on pre-assessment and formative as well as summative evaluation. Adapted from *The Systematic Design of Instruction*, by W. Dick and L. Carey, (1990).

The Dick and Carey Model is ideal for an intervention targeting students in Developmental education for several reasons. First, the pre-assessment stage is very structured and intense, consisting of a needs assessment, instructional analysis, and analysis of learners and contexts. Objectives are only written once these very thorough assessments are complete. Second, equal emphasis is placed on developing and selecting instructional materials. This ensures that a full range of materials are considered based on the results of the initial assessments, objectives, and strategies rather than easily implemented pre-made materials being chosen based on cost and efficiency. Table 2, below, offers a comparison of characteristics for four Instructional Design models, indicating the qualities inherent to the Dick and Carey model which best suit it for the purposes of this study.

Table 2. Comparison of characteristics for four Instructional Design models

Model	Non-linear structure	Repetitive, revisionist nature	Creation of new materials	Strong, structured initial assessment
ADDIE	X	X		
ASSURE	X	X		
Rapid Prototyping	X	X	X	
Dick and Carey	X	X	X	X

Simms and Knowlton (2008) explain that a systematic approach to instruction is the most effective instructional design strategy for Developmental education for three reasons. First, they explain the efficiency of focusing directly on the design of instruction. Second, they emphasize the background gathering stage of the process, highlighting the link between course goals and objectives and instruction. Third, they cite the cyclical

nature of the process, emphasizing the continual evaluation and improvement of instruction. Given the benefits of using a systematic approach over alternative instructional design methods, they claim to "find the match between the preferences of adult learners and the inherent characteristics of [Instructional Systems Design] to be undeniable," (pg. 21). While Simms and Knowlton focus on developmental math courses, these findings also apply to developmental English courses as the student population often overlaps.

While all four of the models discussed above provide a system for Instructional Design, and therefore meet the requirements of Simms and Knowlton, the Dick and Carey Model will be the basis for this project. This model's emphasis on evaluation, divided into three categories – conducting a goal analysis, identifying subordinate skills and entry behaviors, and analyzing learners and contexts (Dick et al., 2005) – is well suited for students in developmental education, with their attendant affective barriers explained previously.

Use of Dick and Carey Instructional Design model. The Dick and Carey model of Instructional Design was used to design the intervention for this study. This model was chosen due to its inclusion of four key characteristics: a strong, structured initial assessment; a repetitive, revisionist nature; the creation of new materials; and a non-linear structure.

The initial assessment stage of the Dick and Carey model consists of assessing needs to identify goals, conducting an instructional analysis, and analyzing learners and contexts. The literature review section of the dissertation is founded on this stage. The current low pass rates of students in developmental education courses indicate an area of

need, and the distal goal of this study is to increase pass rates in this field. An analysis of learners and contexts indicates that affective traits are a barrier for success for students in developmental education courses. An analysis of instruction indicates that Bandura's theory of self-efficacy may be a necessary component of student success in developmental education courses. Synthesizing the indications from these three areas of analysis results in a stronger understanding of the needs of the student population and a potential way to meet those needs.

The next stage of the model consists of writing performance objectives. As the initial stages indicate that students in Developmental education are not currently as successful as desired, student success is influenced by academic self-efficacy, and that students in Developmental education tend to have low academic self-efficacy, the proximal objective of this study is to raise self-efficacy levels in students taking developmental education courses. The three research questions stem from both the proximal and distal goals. Once goals are written, assessment instruments must be developed. In this case, the assessment instrument is the pre- and post-survey. In keeping with the performance objectives (written as research questions), the assessment instrument measures students' academic self-efficacy.

After goals have been developed and an assessment instrument has been designed, instructional strategies and materials are addressed. For this study, the use of an online delivery method was chosen to ensure continuity across course sections and to minimize disruption of classes. As the target audience for the intervention consists of students who placed into developmental English and reading courses, a video delivery was chosen over the more traditional text-based media. In addition to ensuring that students are able to

fully comprehend the content, video delivery allows students to see and hear the interviewee, strengthening the social modeling connection. In addition, as attrition among this student population can be high, the intervention was designed to be completed in a three week period rather than throughout the full course. Instructional materials were created, as opposed to found and employed, for this intervention, as the target audience and outcome are very specific.

After instructional methods and materials are designed, evaluation is the next step. Formative evaluation has been ongoing throughout the design process. Continual revision, incorporating both research and feedback from multiple sources including dissertation committee members, has been an ongoing part of the process. In this case, summative evaluation of the intervention will be chapters 4 and 5 of the dissertation.

Summary

The field of developmental education is currently in the spotlight. The low success and retention rates of students in developmental courses have led to a focus on redesign, which largely addresses institutional barriers rather than personal barriers to student success. Bandura's self-efficacy theory offers a way to address the affective personal barriers, and the Dick and Carey Instructional Design model provides a process for developing an intervention based on this theory. The following chapters of this dissertation include a description of the method used for this study, a report of the results from this study, and a discussion relating the results from this study to the existing literature in the field.

Chapter 3 relates the method used for this study, including sample recruitment and construction, the creation and delivery of the intervention videos, construction of the self-efficacy scale, and data analysis techniques.

CHAPTER 3: METHOD

As illustrated in Chapter 2, self-efficacy provides a theoretical approach for addressing the affective barriers faced by students in developmental education. The purpose of this study is to examine the impact of a social modeling intervention designed to increase self-efficacy as well as the relationships between self-efficacy and student success and retention. This chapter includes specific information about the study to be conducted, including research questions, setting and participants, procedure, data and design, and a summary.

Research Questions and Hypotheses

One primary research question will be addressed in this study:

To what extent does a series of three five-minute videos consisting of interviews with students who have previously completed developmental education coursework and who are now succeeding in their academic programs, designed using a systems theory approach and based on the social modeling aspect of self-efficacy, impact the academic self-efficacy of community college students in developmental English and reading courses?

Two secondary research questions will also be addressed:

1) To what extent does an intervention designed to increase academic self-efficacy relate to student retention among community college students in developmental English and reading courses?

2) To what extent does an intervention designed to increase academic self-efficacy relate to student success among community college students in developmental English and reading courses?

Setting and Participants

This study was conducted at a large community college in the Southeastern region of the United States. The college enrolls 60,000 students spread over six campuses. A slight majority of students are female. The majority of students are in-state, 4% are out-of-state, and 10% are international. Almost half of students are White, 32% are Black or non-Hispanic, 10% are Hispanic, and the remaining students identify as Other. A third of students are 21-30 years old and a fifth are 31-40 years old; the remaining 40% are fairly evenly divided between the categories of under 21 years old, 41-50 years old, and over 50 years old.

The sample for this study consisted of students in ten course sections of Developmental Reading and English (DRE) offered at this institution: DRE 096, DRE 097, and DRE 098. DRE 096 is the first level of Developmental Reading and focuses on grammar and paragraphs. DRE 097 focuses on writing essays, and DRE 098 culminates in a documented essay incorporating outside sources. Table 3 provides an overview of the placement requirements and course content for each level of the Developmental Reading and English sequence.

The ten course sections included in the study were divided into matched pairs by course level, instructor, and campus. The Institutional Research team at the institution randomly assigned one course out of each of the five matched pairs to the treatment group. It was anticipated that 180 students, divided into two sets of intact groups, would

be enrolled in the ten course sections included in the study. Five course sections received the treatment, and five course sections functioned as the control. Differences between instructor, course level, and campus were controlled for by the division of courses into matched pairs before random assignment occurred.

