

2016

## The Impact of a Student Success Course on Developmental Students' Retention

Brenda Renee McGill  
*University of Rhode Island, brmcgills33@gmail.com*

Follow this and additional works at: [https://digitalcommons.uri.edu/oa\\_diss](https://digitalcommons.uri.edu/oa_diss)

Terms of Use

All rights reserved under copyright.

---

### Recommended Citation

McGill, Brenda Renee, "The Impact of a Student Success Course on Developmental Students' Retention" (2016). *Open Access Dissertations*. Paper 423.  
[https://digitalcommons.uri.edu/oa\\_diss/423](https://digitalcommons.uri.edu/oa_diss/423)

This Dissertation is brought to you for free and open access by DigitalCommons@URI. It has been accepted for inclusion in Open Access Dissertations by an authorized administrator of DigitalCommons@URI. For more information, please contact [digitalcommons-group@uri.edu](mailto:digitalcommons-group@uri.edu).

THE IMPACT OF A STUDENT SUCCESS COURSE ON  
DEVELOPMENTAL STUDENTS' RETENTION

BY

BRENDA RENEE MCGILL

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY  
IN  
PSYCHOLOGY

UNIVERSITY OF RHODE ISLAND

2016

DOCTOR OF PHILOSOPHY DISSERTATION  
OF  
BRENDA RENEE MCGILL

APPROVED:

Dissertation Committee:

Major Professor: Kathryn Quina

Margaret Rogers

Annemarie Vaccaro

Nasser H. Zawia  
DEAN OF THE GRADUATE SCHOOL

UNIVERSITY OF RHODE ISLAND

2016

## **Abstract**

This study uses longitudinal data from community college students enrolled in developmental reading classes to explore the impact of a success course on key momentum points and milestones. Working from an institutional database, a cohort of first semester students (N = 1,427) from a public community college in New England was tracked from fall 2007 through spring 2013. Developmental reading students enrolled in a newly-instituted success course (N = 359) were compared to peers who did not enroll in the course. Chi square analyses addressed the relationship between reading level and success course enrollment and between success course enrollment and retention (2<sup>nd</sup> and 4<sup>th</sup> semester), momentum points (enrollment into developmental writing and gateway writing courses), and milestones (completing an associate's degree or transfer- ready status). The results demonstrate a small (6-10%) but consistent effect of enrollment in the success course in facilitating the acquisition of academic goals. Regression analyses evaluated the demographic characteristics associated with these variables. In individual predictive analyses, nonwhite, first generation, and female students were significantly less likely to complete momentum points or milestones; however, in the full model race was the most consistent predictor, with completion ratios for nonwhite students 2-5 times lower than white students. Findings demonstrate the effectiveness of enrollment in a success course as a means of facilitating the achievement of academic goals, and further demonstrate that a 1-credit version of the course is the most effective delivery.

## **Acknowledgments**

First, giving honor to my Father, who gave me this remarkable opportunity and guided me through it all, I say thank you. To my forever supportive husband, Patrick and wonderful children, Evan and Maya and their families who believed in me, showered me with patience and love, for these many years, I say thank you. To all my incredible family and friends and particularly those who burnt the mid-night oil reading my chapters, Norrine; and helped me when I needed technical ‘keep going’ support, Rouba; and the statistical mentor graduate students who supported me along the way, Allie, I say thank you. A very special thank you to the Student Services Department at the Community College of Rhode Island, especially Dean Cipolla, for their continued support of my never-ending need for an adjusted work schedule. Most of all, I express my sincere gratitude to my major professor, Dr. Kathryn Quina, who always made me feel capable, who always had an educative word and always knew when I needed an understanding heart throughout my doctoral study. I am especially indebted to Kat for her invaluable advice, generous assistance and enormous patience in the preparation of this manuscript. May I continue to make you proud with the work that is yet to be done. Thank you also to the faculty at the University of Rhode Island who believed in me and offered their unfettered support along the way, thank you again and again. To those who have gone before me and did not have this opportunity I present this degree to you as a symbol to recognize the power in the blood; because you survived, I could also. Thank you.

## Table of Contents

Abstract.....	ii
Acknowledgments .....	iii
Table of Contents.....	iv
List of Figures.....	vii
List of Tables .....	viii
CHAPTER ONE.....	1
INTRODUCTION.....	1
Background of the Study .....	1
Statement of the Problem .....	2
Purpose of the Study.....	6
Significance of the Study.....	8
Hypotheses .....	10
Contributions of the Study.....	11
CHAPTER TWO .....	12
LITERATURE REVIEW.....	12
Student Retention .....	12
Theories of Community College Retention .....	15
Research Related to Community College Retention .....	21
Developmental Education .....	24
Research on Developmental Education .....	26
Student Success Courses .....	29
Theories Related to Student Success Courses .....	32

Research Related to Student Success Courses.....	35
Student Characteristics .....	39
Gender.....	41
Race and Ethnicity .....	43
Age.....	44
Socioeconomic Status .....	46
First Generation .....	48
The Present Study.....	51
CHAPTER THREE .....	53
METHODOLOGY .....	53
Overview and Design .....	53
Participants .....	54
Measures.....	58
Procedures .....	60
Overview and Analyses.....	61
CHAPTER FOUR .....	62
RESULTS.....	62
Research Question 1 .....	62
Research Question 2 .....	63
<i>Second Semester reenrollment.</i> .....	63
<i>Fourth Semester reenrollment.</i> .....	65
<i>Developmental Writing Course Enrollment</i> .....	66
<i>Gateway Writing Course Enrollment</i> .....	68

Associate's Degree Milestone.....	69
Certificate Milestone.....	71
Transfer Ready Milestone.....	71
Research Question 3 .....	72
Developmental Writing.....	74
Gateway Writing.....	76
Associate's Degree.....	77
Transfer Ready.....	78
CHAPTER FIVE .....	80
DISCUSSION.....	80
Success Course Enrollment and Developmental Placement .....	80
Demographic Predictors of Student Success.....	84
Theoretical Implications.....	86
Limitations.....	88
Implications .....	90
Conclusions and Future Directions .....	92
Appendix A Sample of Student Success Course Curriculum.....	95
Appendix B. Momentum Points and Milestone Pathway Over Six Years .....	96
Bibliography .....	97



## **List of Figures**

Figure 3.1 Flow of Participant Enrollment.....	53
--	----

## List of Tables

Table 3.1 <i>Total developmental cohort: (1,427) Gender, race/ethnicity, student age, social economic status, and first generation.....</i>	55
Table 3.2 <i>Developmental And Success Course Cohort Participants: (359) Gender, Race/Ethnicity, Student Age, Social Economic Status, And First Generation .....</i>	56
Table 4.1 <i>Reading Level and Success Course Enrollment (Combined Courses) .....</i>	62
Table 4.2 <i>Second Semester Enrollment for Total Developmental Students .....</i>	63
Table 4.3 <i>Second Semester Enrollment for Success Course Students Only .....</i>	63
Table 4.4 <i>Fourth Semester Enrollment for Total Developmental Students .....</i>	64
Table 4.5 <i>Fourth Semester Enrollment for Success Course Students Only.....</i>	65
Table 4.6 <i>Developmental Writing Enrollment and Success Course Enrollment .....</i>	64
Table 4.7 <i>Developmental Writing Enrollment and Success Course Enrollment: Type of Success Course.....</i>	66
Table 4.8 <i>Gateway Writing and Success Course Enrollment.....</i>	67
Table 4.9 <i>Gateway Writing and Success Course Enrollment: Type of Success Course</i>	
Table 4.10 <i>Associate's Degree completed within Six Years and Success Course Enrollment .....</i>	70
Table 4.11 <i>Associate's Degree completed within Six Years and Success Course Enrollment: Type of Success Course.....</i>	69
Table 4.12 <i>Transfer Ready and Success Course Enrollment Completed within Six Years: All .....</i>	70

Table 4.13	<i>Transfer Ready and Success Course Enrollment completed within Six Years:</i>	
	<i>Type of Success Course.....</i>	70
Table 4.14	<i>Descriptive Statistics: Developmental and Gateway Writing,</i>	
	<i>Certificate, Associate’s Degree (List 1), Transfer Ready (List 2) .....</i>	73
Table 4.15	<i>Logistic Regression Interaction Predicting Likelihood of Enrolling</i>	
	<i>into a Developmental Writing Course .....</i>	74
Table 4.16	<i>Logistic Regression Interaction Predicting the Likelihood of</i>	
	<i>Enrolling into a Gateway Writing Course.....</i>	75
Table 4.17	<i>Logistic Regression Interaction Predicting Likelihood of Completing</i>	
	<i>an Associate’s Degree .....</i>	76
Table 4.18	<i>Logistic Regression Interaction Predicting the Likelihood of</i>	
	<i>Completing Transfer Ready Status .....</i>	77

## **CHAPTER ONE**

### **INTRODUCTION**

#### **Background of the Study**

There is a record rate of enrollment in community colleges. The United States Government Accountability Office reports 7.1 million students attended community colleges in the fall of 2011 (American Association of Community Colleges [AACC], 2011). The successful completion of their educational pursuits has economic and social impacts for these students, their families and society at large. President Obama addressed this issue in his first joint address to Congress on February, 24, 2009, setting a goal that the nation should once again have the highest proportion of college graduates in the world by the year 2020 (U.S. Department of Education [USDOE], 2011). The abilities and skills of community college students will play an integral economic role in meeting the employment needs of the information corridor of New England and to secure a place in the middle class and beyond (Kuh, Kinzie. Buckley, Bridges, & Hayek, 2006; National Center on Education and the Economy [NCEE], 2013).

However, data on college completion has demonstrated mixed results. An analysis by the Community College Research Center [CCRC] (2012), *A Matter of Degrees*, states "six years after beginning community college, fewer than half of the students who entered college with a goal of earning a degree or certificate have earned a credential, transferred to a four-year institution, or are still enrolled in their community college" (pg.6). The Integrated Postsecondary Educational Data System

(IPEDS) report for fall-to-fall retention rates for the 2007-2008 academic year found a 60.9% retention rate for the full-time cohort and a 47.8% retention rate for the part-time cohort. This is in line with Fike and Fike's (2008) report of an average attrition rate of 41% from first to second year and a 34% persistence-to-degree rate.

This increased enrollment has been accompanied by an increased demand for remedial courses (Calcagno & Long, 2008; NCEE, 2013; Tucker, 2013). Too many students in the United States are entering community college underprepared in academic and non-academic ways, which reduces their chances of obtaining their postsecondary goals (Bridges, et. al, 2005; Cho & Karp, 2011; Karp, Bickerstaff, Rucks-Ahidiana, Bork, Barraagan, & Edgecombe, 2012; Kuh, 2008; Kuh & Leegwater, 2005; Mullin, 2012a; Sherwin, 2011; Tinto, 2006). An estimated 60-80% of students enter college with academic deficiencies and may be required to enroll in additional developmental education courses. The longer it takes a student to move through developmental education programs to reach their goal, the more likely they are to drop out (Center for Community College Student Engagement [CCCSE], 2012, p.14).

### **Statement of the Problem**

Programs and policies have been identified to improve the current retention rates, yet sadly, there are not enough programs in place. The present study examined one New England community college's effort to improve student success, analyzing institutional data for a range of indicators (retention, momentum points, and milestones) on students who tested on entry as needing developmental education.

When President Obama announced a proposal to build America's skills through community colleges and produce millions more graduates who will be ready to meet the demands of the 21<sup>st</sup> century economy, he acknowledged the importance of student retention in community colleges (Cunningham, 2010; Obama, 2009, 2010). He also addressed the low program completion rate and how to prepare America for the jobs of the future.

Student goals in community colleges span from taking a course of interest to the unemployed completing a certificate program, to completing an associate degree for employment or transferring to a four-year institution. Students attending community colleges tend to represent a different demographic than students at four-year institutions, and have somewhat different patterns of attendance. They skew older, are more likely to attend school part-time, are more likely to work while in school, and are more likely to be the first in their families to attend college (AACC, 2012).