TABLE 3: Placement requirements and course content for DRE 096, DRE 097, and DRE 098

	DRE 096	**DRE 097**	**DRE 098**
Prerequisite Course	Pass ABL	Pass DRE 096	Pass DRE 097
Prerequisite Accuplacer Score	72-91	92-128	129-165
Reading Focus	8^{th}-10^{th} grade texts	10^{th}-12^{th} grade texts	11^{th} grade – early college level texts
Writing Focus	Sentences and paragraphs	Paragraphs and essays	Essays
Culminating Assignment	Revised, polished paragraph	Revised, polished essay	Revised documented essay

Procedure

Students were recruited from the instructors' classes using the script attached in Appendix A: Participant Informed Consent. Instructions were provided to participating students through course instructors and course Blackboard shells.

Both sets of courses, control and treatment, completed a short electronic survey, delivered through Google Docs, to measure initial level of academic self-efficacy related

to social modeling as well as to collect demographic data. During the first week, students in the courses designated for treatment participated in the intervention by viewing the first five-minute Student Success video in Blackboard; students in the control group did not view the video. In week 2, the treatment group viewed the second five-minute Student Success video while the control group did not. At the beginning of week 3, the treatment group viewed the third video in the series. At the end of the third week, both groups once more completed the academic self-efficacy survey through Google Docs. At the end of the eight week course, success and retention data were collected through course records for students in both groups.

Intervention. The intervention for study participants consisted of viewing three five-minute videos consisting of edited footage of interviews with students who had previously completed developmental education courses and who were making successful progress towards their academic goals. The intervention was delivered electronically, as a supplement to the course, and lasted for fifteen total minutes. The semi-structured interview questions, included in Appendix D, were based on the social modeling aspect of Bandura's self-efficacy theory and were designed to elicit the following:

1. The model's educational background - in order to facilitate subject identification with the model
2. The model's current progress towards educational goals - in order to provide an explicit measure of current success
3. Challenges faced throughout Developmental coursework - in order to demonstrate that success was due to effort and persistence rather than ease of the program

4. Personal qualities and sources of support - in order to demonstrate effective skills and strategies for overcoming these challenges

Video Creation and Evaluation. The three videos were created by the researcher. Student interviewees were recruited through informal, on-campus conversations. Students who expressed an interest in participating were screened to ensure that they met the following criteria: 1) students must have begun their studies at the developmental reading and English level, 2) students had to be on track to graduate at the end of the semester in which the study took place, and 3) students must have been successful in their developmental level reading and English courses.

Once all three students who met the criteria were recruited, one hour interview sessions were scheduled with each interviewee. Interviews were conducted in the Teaching Commons area of the institution, in a Digital Media Services studio consisting of professional level recording equipment and editing software. Each interview began with a discussion of the study and the interviewee's role in the project, a review of the Interview Informed Consent Form and the Video Release Form, and the collection of signatures. After the required paperwork was completed, interviewees received a brief introduction to the recording equipment and were connected to a lapel microphone. Once the interviewee was ready, the researcher ran a video check, a microphone check, and a lighting check.

Recording began once all equipment was confirmed and the interviewee indicated readiness. The researcher asked the Semi-Structured Interview Questions (see Appendix E for list of questions). Questions were available to interviewees before the recording session and were reviewed just prior to recording. Once the list of questions was

exhausted, the questioning process was restarted so that each question and response was recorded twice. This allowed for more available footage for editing purposes. During recording, the researcher was not attached to a microphone or on camera as the interviewee was the sole voice and visual. The total time in the recording studio for each interview was about an hour. Once complete, recordings were rendered into an editable file by Digital Media Services team members and transmitted to the researcher electronically via a flash drive.

The researcher edited the recorded footage from each one hour interview into a polished five minute video using a Mac computer and Adobe Final Cut Pro, which were both available through Digital Media Services. The editing process was guided by the key components of Bandura's social role modeling aspect of self-efficacy theory (1994). Specifically, in alignment with the interview questions, clips from each video were chosen to illustrate the following: the model's educational background, the model's current progress towards educational goals, challenges faced throughout developmental level coursework, and personal qualities and sources of support.

Each interview recording was edited individually. First, video clips related to each specific area of the social modeling aspect of the theory (background, challenges, methods of overcoming the challenges, and current success) were pulled from the original interview footage and grouped together. Second, other applicable footage was pulled and grouped. This varied depending on the interview. For instance, one interviewee discussed her pregnancy as a unique challenge faced during her coursework and offered strategies for staying engaged and communicating with instructors while on an extended leave. Another interviewee discussed the role that his environment played on

his decisions and the choices he had to make in order to be successful in college. The third interviewee spoke about his transition from being afraid of writing to feeling pride at how well he writes at his new job. While not explicitly targeted by the semi-structured interview questions, this information did provide examples of the models' challenges and strategies for overcoming those challenges, which is in accordance with Bandura's theory. Third, the groups of clips were organized according to the theory: background, challenges, sources of support, additional footage if applicable, and upcoming graduation and future plans. Once the clips and categories were organized, the researcher pulled the best material from each category, editing the full footage into a five minute video. This process was completed with each of the three interviews.

To ensure that the final edited videos were grounded in theory, the researcher continually referred to a hard copy of Bandura's description of the social modeling aspect of self-efficacy throughout the editing process: "seeing people similar to oneself manage task demands successfully," (1994). Continual reference to the theory helped ensure validity. A second check for validity occurred once the videos were fully edited. The instructors whose course sections were participating viewed the videos prior to the beginning of the study. While no formal feedback was collected, all four instructors (the fifth instructor was the researcher) approved the videos and indicated that they believed the videos would be helpful for students. One instructor requested permission to show the videos to both of her course sections, the control and treatment. Another instructor requested permission to show the videos to her courses which were not participating in the study. Permission was not granted to show the videos outside of the study or to students in the control group. Participating instructors evaluated and approved the video

content; instructors indicated confidence that the videos would have a positive impact on students.

Instrumentation. The pre- and post-test measure was a short survey consisting of three Likert-type questions focused on the social modeling aspect of self-efficacy. These questions, included in Appendix E, center around the same four areas as the semi-structured interviews on which the intervention was based.

Treatment and Assessment Delivery. A new content tab labelled "Student Success" was added to each instructor's course Blackboard shells. The first item in the new tab was a folder labelled Informed Consent. This folder consisted of a video explaining the Informed Consent form, the Informed Consent Form, and a brief survey in which students would type their names to indicate acceptance of the Informed Consent. The second item in the tab consisted of links to the pre-assessment and post-assessment, both delivered through Google Docs, and the edited and reviewed student interviews. The assessments were included in all course shells while the interviews were only included in the shells for courses in the treatment group. Adaptive release was set so that students who did not electronically sign the Informed Consent form were unable to access the study assessments and intervention.

During the first week of the study, the researcher led each class of students through the study activities: an explanation of the study and a recruitment spiel, Informed Consent terms and signature collection, and completion of the pre-assessment for students who were interested in participating in the study. The researcher also played the first five minute student interview video during the class period for each class in the treatment group. During the second week of the study, instructors played the second

student interview video in their classrooms without the researcher's presence. One instructor forgot to show the video during this second week and showed it at the beginning of the third week instead. During the third week of the study, the researcher again visited each classroom to lead concluding activities, consisting of showing the third and final video and administering the post-assessment.