According to NCEE (2013), the average age of a community college student is 28 years. Demands on their time reflect the reality of a competing struggle. Sixty percent of community college students work more than 20 hours a week were reported in the National Center for Education Statistics [NCES] report and 20% percent are caring for dependents and/or commuting 6-20 hours a week (Berkner & Choy, 2008). As a result, nearly 60% are enrolled in college part-time (CCSSE, 2005).

Fifty-two percent are recent high school graduates. Less than half (44%) of community college students devote themselves to their studies full time. Among full time community college students, 40 percent are employed; and this number rises to 75 percent among part-time students. Women dominate the community college

landscape, making up 57 percent of the student body. African American students make up 15 percent; Hispanic students 18 percent; Asian/Pacific Islander 6 percent, and Native Americans 1 percent. As an open access institution, two-year colleges need to address this vast number of issues for a very diverse student body, including: a wide range of age groups and goals; significant demands on their time; and an unimaginable array of personal, academic, and financial challenges (Berkner & Choy, 2008; CCSSE, 2007; Mullin, 2012a; The College Board, 2013; Zhai & Monzon, 2001).

### Developmental Education

Since no preadmission testing is required at a community college, students are required to take placement testing in reading, writing, and math when they enter the college. Consequently, many students are required to take developmental courses. Bailey, Hughes and Smith's (2011) *Complete College America* reports that too many freshmen need remediation, and if they are African American, Hispanic, or a low-income student, they are more likely to require remediation: 92.2%, 81.4% and 92.8%, respectively (Adelman, 2005; Attewell, Lavin, Domina, & Levey, 2006; Calcagno & Long, 2008; Collins, 2009; Mullin, 2012a; National Bureau of Educational Research, 2008; NCEE, 2013; New England Board of Higher Education [NEBHE], 2012; Survey of Entering Student Engagement [SENSE], 2014). These students are also identified as "at risk" because placement into developmental courses has been associated with low persistence and completion rates (Calcagno, et. al, 2007; Cavote & Kopera-Fry, 2006; Community College Research Center, 2002; Gardner, n.d.; Kuh, et. al, 2008; NCEE, 2013). Achieving the Dream (2008) reports nationally among a sample of over 250,000 predominantly underrepresented minority and low-income community college

students, 59 percent of beginning students were referred to developmental courses (NCEE, 2013; USDOE, 2008). In addition, the underprepared community college student frequently has not acquired the learning strategies for college success.

### Success Courses

Kuh has argued that engagement for the student who commutes occurs most frequently in the classroom (Kuh, 2005, 2007). Student success courses are often an extension of the freshman orientation and address both academic and non-academic deficiencies. Frequently, students who place in one or more developmental courses are encouraged to enroll in a student success course (Cavote & Kpera-Frye, 2004; CCRC, 2002; Florida Department of Education, 2006; Karp, et. al., 2012; Tinto, 2006; Zeidenberg, Jenkins, & Calcagno, 2007). Yet, although student success courses have become the typical solution for institutions to impart this knowledge, not every student is a recipient of this information. CCSSE (2012) reports that of the 166 respondents providing first-year experience programs, only 27% of the institutions indicated that they require these programs for all entering students.

The Success Course at the institution studied here emphasized attitude, study habits, time and stress management, in a setting of active and collaborative learning (see Appendix A). Students engage in a variety of instructional experiences, including discussions, with reading, speaking, writing and reflective listening assignments. The course requires the creation of a personal success plan that includes educational and career goals, community service, introduces and requires use of the college's resources and personnel to develop self-advocacy skills. It is also the classroom that can provide the environment to develop success skills in both academic and non-academic arenas



(Glenn, 2011; Kinzie & Kuh, 2004; Kuh, et. al., 2005; Pascarella & Terenzini, 1991; Ried, 2009).

### **Purpose of the Study**

Analyses were designed to assess the relationship between the institutional practice of enrolling developmental reading students in a first-year success course and key student success indicators. Recognizing that there are multiple theories of retention that relate to the community college student, this longitudinal, quantitative study was shaped by retention theories related to engagement and transition, along with models focusing on academic preparedness and high impact practices (e.g., Cunningham, 2010; Glenn, 2011; Kamimura, 2012; Kuh, et. al., 2006; Reid, 2009).

To meet the goal of increasing retention and completion rates of developmental reading students requires a focus on the intermediate goals measured as *momentum points*, such as developmental course completion, ‘gate-way’ course completion and semester retention. It would also require a focus on the terminal goals measured as *milestones* that represent final academic achievement of a degree or certificate completion and transfer ready status (Collins, 2009; McClenney & Marti, 2006). Early enrollment in a student success course can address the retention and completion concerns (CCCSE, 2012) through imparting the knowledge required by many under-prepared first-time college students.

The objective is to provide a new perspective for institutional decisions regarding efforts to foster student success, with the ultimate goal of increasing retention and completion rates (Ewell & Jenkins, 2008; Voorhees & Lee, 2013). To do so, this study examined secondary institutional research data to assess whether students

at a non-residential community college who place into developmental reading courses and enroll in a student success course show more positive progression in completing momentum points and milestones across a six-year time frame than their peers who do not enroll in the success course.

A research method utilized by Ziedenberg, Jenkins and Calcagno (2007) to analyze student characteristics and success course enrollment was applied in this study. Specifically, this study examined the effect of enrolling in a success course, rather than completing the course (Attewell, et al., 2006; Florida Department of Education, 2006). This approach addresses the concern that selecting just those students who completed a success course would bias the results toward students who might have latent characteristics, such as a unique summer school experience or personality types that are very organized and conscientious, which might increase their likelihood of completing a success course. However, for a less engaged student, a success course could provide the setting to overcome the challenges related to the first semester developmental reading student.

The anticipated result is for this research to play a role in the expansion of literature concerning how developmental reading students fare with enrollment into student success courses, and demonstrate that community college data can provide an understanding of what the factors are and how they work together to help better prepare these students (Achieving the Dream, 2008; CCCSE, 2013; Jenkins et. Al., 2009; Kuh, et. Al., 2006; Tinto, 2007; Zeidenberg, Jenkins, & Calcagno, 2007). What this researcher hopes to find is that community college students who place into developmental reading and enroll in student success courses show greater retention,

and demonstrate an increase in their completion of momentum points and milestones over a period of 6 years compared to students who place into developmental reading and do not enroll in a student success course. The premise is that more developmental students will succeed with enrollment into student success courses; therefore, institutions should increase their investment to provide student success courses for more students.

### **Significance of the Study**

Federal and private think tanks feel that if a student cannot successfully complete a community college certificate or two-year degree leading directly to a job or move into advanced studies, he or she will have a very hard time supporting a family above the poverty level (Prince, 2008; Tucker, 2013; Veenstra, 2009). Given that at least 45 percent of US college students are in community colleges, the socio-economic impact of not completing postsecondary education is a national problem affecting millions of students who are needed to meet today's knowledge-based economy (NCEE, 2013; Tucker, 2013). Research is needed to continue the identification of factors associated with retention and program completion of developmental community college students if the problem is to be adequately addressed. Therefore, the significance of this study is to explore the institutional practice of developmental education and student success courses as a joint effort to address this disparity in the higher education system.

Considerable research literature has looked at developmental education or at student success courses, or at the longitudinal correlation of developmental education or student success courses with retention. Much of the discourse around the

association of developmental reading placement and a student success course on enrollment and goal completion has been limited (CCSSE, 2006; Fike & Fike, 2008; The College Board, 2013). Zhai and Monzon (2001) and Cho and Karp (2013) are examples of research conducted on community college student characteristics and withdrawal reasons with a focus on student success courses, but with developmental math as a main factor. This study proposes that focusing on the type of engagement that takes place in the first year student success course is especially important for community college students, because the classroom is, for many, the one place where they meet each other and the faculty (Karp, et al., 2012; Tinto, 2006).

Community college data was not disaggregated to represent degree completion for New England Community Colleges in Bailey, Hughes and Smith's (2011) *Complete College America* report. Therefore, another significant aspect of this study is that it will address this gap in the research literature by combining developmental reading placement and student success course enrollment within a longitudinal analysis. Because of the gap in linking developmental reading and student success course research, this study will identify to what extent momentum points and milestones are influenced by the students' biographic and demographic factors. Lastly, this study could provide college decision makers with an opportunity to review their retention strategies and consider the effectiveness of student success course enrollment, particularly for groups with historically low rates of retention (The College Board, 2013). The resulting data may be used to target assistance for the types of students failing to meet momentum points and milestones in a timely fashion (Voorhees & Lee, 2013).

Retention has several definitions. Usually it is an indicator for students who earned credit at a time point in the academic year. Term retention for this study represents students in the entering cohort who remained enrolled from fall to spring (2<sup>nd</sup> semester) and first fall to second spring (4<sup>th</sup> semester). Yearly retention rates reflect students in the entering cohort that remained enrolled for the following six years. Retention is also defined as maintaining enrollment in a community college until the successful completion of momentum points and milestones.

Momentum points, described in research as intermediate goals, are completion of a developmental course sequence and college ‘gateway’ courses. Milestones are defined as end goals: completion of certifications, associate degrees, or completing transferable coursework credits within six years (Collins, 2009; Keup & Barefoot, 2005; Leinbach & Jenkins, 2008; Rhodes & Carifio, 1999). Transfer ready status is defined as obtaining 24 or more credits without completing a certificate or Associate’s degree. The terms remedial and developmental are used interchangeably in the literature to signify the academically underprepared student. The term developmental will be used in this study. The 1-credit and 3-credit versions of the Success Course will also be compared where appropriate.

## **Hypotheses**

- H1. Students with a lower score in developmental reading courses will be significantly more likely to enroll in a student success course.

- H2. Developmental reading students who enroll in a student success course will be significantly more likely to progress to the next semester, be enrolled in the fourth semester, and complete momentum points and milestones than developmental students who do not enroll in such a course.
- H3. Students who enter with social disadvantages (gender, race, age, economic status, and 1<sup>st</sup> generation status) will be significantly less likely to complete momentum points and milestones regardless of success course enrollment.

### **Contributions of the Study**

This study provides answers to the assumptions of other studies as to how much the relationship of institutional practices affect retention; using longitudinal data to focus on the relationship between developmental reading placement and enrollment in a student success course. By exploring the combination of developmental reading placement and student success course enrollment, this study offers an alternative lens to understanding the importance of combining these two practices and challenges future research to follow pursuit to increase awareness of the uniqueness of community college student retention. The findings in this study will have institutional policy implications for offering retention programs for developmental students. Lastly, it is hoped that this research will yield important information that can serve as the foundation for an effort to improve developmental student retention and success at community colleges.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

Understanding how non-academic experiences impact the retention of community college students is important to gain insight into how to create an environment that supports college success in the classroom. This section lays the groundwork for understanding the complexity of student retention in the community college with current and comprehensive review of four elements that contribute to understanding student retention at a community college: student retention, developmental education, student success courses, and the student characteristics that affect student success. Classical and current theories on student retention related to the community college student will be reviewed, as well as the results of research conducted on these areas.

#### **Student Retention**

The early view of retention was singularly identified as degree completion within a limited period of time for traditional universities, as defined by the Student Right-to-Know Act and influenced by the Carnegie Institute (Hagedorn, 2006). College retention was based on graduation rates, and defined as the percentage of full-time, first-time, degree-seeking enrolled students who graduate within 150 percent of the normal time for completion, (4 semesters or 6 quarters excluding summer terms) specifically, three years for two-year colleges. However, the conceptual foundations used to define college retention have evolved as additional factors have been identified

regarding the differences between traditional universities and community college patterns of enrollment and retention (Community College Times Staff, 2012; Hagedorn, 2006). This expansion of the definition of retention takes into consideration the varied status of the community colleges student and includes particular issues affecting the reported numbers. Currently, the most often cited definitions of student success in college are term-to-term retention and educational attainment (achieving a degree or educational credential). These perspectives emphasize, to varying degrees, the importance of academic preparation and the quality of student experiences before and during college. Due to this new awareness of the differences between factors of retention at traditional universities and community colleges, there is a need to define the factors associated with retention at two-year colleges.

NCEE describes retention as an institutional measure; in other words, what institutions do to retain students. The current definitions of retention take into consideration student academic and personal goals, transfer rates, enrollment patterns and their effect on time to graduation to take a serious look at why community college students have lower retention and completion rates (Lumina Foundation, 2008; NCEE, 2013b).