The surveys were delivered through Google Docs. Survey results remained confidential, and course instructors were not able to match students with their individual survey results. Students were assigned a code which they were asked to enter before the pre- and post-surveys. This code allowed the researcher to match pre- and post-survey results while providing confidentiality to participants. Survey data were collected through Google Docs, downloaded as a Microsoft Excel spreadsheet, and then imported into SPSS for analysis.

In addition to survey response data, student retention and success data were also collected. The course is graded as Pass/Fail, so students who earned a Pass were labeled successful while students who earned a Fail were labeled unsuccessful. Student retention was operationalized as whether or not the student was in attendance during the last week of the course; students who attended the last week of the course were labeled retained while those who did not were labeled released. These data were gathered through course records, entered into Microsoft Excel, and then imported into SPSS for analysis. The success and retention measures of students in both groups were analyzed through chi-square analyses.

Design and Data Analysis

This study is quantitative in nature. Numerical data were collected through a single survey delivered to each participant twice and entered into SPSS as the study progressed. Student success and retention was gathered through course records and entered at the end of the course. All analyses were run using SPSS software.

The main experimental design for this study was a repeated-measures ANOVA with one between-subjects factor (treatment 1, control) and one within-subjects factor (pre- and post-surveys). The two surveys were delivered at the beginning of the study and again at the end of the three week period. The treatment group participated in the intervention during weeks one, two, and three by watching one five-minute video each week. The control group did not participate in the intervention.

A repeated-measures ANOVA was used to address the primary research question (To what extent does a series of three five-minute targeted intervention videos consisting of interviews with previous DE students who are now succeeding in their academic programs, designed using a systems theory approach and based on the social modeling aspect of self-efficacy, impact the academic self-efficacy of community college students in developmental English and reading?). The a priori hypothesis for this analysis was that a significant interaction exists. Two main effects were also tested: 1) the impact of treatment group on self-efficacy and 2) the impact of time (pre- and post-survey) on self-efficacy. Interactions between treatment group and time were also examined.

A chi-square test of independence was conducted to address the first secondary research question (To what extent does an intervention designed to increase academic self-efficacy relate to student retention among community college students in

developmental English and reading?). Treatment group and student retention, coded as retained or not retained, were the two sets of nominal data. An operational definition of student retention is available in Chapter 1.

Another chi-square test of independence was run to address the second secondary research question (To what extent does an intervention designed to increase academic self-efficacy relate to student success among community college students in developmental English and reading?). Treatment group and final grade, coded as pass or fail, were the two sets of nominal data. An operational definition of student success is available in Chapter 1.

Based upon the results of the ANOVA and chi-square tests of independence, two additional analyses were also run. A logistic regression was used to determine whether initial academic self-efficacy score was an accurate predictor of student success or retention in the course.

Summary

This study explored the impact of an intervention on self-efficacy as well as the relationship between self-efficacy and student success and retention in an effort to address the affective barriers facing students in Developmental education. This knowledge allows instructors teaching Developmental education to better address the affective barriers their students face.

The following chapter presents the results of this study, including demographic information, reliability of instrument, and the statistical analyses. The final chapter offers a discussion situating these results within the existing literature in the field, culminating in a discussion of the role academic self-efficacy should play in developmental education

reform. The final chapter also provides a list of limitations of the study and suggestions for future research.

CHAPTER 4: RESULTS

Chapter 4 will focus on the statistical analysis of the data and the results of the study. The chapter begins with a section on treatment fidelity, moves into a description of the study participants and sample demographics, continues with a description of the instrument used to gather data, moves into an analysis of the data organized by research question, and ends with a summary of results.

Treatment Fidelity

The intervention was designed to be delivered in three doses, with one five-minute video shown to students in the treatment course sections each week for three weeks. As stated in Chapter 1, treatment fidelity for the course of this study was operationally defined as a participant's active engagement in and completion of the fifteen-minute intervention within the appropriate time period. Four out of the five treatment groups received the treatment on this schedule. One of the participating instructors did not show the video during the second week of the study, so one set of students viewed two videos on separate days of week 3.

Another possible threat to treatment fidelity was the attention of the students in the treatment group. While the videos were played during class time, there is no guarantee that the students were active viewers while the videos were playing.

In order to ensure that students fully understood the survey questions, the researcher read the questions out loud to students as they completed the survey. In

addition, several students from both the treatment and control group needed additional help; the researcher reread the questions to each of these students individually.

Participants

In order to reach the largest possible number of participants, students were recruited from 10 course sections of Developmental Reading and English (DRE) offered during the second short session of Spring 2014. All sections of courses with the DRE prefix were included in the study aside from two sections belonging to one instructor who opted not to participate. Students were recruited from three different course levels (DRE 096, DRE 097, and DRE 098), five different instructors, and two campuses. In order to control for the differences between campus, instructor, and course level, course sections were divided into matched pairs, each pair consisting of two courses at the same level taught on the same campus by the same instructor. The Center for Applied Research at the institution used a random numbers table to determine which section out of each matched pair would receive the treatment and which would be the control group.

Combined attendance for all sections on the day in which students were recruited, informed consent was reviewed, and the pre-survey was taken totaled 100. One class section with 10 potential control group participants did not complete the Informed Consent form and was unable to participate in the study as the twenty minutes of class time allotted for the initial presentation was not sufficient to explain the study and lead students through the required technical aspects of the Informed Consent form and survey. Out of the 90 possible remaining participants, 67 students agreed to participate in the study, completing both the informed consent form and the pre-survey. From the 67 students who signed the Informed Consent form and completed the pre-survey, 13 were

absent on the day of the post-survey. Out of the 57 participating students who were present for the post-survey, 15 opted not to complete the final survey. The result was a set of 42 participants for whom matched data for the pre-survey and the post-survey was available. These 42 participants make the data set used in the main analysis and from which conclusions have been drawn.

Demographic analysis of participants for the ANOVA is reported from the 42 participants for whom matched data are available. The majority of students participating in this study were young: 15 were age 19 and younger, 15 were 20-29 years old, 7 were 30-39 years old, 4 were 40-49 years old, and 1 was age 50 and over. There were a few more female participants (23) than male participants (19). Half (21) of the participants identified as Black or African American, 7 as Hispanic/Latino, 6 as Caucasian, 4 as Asian/Pacific Islander, 2 as Biracial or Multiracial, and 2 as Other. Over half of the participants (24) were enrolled as full-time students, 17 were enrolled part-time, and 1 participant did not answer this question. Almost a fourth (9) of participants were employed full-time, 16 were employed part-time, 16 were unemployed, and 1 participant did not answer this question. Table 4 provides frequencies and percentages for demographic data for this sample.