The revised retention definitions take into account part-time and transfer completion time, acknowledging that many community college students balance work and families in addition to school work. Incorporating this information into a profile of students' progress and completion would clarify the picture of student success at community colleges, according to education experts (Community College Times Staff, 2012). When the 28 percent graduation rate is combined with a minimum transfer rate



of 18 percent, the result is a minimum completion rate of 46 percent (Mullin, 2012b). This suggests that nearly half of first-time students who start full-time at a community college have made substantial progress.

Length of time to degree is another factor related to retention results. According to NCES, graduation rates of full-time, first-time students in 2006 increased from 13 percent to 28 percent at community colleges, when students were tracked for twice the time – doubled to four years (Berkner & Choy, 2008). A federal commission recently recommended that federal data on community college students should also include part-time students and transfer students up to double the normal time to completion (Community College Times Staff, 2012). Just expanding the period of time that colleges track their students show significant improvements in graduation and completion rates.

Institutional surveys conducted by Fong and Jarrat in 2013 show institutions have defined retention to consist of 1) enrollment in at least one course within a year, 2) enrollment in at least one course in consecutive terms, 3) enrollment combined with some measure of academic progress (e.g., course completion), and 4) enrollment in at least one course at a specific point in time (e.g., census date). Additionally, predictive analytics (Cook & Lisa, 2016; IBM, 2014) have allowed institutions to expand their definition of retention to include multiple term cohorts, courses taken (e.g., gatekeeper courses, basic skills, etc.), and milestone events (over length of time and in different order for different students). Napoli and Wortman (1998) posit that “the term to term, rather than year to year, retention is a more meaningful measure when studying community college students” (p. 437). Incorporating completion rates for milestones,

retention rates per year, transfer-ready students, cumulative GPA and credits, and completion ratios have all begun to provide a broader picture of an institution's retention rate (McClenney & Marti, 2006). Therefore, retention for this study is defined as term-to-term enrollment of a student and the successful completion of a developmental course sequence, a gateway course, and completion of transfer-ready status or a program of study (certificate or associate's degree).

### **Theories of Community College Retention**

Community college retention is considerably more complex than the initial assessment of college retention and there is now a plethora of literature creating bridges between theories on student retention (Astin, 1993, 1999, originally published in 1984; Bean & Eaton, 2000; Chickering & Reisser, 1993; Fike & Fike, 2008; Pascarelli, 1985; Pike & Kuh, 2005; Tinto, 1993; Upcraft & Gardner, 2005). Generally, three factors remain in the forefront: student academic preparedness, non-academic needs, and institutional policies. Two classical theories and four revisions of the original theories are described in this chapter to provide a framework of factors that influence student retention in the community college.

***Tinto's Theory of Individual Departure from Institutions of Higher Education*** is primarily based on student interaction and integration at the four-year institution. It has the primary purpose of explaining how social and academic forces work together as a student progresses from being in college for the first time to developing into a mature college student (Tinto, 1993). Tinto suggests that in order to

create a model for predicting dropout one must first understand the processes that cause an individual to dropout. He describes this process through five main stages: Pre-Entry characteristics; Goals and Commitments; Institutional Experiences (in both academic systems and the social systems); Integration (both academic and social); and the Departure Decision. These stages lead to the student's decision to stay in or to leave college (Fike & Fike, 2008). The process is influenced by many factors such as the need to obtain a degree, or remain employed, or to become eligible for entry into an occupational field. In addition, individual student characteristics in the form of demographics (gender, race, ethnicity, age), high school experience and socioeconomic status are often directly related to predicting dropouts.

Tinto (2006) also provided a historical view from the first attrition models that blamed students for their dropout behavior to the research of the 1970's that suggests there are "explicit connections between the environment; in this case, the academic and social systems of the institutions and the individuals who shaped those systems and student retention over different periods of time" (p. 3). From this perspective, Tinto emphasized the highly interdependent nature of those experiences and interactions as factors which affect a student's commitment to the institution and educational goals. However, subsequent theorists have questioned whether the applicability of Tinto's model was valid for non-residential students (Chickering & Reisser, 1993; Pascarella, 1985).

*Astin's Theory of Involvement* also focused on retention of the traditional four-year college student, although Astin later addressed retention of non-traditional two-year college students (Astin, 1999; originally published in 1984). His input-

environmental-outcome model posited that outputs (degrees earned, number of graduates, race/ethnicity) must always be evaluated in terms of inputs (student ability, gender, age, major, etc.). Yet, this information alone is not enough to explain retention; aspects of the environment (courses, programs, facilities, faculty, peer groups, etc.) complete the model. Assessment of the relationship between input and outcome variables without considering environmental variables may lead to an incomplete and misleading analysis. For example, it could be argued that higher graduation rates at some colleges could be the direct result of enrolling top students. Therefore, variables such as the level of academic preparation and personal factors should be included in the analyses.

Astin (1993) defined college student involvement as the investment of energy, emphasizing both the quantitative (e.g., amount of time on task) and the qualitative (e.g., type of effort made) nature of involvement in student learning and development. Astin stressed the importance of involvement to retention and suggested that the effectiveness of the educational experience is “directly related to the capacity of the policy or practice to increase student involvement” (p. 519). Both Astin’s Involvement Theory and Tinto’s Interactionalist Theory embrace student engagement as the key to retention and consist of two major components: the institution initiating engagement with the students followed by the student’s response to the institution. However, Astin (1999) adds a focus on the faculty-student involvement, pointing out that instructors have the greatest ability to influence what students actually accomplish, making that relationship one of the most important factors of student retention.

**Institutional and Social Support Theories of Retention** were the four revisionist theories selected because of the association they have with community college student characteristics and the involvement of institutional policies and practices. These theories present a base of knowledge pertaining to the significance of incorporating student success courses for the underprepared, non-traditional student to better facilitate retention in two-year colleges (Bean & Eaton, 2000; Chickering, 1969; Kuh, Schuh, Whitt & Associates, 1991; Pascarella 1985; Upcraft, Gardner & Associates, 1989).