Table 4: Frequencies and percentages for gender, age, race, enrollment status, and employment status in ANOVA sample organized by control and treatment group

	Total		Control		Treatment	
	N	%	*N*	%	*N*	%
Gender						
Female	23	54.8	8	50.0	15	57.7
Male	19	45.2	8	50.0	11	42.3
Age						
19 and under	15	35.7	3	18.8	12	46.2
20-29	15	35.7	8	50.0	7	26.9
30-39	7	16.7	2	12.5	5	19.2
40-49	4	9.5	2	12.5	2	7.7
50 and over	1	2.4	1	6.3	0	0.0
Race						
Asian/Pacific Island	4	9.5	3	18.8	1	3.8
Biracial/Multiracial	2	4.8	1	6.3	1	3.8
African American	21	50.0	8	50.0	13	50.0
Caucasian	6	14.3	2	12.5	4	15.4
Hispanic/Latino	7	16.7	2	12.5	5	19.2
Other	2	4.8	0	0.0	2	7.7
Enrollment Status						
Part-time student	17	41.5	5	31.3	12	46.2
Full-time student	24	57.7	11	68.8	13	50.0
Employment Status						
Unemployed	16	39.0	7	43.8	9	34.6
Part-time	16	39.0	6	37.5	10	38.5
Full-time	9	22.0	2	12.5	7	26.9

While there were several differences between the demographic information for the control and treatment groups, chi-square tests of independence examining the differences between the control and experimental groups did not find statistically significant differences. The control group was evenly divided between males and females while the treatment group had a slightly higher percentage of women than men (57.7% female, 42.3% male). Both groups included more full-time students than part-time students, but the difference between the two groups was more pronounced in the control group (68.8% full-time and 31.3% part-time in the control group and 46.2% part-time and 50.0% full-time in the treatment group). While the percentages of students in each age group do not match exactly, the majority of participants in each group were 29 or under (68.8% in the control group and 73.1% in the treatment group). Half of the participants in each group identified as Black or African American. The control group had more participants identifying as Asian/Pacific Island and Biracial/Multiracial while the treatment group had more participants identifying as Caucasian, Hispanic/Latino, and Other. Similarities between control and treatment group include percentage identifying as Black or African American, percentage of students 29 and below, and percentage of male and female students.

All participants (N=67) were included when examining differences in success and retention rates. In order to utilize a larger sample size, demographic and statistical analysis for the two chi-square tests of independence is reported on the 67 students who completed the Informed Consent form as matched data are not required. Table 5 shows frequencies and percentages for gender, age, race, enrollment status, and employment status for this sample organized into control and treatment group.

Table 5: Frequencies and percentages for gender, age, race, enrollment status, and employment status in chi-square sample organized by control and treatment group

	Total		Control		Treatment	
	N	%	*N*	%	*N*	%
Gender						
Female	40	58.0	15	55.6	25	59.5
Male	29	42.0	12	44.4	17	40.5
Age						
19 and under	24	34.8	7	25.9	17	40.5
20-29	26	37.7	13	48.1	13	31.0
30-39	11	15.9	4	14.8	7	16.7
40-49	5	7.2	2	7.4	3	7.1
50 and over	2	2.9	1	3.7	1	2.4
Race						
Asian/Pacific Island	6	8.7	3	11.1	3	7.1
Biracial/Multiracial	3	4.3	1	3.7	2	4.8
African American	35	50.7	15	55.6	20	47.6
Caucasian	8	11.6	2	7.4	6	14.3
Hispanic/Latino	12	17.4	6	22.2	6	14.3
Other	5	7.2	0	0.0	5	11.9
Enrollment Status						
Part-time student	28	40.6	11	40.7	17	40.5
Full-time student	39	56.5	16	59.3	23	54.8
Employment Status						
Unemployed	32	46.4	14	51.9	18	42.9
Part-time	22	31.9	10	37.0	12	28.6
Full-time	14	20.3	2	7.4	12	28.6

The demographic data for the chi-square test of independence sample show many more similarities between the control and treatment groups. Both groups had a higher percentage of female respondents and full-time students. In addition, the largest employment status for both groups was unemployed. As with the ANOVA sample, the age ranges are very similar if divided into 29 and under and 30 and over. Again, half of the respondents identified as Black or African American. Again, statistical analysis of the demographic data for this sample indicates that no statistically significant difference between the two groups.

Instrument

In accordance with Bandura's acknowledgement that self-efficacy scales are inherently and closely linked with the particular area they measure (2006) as well as a lack of previous research done on academic self-efficacy in the developmental student population, an assessment was created specifically for this study. Both the pre- and post-assessments consisted of three self-efficacy scales on which students self-identified their confidence level regarding a particular outcome: passing the course, knowing where to go for extra help, and mastering the course objectives. The scales ranged from 1 to 10 and were worded as specified by Bandura (2006). Students' scores for each of the three 10 point scales were added together to determine an overall academic self-efficacy score ranging from 0 to 30 points. Content validity for the pre- and post-assessments was reviewed by a full-time faculty member whose students were participating in the study. Reliability measures for the instruments were both very high (see Table 6); a coefficient alpha for the pre-survey total was .88 and the post-survey total was .80.

Table 6: Frequency, mean, standard deviation, minimum, maximum, and Cronbach's Alpha for pre-assessment and post-assessment questions

Pre-Assessment Descriptive Statistics (Cronbach's Alpha=.88)					
	N	*M*	*SD*	Minimum	Maximum
PrePass	42	8.86	1.372	6	10
PreHelp	42	8.38	2.129	1	10
PreObj	42	8.76	1.543	4	10
PreTot	42	26.00	4.612	14	30

Post-Assessment Descriptive Statistics (Cronbach's Alpha = .80)					
	N	*M*	*SD*	Minimum	Maximum
PostPass	42	8.95	1.125	6	10
PostHelp	42	8.64	1.635	3	10
PostObj	42	8.81	1.330	5	10
PostTot	42	26.40	3.507	18	30

Primary Analysis

A two-way ANOVA was run to test the primary research question addressed in this study:

1) To what extent does a series of three five-minute videos consisting of interviews with students who have previously completed Developmental education coursework and who are now succeeding in their academic programs, designed using a systems theory approach and based on the social modeling aspect of self-efficacy, impact the academic self-efficacy of community college students in Developmental English?

Prior to conducting the major analysis, the data were screened for missing values, outliers, and normality. There were no missing values aside from two missing entries in the demographic information. Three outliers were detected (participants 4, 6, and 7); analysis was run with and without the outliers included. Results from analysis were the same whether the outliers were included or removed. Data are reported with the outliers

removed as this data set most closely met the underlying assumptions. The kurtosis values for pre-survey control group (4.16), pre-survey treatment group (-1.19), and the post-survey treatment group (-1.105) as well as the skewness value for the pre-survey control group (-1.955) suggesting a lack of normality. Table 7 reports these values.

Table 7: Means, standard deviations, sample sizes, skewness, and kurtosis values for pre- and post-survey data for treatment and control groups

		M	*SD*	*N*	*Skewness*	*Kurtosis*
Pre-Survey	Control	28.08	2.597	13	-1.955	4.165
	Treatment	25.69	4.250	26	-.490	-1.192
	Total	26.49	3.913	39		
Post-Survey	Control	28.46	1.761	13	-.736	-.730
	Treatment	25.92	3.498	26	-.344	-1.105
	Total	26.77	3.240	39		

In addition to data screening, initial analysis also consisted of a comparison of means between the control and treatment groups for the pre-assessment variables. No significant difference was found between individual pre-test measures for pass (t=1.37, p=.18), help (t=.16, p=.87), or obj (t=1.34, p=.19).

A two-way ANOVA with one between-subjects and one within-subjects effects was used to examine the interaction between the viewing of student interview videos and time on students' academic self-efficacy. To determine if the intervention was effective, the research hypothesized that there should be a statistically significant interaction. No significant difference was found for time [F(1,37)=.375, p=.544)] or interaction between time and treatment [F(1, 37)=.023, p=.879]. A significant difference was found for treatment [F(1,37)=5.445, p=.025], indicating that a statistically significant difference did exist between the treatment and control group considering both the pre-survey and post-

survey. The pre-survey and post-survey means for each group (a pre-survey average of 28.08 for the control group and 25.69 for the treatment group and a post-survey average of 28.46 for the control group and 25.92 for the treatment group) suggest that academic self-efficacy is higher in the group which did not view the videos; however, this group had higher academic self-efficacy prior to viewing the videos as well. As no interaction is noted between time and treatment, this finding does not indicate that the videos had an impact on self-efficacy. Figure 4 is a graph visually depicting the relationship between the four data points and is included below.

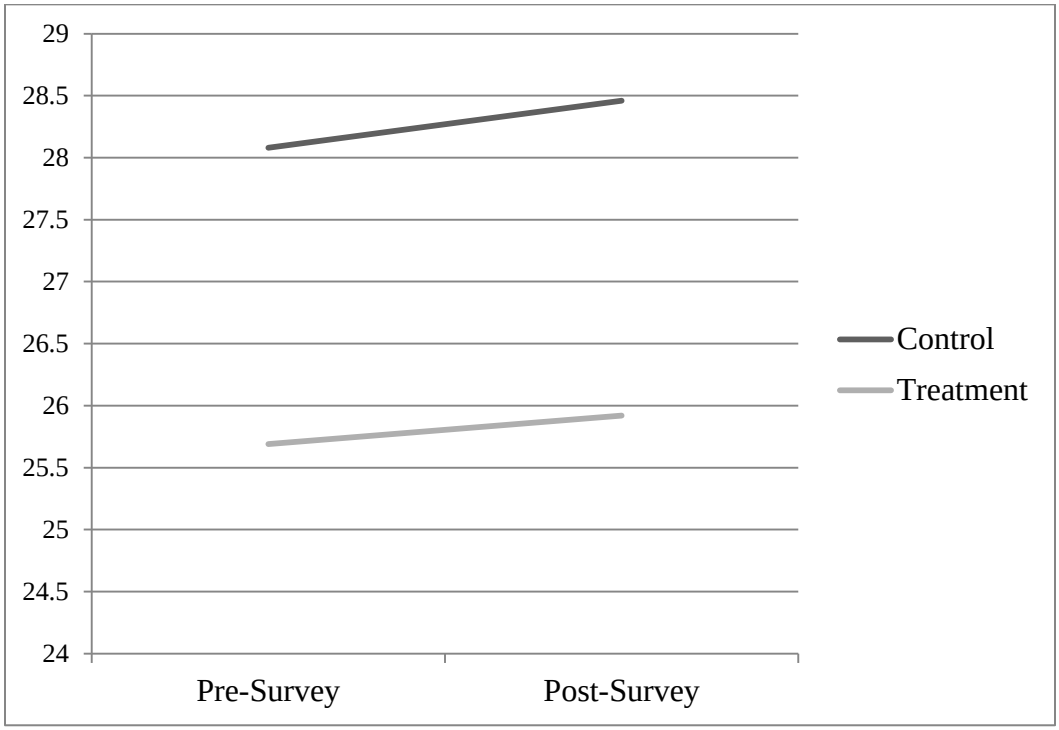

Figure 4. Estimated marginal means of academic self-efficacy. This figure illustrates the interaction between time and treatment on academic self-efficacy. No significant interaction was found; this indicates that the treatment did not have an impact on students' academic self-efficacy.

Secondary Analyses

Two chi-square tests of independence were run to test the two secondary research questions:

2) To what extent does an intervention designed to increase academic self-efficacy relate to student retention among community college students in Developmental English?
3) To what extent does an intervention designed to increase academic self-efficacy relate to student success among community college students in Developmental English?

A 2 X 2 contingency table below indicates the retention status (retained or not retained) by group (treatment and control). The treatment group did not have a significantly higher retention level than the control group (χ^2=.001, p>.05), as shown in Table 8 below.

TABLE 8: Chi-square cross-tabulation for retention and treatment group

		GROUP		Total
		Control	Treatment	
RETENTION	Not Retained	5 (19%)	8 (20%)	13 (19%)
	Retained	21 (81%)	33 (80%)	54 (81%)
Total		26	41	67

A 2 X 2 contingency table below indicates the success status (pass or retake) by group (treatment and control). The treatment group did not have a significantly higher success level than the control group (χ^2=.118, p>.05), as shown in Table 9 below.

TABLE 9: Chi-square cross-tabulation for success and treatment group

		GROUP		Total
		Control	Treatment	
SUCCESS	Retake	6 (23%)	11 (27%)	17 (25%)
	Pass	20 (77%)	30 (73%)	50 (75%)
Total		26	41	67

Additional Analysis

In addition to the primary analysis and two secondary analyses conducted in response to the research questions, one additional analysis was run. As no significant results were found regarding the intervention, the question of whether or not the pre-assessment academic self-efficacy scores were a significant predictor of student success and retention in the course arose. In order to address this question, two logistic regression analyses were run.

The first logistic regression was run using the total pre-assessment score as covariate and student success (1=pass or 0=fail) as the dependent variable. There was not a significant improvement in predicting student success with the covariate in the model (χ^2 =1.72, p=.18). Without the covariate, prediction of student success was correct 74.6% of the time. With the addition of total pre-assessment score, prediction of student success was correct 76.1% of the time, suggesting no improvement in predicting student success.

The second logistic regression was run using the total pre-assessment academic self-efficacy score as a covariate and student retention (1=retained or 0=not retained) as the dependent variable. There was not a significant improvement in predicting student retention with the covariate in the model (χ^2 =2.33, p=.13). Without the covariate, prediction of student retention was correct 80.6% of the time. With the addition of the covariate, student retention was correctly predicted 82.1% of the time.

Summary

The purpose of this study was to determine whether or not an intervention focused on the use of social modeling to increase the academic self-efficacy of students in developmental reading and English courses was successful. Students in ten course sections of Developmental Reading and English were included in the study. The ten sections were matched by instructor, campus, and course level; one course out of each matched pair was included in the treatment group and the other was included in the control group. The treatment group viewed three five-minute interviews conducted with successful students who had previously taken developmental reading and English courses. An ANOVA was used to answer the main research question and chi-square tests of independence were used to determine whether the intervention had an impact on student retention and success. The sample size for the ANOVA test was 42 sets of matched data, and 67 total students were included in the sample for the chi-square tests of independence.

No significant difference was found in the interaction between interview exposure and time, indicating that the treatment did not impact participants' academic self-efficacy. Furthermore, no unexpected relationships were found between inclusion in the treatment or control group and student success or retention, indicating that the treatment did not have a statistically significant impact on either retention or success. An additional analysis found that pre-assessment measures of academic self-efficacy were not a significant predictor of either student success or retention.

The next section of this dissertation discusses the results of this study in relation to existing literature in the field. In addition, limitations of this study are addressed and recommendations for future studies are provided.

CHAPTER 5: DISCUSSION

Chapter 5 situates the current research project findings within the existing base of literature. The chapter begins by restating the research problem, provides a summary of the research findings, discusses the study in relation to the current body of literature, introduces several limitations of this study, and ends with recommendations for future studies in this area.

Research Problem

The success and retention rates of students in developmental education courses are not acceptable, prompting multiple widespread reform movements. An instructional design approach to this issue indicates that the student population faces institutional and personal barriers to academic success. Current interventions focus on decreasing institutional barriers without acknowledging the affective and situational issues impacting student success. This study attempts to address the low success and retention rates endemic to students in developmental courses through an intervention designed using the social modeling aspect of Bandura's self-efficacy theory (1977; 1994), and targeted to the affective needs of students in this population.