***Bean and Eaton's (2000) Self-Efficacy and Institutional Commitment Theory*** was a revision of Tinto's theory, emphasizing the development of positive coping strategies. The idea that retention can be enhanced through experiences of positive psychological outcomes in college was a focal point of Bean's (1986) model of student attrition. Environmental factors were positioned as more important than academic variables. This environment was to facilitate the development of strong self-efficacy skills; "the belief in one's capabilities to organize and execute the course of action required to produce given attainments" (Bandura, 1997, p. 3). Self-efficacy is important because it has been linked to what situations people choose, the behaviors they display, the effort levels they exert, resiliency levels, thought patterns, and stress levels. A student success course which encourages students to build self-efficacy by promoting self-reflection and successful behaviors can affect students' decision-making skills and help them remain in college with higher levels of success.

***Pascarella's (1985) Engagement and Effort Theory*** emphasized the interaction with socializing agents (faculty and peers) and the quality of student effort

as important predictors of student learning and development. The theory posits that what really matters in college is student engagement because individual effort and involvement are critical determinants of college impact (Upcraft, Gardner, Barefoot & Associates, 2005). Although there is strong evidence that the success of first year students is largely determined by pre-enrollment variables (Upcraft, Gardner & Associates, 1989), the establishment of close friends, especially during the first month of enrollment is essential to determining their success in their first year (Upcraft, Gardner, Barefoot, & Associates, 2005). This impact is greatest when academic, interpersonal, and institutional activities are mutually reinforcing (Pascarella & Terenzini, 2005).

*Chickering's (1969) Identity Development Theory* posited that an institution could positively impact underprepared students' retention in two-year colleges through activities to promote identity development. His work with Linda Reisser adapted the theory for a more diverse student population (Chickering & Reisser, 1993). They developed seven vectors of identity development to explain the various psychosocial developments that occur during the student's college years, including developing a strong sense of self: (a) developing competence, whereby students produce intellectual, physical, and interpersonal competence; (b) managing emotions, whereby students learn to recognize, express and control their emotions; (c) movement through autonomy towards interdependence, eliminating the need to be reassured by others or receive other's approval; (d) development of mature interpersonal relationships, which include intercultural appreciation and tolerance; (e) establishing identity, which refers to a healthy self-concept of age, culture and gender; (f) developing purpose, which

occurs when students develop clear career goals and makes meaning of their own interests and establishes positive relationships with others; and (g) developing integrity, which refers to the ability to articulate and emulate their own values through developing humanitarian values (Chickering & Reisser, 1993). Their revised model was proposed to be applicable for college students of all ages. The vectors could vary and were not classified as stage-like; it was possible to move backward and retrace steps during the process. This revision supported the concept that first-year seminars should be targeted to the needs of traditional and nontraditional students (Reid, 2009) .

***Kuh's Student Engagement Theory*** had its origin in Astin's work (Pike & Kuh, 2005). It has been stated that the engagement premise is deceptively simple: The more students study a subject, the more they learn about it. Likewise, the more students practice and get feedback, the more adept they become with that particular skill (Kuh, 2003). The very act of being involved in educationally productive activities facilitates building a foundation of skills and attitudes that is essential to life during and after college. Kuh has six suggestions for institutions to take advantage of the engagement premise: (1) teach first-year students as early as possible how to use college resources effectively; this is especially important for first-generation students who may not know what to expect from college; (2) make the classroom the nucleus of the community, because the classroom is the only venue where students regularly have face-to-face contact with faculty, staff and other students; (3) develop networks and early-warning systems to support students when they need help; (4) connect every student in a meaningful way with some activity or positive role model; (5) if a program or practice works, make it widely available, even mandatory because some students

will not use the resources available; and (6) remove obstacles to student engagement, including the “runaround” problem. Even though the focus is on student engagement, this view emphasizes that institutional policies and practices have a significant influence on the levels of engagement on college campuses (Chickering & Reisser, 1993; Kue, 2010; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005).

### **Research Related to Community College Retention**

Major theoretical perspectives attempt to identify the institutional conditions that are associated with student retention and given the powerful relationship between engagement and positive educational outcomes, it is not surprising that Astin (1999) argued that “the effectiveness of any educational policy or practice is directly related to its capacity to increase student involvement” (p. 520).

Important studies on the retention of community college students have been conducted by Cunningham (2010), Leinbach and Jenkins (2008), Stahl and Pavel (1992), and Tinto (2006). Much of the pertinent research is also contained in national reports and studies by national organizations such as Community College Research Center, Community College Survey of Student Engagement, Lumina Foundation, National Center on Education and the Economy and The Education Trust. Their combined work has expanded factors related to retention to include academics (students’ study habits, academic advising, absenteeism, major certainty, and course availability), biographical background (age, enrollment status, residence, educational goals, high school academic performance, ethnicity and gender) and the high-impact



environment. Current studies also provide on-going research with relevant topics associated with minority students: Student Engagement at Minority-Serving Institutions through *Building Engagement and Attainment of Minority Students* (BEAM) projects (Bridges, Cambridge, Kuh, & Leegwater, 2005), *Foundations of Excellence* (Gardner, n.d.), and the work of Sherwin (2011) and Gonzalez (2012) on Tribal College student success.

Community college research continues to focus on the importance of understanding why students do not complete their programs of study and to this end need to address the competing pressures of work and family which limits the time available for academic pursuits (Tinto, 1993). Additional studies take into consideration the characteristics that a student brings to college (e.g., academic aptitude, gender, or affiliation needs) and postulate that these will influence their interactions with the college environment as well as have a direct effect on retention (Kuh, et al., 2006). Other studies have considered the non-traditional student and combined the environmental and academic variables of Tinto (1975) and Pascarella and Chapman (1983) to look at student expectations. Kuh, Gonyea, and Williams (2005) discuss two ways in which student expectations impact experiences. Expectations can “serve as a filter, or a screening mechanism, through which students evaluate...” their college experiences, and expectations can serve “as a psychological catalyst or deterrent to certain types of behavior” (pp. 35 – 36). Pascarella and Terezini (1992) note that the transition to college can set the tone for what students expect, how much they get involved, and what they experience.

The research has strongly supported the assumption that engagement is positively related to the time and energy students devote to educationally purposeful activities. It is the greatest measure of gain in general abilities and critical thinking (Astin, 1993; Pascarella & Terezini, 1991). Pike and Kuh (2005) restate a second important premise of the frameworks of Astin, Kuh, and Pace to be that even though the focus is on student engagement, institutional policies and practices influence levels of engagement on campus (Chickering & Reisser, 1993; Kuh, Schuh, Whitt, & Associates, 1991; Pascarella & Terenzini, 1991). Perhaps one of the most widely utilized high-impact environments is the first year experience course, often referred to as the student success course (CCCSE, 2012; Cho & Karp, 2013; Glenn, 2011; Howard & Jones, 2000).

The most recent research endeavors for determining the academic and environmental factors that influence retention have involved longitudinal data. This approach involves tracking student cohorts to provide an examination of the students' progress through their time at the institution, versus a snapshot within one term (Bers, 2008). Longitudinal data allow researchers to document not only enrollment, but also the accumulation of credit and earning of degrees; the level of analysis of student success can also be expanded to include the individual level (Yeado, Haycock, Johnstone, & Chaplot; 2014), including low-skill adult students (Prince & Jenkins, 2005). Longitudinal data has become the basis for multiple long term projects such as the Achieving the Dream project (Voorhees & Lee, 2009).

The Nelson report for the Committee on Measures of Student Success Issues (Nelson, 2011), supported by research on measuring momentum points and milestones

(Leinbach & Jenkins, 2008) and assessing stepping stones and pathways (Crosta, Bailey & Jenkins, 2007), recommends that data collection should include the number of credits to indicate full time/part time status, number of federal financial aid recipients, number of years to certification and associate degrees, semester grade point average, and the proportion of developmental students in the above categories, and whether or not they complete remedial coursework and a college level course. Furthermore, data should be longitudinal, disaggregated by race/ethnicity, gender and age, and noting exclusions of student groups. The report concluded that retention would best be defined by outcome, consistency in enrollment, or type of courses completed.

### **Developmental Education**

The evidence of low reading and writing skills among a sizable proportion of postsecondary students has been an ongoing concern in the United States since the 1970's, when open admission policies were instituted in publicly funded colleges across the country (Perin, 2013). This under-preparation is viewed in terms of deficiencies in a student's basic academic skills, specifically in those skills integral to reading, writing, and mathematic subject areas. The intention of implementing remediation coursework to the college curriculum was to create an academic bridge to address the lack of preparation in high school and to propel students to a level that would allow them to perform in the postsecondary setting (Bailey, Hughes, & Smith, 2012; Bettinger & Long, 2005; Kuh, et al, 2006). It is because community colleges

have open-door policies that the use of placement tests was identified to be in the best interest of the student and the institution. Therefore, it is not surprising that the majority of community colleges assess all students upon entry for “college readiness” and if students demonstrate a lack of academic skill, they are placed into remedial or developmental classes. Placement tests are widely used among postsecondary institutions to determine whether or not a student will be referred to developmental classes, although some community colleges address developmental courses as a recommendation and not a requirement (NCEE, 2013). For example, NCEE reports that a “hundred percent of public two-year institutions use some type of math test to evaluate students, ... while 94 percent also use a reading test” (p 8).

While open access ensures that every high school graduate can attend, research has shown that on average, community college students enter less academically prepared, which can have a negative effect on their retention (Adelman, 2006; Calcagno, Crosta, Bailey, & Jenkins, 2005; Lumina Foundation, 2005). Major concerns have been expressed about the efficacy of developmental courses in relation to retention and graduation goals, because the classes increase the length of time to graduation and often reduce the number of credit bearing courses a student can take to achieve full time status (CCSSE, 2013; NCEE, 2013; NEBHE, 2012).

Recent studies estimate 58 percent to 90 percent of entering community college students take at least one developmental course (Adelman, 2005; Attewell, Lavin, Domina, & Levey, 2006; Bailey, 2009; CCSSE, 2007; Collins, 2009; Domina & Levey, 2006; NCEE, 2013). Bailey, Hughes and Smith’s (2011) *Complete College America* report for New England states indicated that 69.7% of students who entered a

two-year college enrolled in remediation. The report's demographic data showed 92.8% of students needing remediation were low-income. Among students ages 17-19, 79.3% needed remediation, compared to 64.5% ages 20-24 and 41.2% of students over 25. The percent in need of remediation by racial category were: African Americans, 92.2%; Hispanic, 81.4%; White, 66.2%; and others, 70%. Reports by Achieving the Dream (2008) and USDOE's (2008) Transition Matters indicate that among a sample of over 250,000 predominately underrepresented minority and low-income community college students, 59% of beginning students were referred to developmental courses. NCEE (2013) found similar statistics.

### **Research on Developmental Education**

Although developmental education has been around for 50 years, research assessing its longitudinal effect is relatively recent. Longitudinal research has amplified the goal to improve our understanding of how student demographics, individual pathways through college, and their entering academic ability are related to retention and graduation. The result is a closer look at the types of instruction and supports needed by underprepared students (Bailey, 2009; McClenney & Marti, 2006; Nelson, 2011; Perin, 2013). Data from the initial 27 Achieving the Dream colleges (CCSSE, 2007) and the Lumina Foundation (2008) showed the value of early intervention with students who need additional academic preparation. CCSSE reported that students who completed any developmental course in their first semester of

enrollment were, from that point forward, more likely to persist and succeed rather than other groups of students.

Criticism of developmental education has been fueled on two fronts. First, studies have shown disparate results when comparing completion rates of students who placed into developmental courses and did not take the classes against those who did. The Admitted Class Evaluation Service (ACES, 2008) report addressed some of these concerns, stating that in determining whether to place a student into a course, there are two types of correct decisions: placement in which the student eventually succeeds or placement in which the student would have succeeded even with the course. Similarly, there are two types of incorrect decisions: placement for a student who will not succeed even with a course, or denial of placement for a student who would have succeeded if it had been available. The ACES Placement Validity report on the commonly used ACCUPLACER exam suggested that the strength of the assessment prediction can be improved by providing institutions with instruction in the use of statistical concepts such as correlation coefficients, percent correctly placed, and use of a ‘composite predictor’ (College Board, 2008, p. 4).