Findings

The study found no significant change in academic self-efficacy when students in developmental education courses were exposed to three five-minute video interviews with successful students who began their college careers in developmental education.

This indicates that the videos did not impact current students' beliefs about their ability to succeed. The study also found that the treatment did not have a significant impact upon the success and retention rates of students in developmental education. Additional analyses found that initial academic self-efficacy score was not a significant predictor of student success and retention in the course.

Discussion

As the null hypothesis was not rejected for the three research questions in this study, a discussion of the results will explore the possible reasons for these results as opposed to the impact the results will have upon the field. Furthermore, the additional analyses will be explored in relation to this discussion. This section will end with a discussion of the role academic self-efficacy should play in ongoing and future developmental education reform.

A return to the literature suggests three main reasons why the intervention may not have had the intended effect. First, the intervention itself may not have been strong enough or long enough to make a difference in student success. Second, the sample used in the study may not have been representative of the larger student population. Third, the underlying theory of academic self-efficacy may not be applicable to students in developmental education.

Instructional design. The first possible explanation for the ineffectiveness of the intervention is that the intervention itself may have been insufficient. One way to judge the effectiveness of the intervention is to analyze the Instructional Design method through which it was designed and implemented. Although the results of this study are not statistically significant, the use of the Dick and Carey Instructional Design model

(Figure 3 in chapter 2 offers a visual representation of the model) as the process through which the intervention was designed is justified (Dick et al., 2005). The non-linear structure; repetitive, revisionist nature; creation of new materials; and strong, structured initial assessment which are hallmarks of the model were well suited to this study. (See Table 2 in chapter 2 for a comparison of these characteristics in four Instructional Design models.) The non-linear and repetitive, revisionist nature of the model allowed for revisions and continual improvements throughout the process. Changes were made to the study as new information was unearthed or new considerations arose. The focus on the creation of new materials rather than the use of pre-made materials allowed for student interviews specifically related to this project to be recorded, and a strong, structured initial assessment provided the foundation upon which the study was designed. The final data analysis, which would be the summative evaluation step of the model, indicates that the intervention designed, developed, and implemented through the use of the model was not successful. Based upon this evaluation, the next step is to return to the 'analyze learners and contexts' stage of the initial assessment. In the case of this study, that would mean a return to the theory of academic self-efficacy and its relation to the population of students in developmental education. While the intervention itself did not have significant results, the process through which it was developed and implemented was effective and has a mechanism for revision in the case of an unsatisfactory summative evaluation.

Sample representation of population. The second possible explanation for the ineffectiveness of the intervention is that the sample used in this study may not accurately represent the population. For instance, the student sample for this study was solicited from pilot courses for a redesigned Developmental Reading and English curriculum. This

offers a strong illustration of the prevalence of widespread reform in developmental education. The Developmental Reading and English courses are part of SuccessNC, an initiative designed to increase the graduation rates for community college students in North Carolina (Completion by Design, 2011; North Carolina Community College System, 2012). These redesigned courses emphasize accelerated, integrated, mastery-based, and technology enhanced instruction; Table 3 in chapter 3 offers an overview of the curriculum for the new courses. While the curriculum was standard in both the control and treatment groups, rendering the shift negligible in terms of results for this particular study, the necessity of drawing a sample from the new courses illustrates the prevalence of developmental education redesign.

Another way in which the sample may differ from the population is in the presence of situational barriers. The barriers faced by students in developmental education are well documented. [Bailey, Jeong, & Cho, 2010; Central Piedmont Community College, 2011; Completion by Design , 2012; DiTommaso, 2011; Hawley & Harris, 2005; Hirsch, 1994; Mealey, 1990; Rouche & Rouche, 1993; Yaworski, Weber, & Ibrahim, 2000]. In regards to this study, data were gathered for two categories of situational barriers: enrollment status and employment status. Data were gathered in the same categories for a nationwide survey of community college students (Center for Community College Student Engagement, 2012). Interestingly, the sample drawn in this study did not match the national average in the two areas in which similar data were collected. According to the national survey, 59% of students attended college part-time and 41% attended full-time. This study's sample consisted of more full-time students (57%) than part-time students (43%), which is the opposite of the national survey.

Furthermore, 67% of full-time and 78% of part-time students work at least one hour per week. In the sample for this study, 46% of all students, part-time and full-time, were unemployed. While a direct comparison is not possible as the CCCSE survey includes community college students at all levels and the data for this study only includes students in developmental level courses, these discrepancies suggest that the sample included in this study does not reflect nationwide averages. Data regarding the institutional barriers and affective barriers (other than academic self-efficacy) were not collected for this study.

Relevance of academic self-efficacy to students in developmental education. A third possible explanation for the ineffectiveness of the intervention is that the theory of academic self-efficacy may not be applicable to students in developmental education. The meta-analysis which serves as a landmark piece of research about academic self-efficacy offers very strong support for the idea that the construct of academic self-efficacy is a strong predictor of student performance and persistence (Robbins, Lauver, & et. al., 2004). However, as pointed out in the response by Weissberg and Owen (2005), only one of the 109 studies included in the meta-analysis contained data from a commuter institution. In addition, Weissberg and Owen also criticize that race, gender, and level of college readiness were not adequately accounted for in the study. Both critiques indicate that the results of the meta-analysis may not be directly applicable to students in developmental level courses. This current study supports the critique submitted by Weissberg and Owen by indicating that self-efficacy does not impact the success and retention rates of students whose demographics don’t match those included in the meta-analysis.

Just as the specific population of students in developmental education courses was not adequately accounted for in the meta-analysis, it has also not been fully explored in individual research studies. While there is a strong body of literature related to self-efficacy and linking a high academic self-efficacy to increased student success and retention, not much research has been conducted applying the theory to the population of students in developmental education courses. Of the two studies referenced in chapter 2, Hall and Ponton (2005) found that students in a developmental level math course have lower academic self-efficacy than students in calculus, and Visor, Johnson, and Cole (1992) found that an increase in academic self-efficacy among students in a developmental education course correlated with an increase in the use of optional supplemental instruction. Both studies provide circumstantial support for the positive impact academic self-efficacy can have on the developmental student population, but neither indicates a correlative or causal relationship. Although self-efficacy has been tested with different student populations, it has not been quantitatively studied among students in developmental education courses.

The possibility that academic self-efficacy is not relevant to students at the developmental level of education is further supported by the additional analyses conducted with the data collected for this study. Logistic regression was run to determine whether students' pre-assessment academic self-efficacy scores were an accurate predictor of either student success or student retention at the end of the course. Results from the analyses indicate that initial self-efficacy did not help predict retention or success. If no predictive relationship exists between the independent variable of academic self-efficacy and the dependent variables of success and retention, as indicated by the

additional analyses, then the underlying theory of academic self-efficacy may not be applicable to students at the developmental level.

Role of academic self-efficacy in reform of developmental education. The literature in the field of developmental education indicates that personal barriers should be addressed in order to ensure the highest possible outcomes for students in developmental education courses (Bonham & Boylan, 2011; Fowler & Boylan, 2010). The results of this study indicate that Bandura's theory of academic self-efficacy may not be the most effective means of addressing the affective barriers faced by students in developmental education. Ongoing and future reform of developmental education should continue to focus on addressing situational and affective barriers to student success; however, academic self-efficacy should not play a prominent role in such reform.

This study has been an initial attempt at exploring the theory of academic self-efficacy, specifically the social role modeling aspect, with a new student population. While previous research has indicated that academic self-efficacy may have a positive impact on student success and retention among other student populations, such as first-generation college students (Majer, 2009; Ramos-Sanchez & Nicols, 2007; Vuong, Brown-Welty, & Tracz, 2010), this is no guarantee that the same relationship will exist among students in developmental courses. The results of this initial study indicate that conclusions drawn about the significant link between academic self-efficacy among other student populations are not directly transferrable to students in developmental education.

This study did not support the a priori hypotheses based on a review of literature related to academic self-efficacy theory. There are several limitations within this study

which may help explain why the results of this study did not confirm the original hypotheses.

Limitations

Sample size and demographics. The first limitations for this study are sample size and demographics. The sample size for the study was fairly small. This can be partially attributed to student attendance and attrition at the developmental level. For instance, while 67 participants signed the Informed Consent form and completed the pre-survey, only 42 participants completed the post-survey. This resulted in a low number of matched sets of data for the ANOVA analysis. Another possible explanation for the small sample size is the ability level of the students and the skills required to complete the online Informed Consent form on Blackboard and the pre- and post-surveys delivered through Google Docs. For example, all 10 students in one of the two sections of DRE 096 (the beginning course in the Developmental Reading and English sequence) were unable to navigate and use these tools. A third possible reason for the small sample size is the very attrition which makes the field of developmental education such a rich target for study. Attrition is high within developmental education courses, offering a strong opportunity for improvement; however, the high attrition rate also makes research difficult. Furthermore, the control group and treatment group demographics for the ANOVA sample were not very similar. As the demographic information for the two groups was not equivalent, conclusions drawn from a comparison between the two groups are necessarily limited.

Treatment delivery. The second limitation for this study is treatment delivery and exposure. Bandura lists four ways of developing self-efficacy: “mastery experiences,

seeing people similar to oneself manage task demands successfully, social persuasion that one has the capabilities to succeed in given activities, and inferences from somatic and emotional states," (1994, p. 15). Due to the high rates of attrition among students in developmental courses, however, this study only focused on the social modeling aspect of the theory. Perhaps this limited focus on one out of four possible self-efficacy increasing methods was not intense enough to have a significant impact. In addition, the social modeling aspect of self-efficacy hinges on a subject's identification with the model. Perhaps students in the treatment group did not directly identify with the students in the intervention videos despite their shared experience of placing into developmental level courses.

Treatment exposure. Furthermore, treatment fidelity was also a concern. The limited exposure to treatment may also have an impact on the significance of the results of the study. For example, three five-minute videos may not be a large enough dose of treatment to have a profound effect on participants. Treatment exposure may be further limited by students' attendance during week 2 of the study as attendance was only taken during weeks 1 and 3 when the pre- and post-surveys were given; if a student was present for weeks 1 and 3 but not week 2, his data would make a matched set even though he was not present for the second dose of treatment.

Teaching method. Another potential limitation for this study is the influence of teaching method. Although each course at the same level in the study used the same curriculum and delivery method, the teaching methods used within the classroom were not controlled. Courses were divided into matched pairs based on instructor, campus, and course level before being randomly assigned to the control or treatment group in an

attempt to ameliorate any possible discrepancy in this area. However, as teaching method does have a significant impact on students' academic self-efficacy (Darnon, Buchs, & Desbar, 2011; Fencl & Sheel, 2005; Margolis & McCabe, 2006; Zimmerman, Bonner, & Kovach, 1996), this level of control may not have been sufficient.

Measurement scale. The self-efficacy measurement instrument was designed using a 10-point scale, and the ceiling for this scale may have been too low. For instance, if students answered 10 on the pre-assessment, they were unable to increase their response on the post-assessment even if their personal beliefs increased. The average total academic self-efficacy score for the pre-assessment was 26 out of a possible 30 points, which means that students were already near the top of the scale before the intervention was implemented. This may indicate that students had a high initial academic self-efficacy, rendering the intervention unnecessary.

Recommendations for Future Studies

There are several factors that limit the conclusions that may be drawn from this study. Limitations include sample size and demographics, treatment delivery and exposure, potential influence of teaching method, and instrument scale and application of theory. While the results of this study are not particularly groundbreaking, several important things can still be learned. Perhaps most important are the recommendations for future studies in this area.

First, future study involving students in developmental courses should collect data at a single point in time. Attrition in developmental courses is too high for researchers to rely on matched data collected at different points in time. It is also not recommended that

treatment delivery encompass multiple doses as high rates of absenteeism may impact equal delivery to all intended participants.

Second, the delivered treatment should be more intense, whether through a longer length of time or a more engaging format. In addition, the researcher should deliver all doses of treatment to avoid unintended technical or implementation discrepancies.

Third, students should be trained in using Google Docs to complete a survey and submitting an electronic signature through Blackboard before the intervention begins and Informed Consent is solicited. One course section consisting of 10 possible participants was unable to be involved in the study due to difficulty navigating Google Docs and Blackboard. A training session would eliminate this technical difficulty, resulting in the possibility of additional participants.

Fourth, the researcher should ensure that participating students are fully aware of course expectations before administering the pre-assessment. As academic self-efficacy consists of a students' ability to judge his or her capability of success in a classroom, such a judgment cannot be accurately made until the student is aware of the requirements and expectations for such success.

Fifth, and most importantly, rather than explore the ways to increase academic self-efficacy of students in developmental education, researchers should test the underlying theory to determine whether or not academic self-efficacy is an accurate predictor of success and retention for this student population. Multiple studies indicate that high academic self-efficacy has a positive impact on student success and retention within a general student population. However, while circumstantial evidence exists, currently no quantitative studies indicate the connection between the construct of

academic self-efficacy and success among students in developmental education. A study exploring the connections, or lack thereof, between academic self-efficacy and positive student outcomes would make a valuable contribution to the literature in the field of developmental education.

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APPENDIX A: PARTICIPANT INFORMED CONSENT

Informed Consent for
Developmental Reading and English Academic Self-Efficacy Intervention

Project Title and Purpose

You are being asked to participate in a project titled Developmental Reading and English Academic Self-Efficacy Intervention. The purpose of this research is to document the effects of an intervention designed to increase student success and retention among community college students enrolled in Developmental Education courses. Benefits may include increased retention and success among this student population and an intervention that can be implemented in future courses.

Investigator(*s*)

This research is conducted by Kris DeAngelis in partial fulfillment of her Doctoral degree requirements at the University of North Carolina at Charlotte. The project is overseen by Dr. Claudia Flowers, a Professor at the same university.

Eligibility

You may participate in this project if you are enrolled in the selected sections of Developmental Reading and English at Central Piedmont Community College in the second short session of the Spring 2014 semester.

You may not participate in this project if you are not enrolled in the selected course sections of Developmental Reading and English during the second short session of Spring 2014.

Overall Description of Participation

This project will occur throughout the duration of an eight week course. Two surveys will be administered, one during the first week and one during week three. The survey is estimated to require five minutes for completion. Some participants will participate in an intervention throughout the three week period. The intervention consists of watching three five-minute videos.

In addition to information gathered during the course of the three week intervention period, course grade and retention information will also be collected at the end of the eight week course.

Length of Participation

It is anticipated that your total commitment to the project will be twenty-five minutes spread over three weeks. You will be asked to complete two brief surveys and to watch you may also be asked to watch three five- minute videos.

Risks and Benefits of Participation

There are no foreseeable risks associated with this research study. Possible benefits of participation include an increased understanding of the success and retention of students enrolled in Developmental Education courses.

Volunteer Statement

You are a volunteer. The decision to participate in this study is completely up to you. If you decide to be in the study, you may stop at any time. You will not be treated any differently if you decide not to participate in the study or if you stop once you have started.

Confidentiality Statement

Any information about your participation, including your identity, is completely confidential. Throughout the study, you will be identified by a code known only to the researcher. This code will be used to track your responses to the surveys. Your name will not be included in any presentation of results.

Statement of Fair Treatment and Respect

UNC Charlotte wants to make sure that you are treated in a fair and respectful manner. Contact the university's Research Compliance Office (704-687-3309) if you have questions about how you are treated as a study participant. If you have any questions about the actual project or study, please contact the primary investigator Kris DeAngelis (704-330-6918, kdeangel@uncc.edu) or the responsible faculty member Dr. Claudia Flowers (704-687-8862, cpflower@uncc.edu).

CPCC is eager to ensure that all research participants are treated in a fair and respectful manner. If you have any concerns or questions about your treatment as a subject in this project, contact Dr. Terri Manning, Planning and Research, P.O. Box 35009, Charlotte, NC 28235 (704) 33-6597.

Approval Date

This form was approved for use on *November 20th, 2013* for use for one year.

I have read the information in this consent form. I have had the chance to ask questions about this study, and those questions have been answered to my satisfaction. I am at least 18 years of age, and I agree to participate in this research project. I understand that I

will receive a copy of this form after it has been signed by me and the principal investigator of this research study.

_____ _____

Participant Name (PRINT) DATE

_____

Participant Signature

_____ _____

Investigator Signature DATE

APPENDIX B: INTERVIEW INFORMED CONSENT

Interview Consent Form for
Developmental Reading and English Academic Self-Efficacy Intervention

Project Title and Purpose

You are being asked to participate in a project titled Developmental Reading and English Academic Self-Efficacy Intervention. The purpose of this research is to document the effects of an intervention designed to increase student success and retention among community college students enrolled in Developmental Education courses. Benefits may include increased retention and success among this student population and an intervention that can be implemented in future courses.

Investigator(*s*)

This research is conducted by Kris DeAngelis in partial fulfillment of her Doctoral degree requirements at the University of North Carolina at Charlotte. The project is overseen by Dr. Claudia Flowers, a Professor at the same university.

Eligibility

You may participate as an interviewee in this project if you have 1) previously taken a Developmental English course with interviewer/researcher and 2) are making satisfactory progress towards your degree or have reached your educational goal.

Overall Description of Participation

You will be asked to participate in a one hour video-taped interview consisting of semi-structured questions. This video will be edited into a five-minute Student Success video which will be shown to study participants.

Length of Participation

It is anticipated that your total commitment to the project will be seventy minutes spread over two sessions. The first session will consist of a one hour semi-structured interview and the second session will be a review during which you can view the edited footage to ensure your viewpoint has been correctly captured.

Risks and Benefits of Participation

There are no foreseeable risks associated with this research study. Possible benefits of participation include an increased understanding of the success and retention of students enrolled in Developmental Education.

Volunteer Statement

You are a volunteer. The decision to participate in this study is completely up to you. If you decide to be in the study, you may stop at any time. You will not be treated any differently if you decide not to participate in the study or if you stop once you have started.

Statement of Fair Treatment and Respect

UNC Charlotte wants to make sure that you are treated in a fair and respectful manner. Contact the university's Research Compliance Office (704-687-3309) if you have questions about how you are treated as a study participant. If you have any questions about the actual project or study, please contact the primary investigator Kris DeAngelis (704-330-6918, kdeangel@uncc.edu) or the responsible faculty member Dr. Claudia Flowers (704-687-8862, cpflower@uncc.edu).

CPCC is eager to ensure that all research participants are treated in a fair and respectful manner. If you have any concerns or questions about your treatment as a subject in this project, contact Dr. Terri Manning, Planning and Research, P.O. Box 35009, Charlotte, NC 28235 (704) 33-6597.

Approval Date

This form was approved for use on *November 20th, 2013* for use for one year.

I have read the information in this consent form. I have had the chance to ask questions about this study, and those questions have been answered to my satisfaction. I am at least 18 years of age, and I agree to participate in this research project. I understand that I will receive a copy of this form after it has been signed by me and the principal investigator of this research study.

_____ _____

Participant Name (PRINT) DATE

_____

Participant Signature

_____ _____

Investigator Signature DATE

APPENDIX C: INTERVIEW RELEASE FORM

Interview Release Form for
Developmental Reading and English Academic Self-Efficacy Intervention

For purposes of and in connection with the Developmental Reading and English Academic Self-Efficacy Intervention project undertaken by Kris DeAngelis, under the guidance of Dr. Claudia Flowers, at the University of North Carolina at Charlotte:

I agree to the use of my name, voice, image, or likeness in connection with the above project. Such use may include film, audio tape, audio-visual work, photograph, illustration, animation, or broadcast, in any media, now known or later developed. All such items produced will be considered a "Work" for purposes of this agreement.

I irrevocably resign any and all claims of copyright I may have in and to all "Works" as defined in this agreement.

I hereby release, discharge, and agree to hold harmless the University of North Carolina at Charlotte and Central Piedmont Community College, their legal representatives and assigns, all persons acting under their authority, and those for whom they are acting, from all claims, causes of action and liability of any kind, now known or unknown, in law or in equity, based upon or arising out of use of the "Works" or this agreement.

If I am an enrolled student, I understand that this release constitutes a waiver of my privacy rights under the Family Educational Rights and Privacy Act (FERPA). This release is effective on the date written below and will remain in effect indefinitely.

I represent and warrant that I am over the age of eighteen (18) years, and that the authorizations and rights granted hereunder do not conflict with or violate the rights of any third party.

_____ _____

Participant Name (PRINT) DATE

_____

Participant Signature

_____ _____

Investigator Signature DATE

APPENDIX D: SEMI-STRUCTURED INTERVIEW QUESTIONS

1. Describe your educational experience prior to enrolling at CPCC.
2. What is your current academic progress?
3. What challenges did you face during your Developmental coursework?
4. What personal qualities helped you overcome these challenges?
5. In addition to your personal qualities, where else did you find support in overcoming these challenges?
6. What advice would you give to current students enrolled in Developmental Education coursework?

APPENDIX E: ACADEMIC SELF-EFFICACY SURVEY

Demographic questions (only included in pre-test)

1. What is your age? (19 and under, 20-29, 30-39, 40-49, 50 and over)
2. What is your gender? (male, female)
3. What is your race? (Caucasian, Hispanic or Latino, Black or African American, Asian/Pacific Islander, other)
4. What is your enrollment status? (full time student, part time student)
5. What is your employment status? (full time employment, part time employment, unemployed)

Personal assessment questions

Three outcomes are listed below. Please rate how confident you are that you can achieve these outcomes as of now, based on the scale provided.

Cannot do at all				Moderately certain can do					Highly certain can do
1	2	3	4	5	6	7	8	9	10

1. Earn a passing grade in my DRE (Developmental Reading and English) course
2. Obtain help to overcome challenges I may face while completing my DRE course
3. Master the course objectives in my DRE course