Second, placement tests may not be the good predictors of success as previously thought because of the additional time required to complete developmental courses appear to be a detriment to completion rates. Groups who have studied the longitudinal effect of developmental education agree that the longer it takes a student to move through developmental education into a credit bearing courses, the more likely they are to drop out (CCSSE, 2013, NCEE, 2013). Noting that most developmental students never progress to college credit bearing coursework, and only one-quarter

earn a college degree within eight years, NEBHE's 2012 report suggested making developmental education a co-requisite – a formal course taken simultaneously with another as opposed to being a prerequisite (Harney, 2012).

While academia wrestles with these questions, the essential need remains. The reality of the open-door policy effect is that community colleges tend to enroll more under-prepared students because this is where students can take advantage of developmental education to prepare for college level work (Perin, 2013). Yet, even though there is evidence that many students will benefit from focused 'high-impact' programs to help them overcome a history of academic failure and negative attitudes toward education and learning (Geatty-Guenter, 1994), there are still strong feelings in the field of higher education around the validity of how best to structure developmental coursework (Black Issues in Higher Education, 2003; Manpower Demonstration Research Corp [MDRC], 2013; Office of Career, Technical, and Adult Education [OCTAE] 2014), and rightly so.

Another concern is that, while individual studies and national coalitions have shown a strong association between developmental education and retention, studies that applied a regression discontinuity analysis of the data have questioned the eventual effect on degree completion (e.g., Calcagno & Long, 2008). Other researchers question methodological obstacles because students may take different numbers of developmental courses in one or more areas (Nelson, 2011). NECC (2013) conducted a survey whose results showed a very large proportion of students who enroll in remedial programs fail to earn a degree or certificate, whether or not they complete the remedial program. Yet, while questions still remain, Fike and Fike

(2008) report successful academic performance of students who complete their developmental program of study, with more than one third of the developmental students earning an Associate's degree or certificate. Fike and Fike also estimate that nearly two million students would drop out of college annually in the absence of developmental education.

### **Student Success Courses**

Historically, student success courses have been referred to as extensions of freshmen orientation and labeled first year seminars or student life skills classes. These courses evolved from the need to assist freshmen in adjusting to the college environment and addressed both academic and non-academic deficiencies. John Gardner, in 1972, advocated this relatively new concept at the University of South Carolina to increase academic performance and retention for freshmen students (Reid, 2009).

Success courses have taken a variety of content formats. Some are of the orientation to college format; others have a more substantive focus, are disciplined based, or have interdisciplinary content, taught by faculty and/or student affairs staff; others are team taught and combine advising and orientation activities (Upcraft, Gardner, & Barefoot, 2005). Success courses seek to integrate students into college life and can help students who are struggling academically, prepare students for the rigors of college life, teach time management skills, good study habits, and effective note-taking strategies (Zeidenberg, et al., 2007). ACFSA (2008) also recommends that students receive information and are reminded about deadlines specific to the academic



calendar. The concept has become a mainstay for the freshman cohort, and although the specific nature of the course has varied based upon the institutional focus (Barefoot, 2004), the goal has remained to be the improvement of student retention and graduation rates.

In 2008, the Advisory Committee on Student Financial Assistance [ACFSA] completed a report for Congress and the Secretary of Education that recognized the need to strengthen the community college pathway. Through its research, the Committee noted three critical transition points: enrollment, persistence, and transfer. The barriers that students encounter at each point were identified in five categories: academic, social, informational, complexity, and financial (USDOE, 2008). They recommended that student success courses be designed in such a way that each barrier category could be addressed throughout a semester. This structure and content were determined to be beneficial not only to the non-traditional student but also to the traditional student as an effective method to meet the identified barriers (Focus, 2009; Headden, 2009; Lumina Foundation, 2009; Royal & Taylor, 2008). Therefore, a proactive approach to meeting the needs of the student is to connect the student to the services within the classroom in a structured way, rather than waiting for the students to take the first step (Karp & Bork, 2012; Karp, et al., 2012).

Success courses have taken a variety of content formats. Some are of the orientation to college format; others have a more substantive focus, are disciplined based, or have interdisciplinary content, taught by faculty and/or student affairs staff; others are team taught and combine advising and orientation activities (Upcraft, Gardner, & Barefoot, 2005). Success courses seek to integrate students into college life

and can help students who are struggling academically, prepare students for the rigors of college life, teach time management skills, good study habits, and effective note-taking strategies (Zeidenberg, et al., 2007). ACFSA (2008) also recommends that students receive information and are reminded about deadlines specific to the academic calendar.

Several dynamics impact the effectiveness of a student success course, including the form of faculty engagement, access to retention-related information such as financial aid and academic requirements, as well as addressing the myriad of previous experiences students bring with them when transitioning to college (Achieving the Dream, 2008; Driscoll, 2007; Napoli & Wortman, 1998). Engaging students during their first year of college is often directly related to the amount of contact with faculty and the quality of the interactions. The time and energy that students are expected to invest in educationally purposeful activities and the effort institutions devote to using effective educational practices have become central to recent research and connects the interaction with faculty and staff (Carlson, 2014; Kinzie & Kuh, 2004; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Yeado, Haycock, Johnstone, & Chaplot, 2014).

The importance of access to institutionalized support has been recognized and led to a host of educational initiatives to encourage the creation of college support programs during this transition period. A major factor of concern in recent reports is the dearth of financial aid information for students (ACSFA, 2008). Finances are a major issue to student retention, and the ACSFA expressed concern that many students do not have adequate financial aid advising in relation to academic requirements in a

timely manner. Students may not be aware of information gaps until it is too late. Their report suggests that challenges are compounded when students are not introduced to the issues discussed in a student success course, such as financial aid requirements, academic calendars, and the advising process. The lack of such information can impede academic progress and affect retention.

### **Theories Related to Student Success Courses**

A solid foundation on the theoretical basis for a student success course can be found in understanding the student development theory. By the late 1900's, three major categories classified how a student develops: psychosocial theories, cognitive-structural theories, and typology/person-environment theories (Evans, Forney, & Guido-DiBrito, 1998). Later a fourth theory, humanistic existential, rounded out the major theories on student development (University of Calgary, 2014). The application of these theoretical positions to the classroom lends support to the creation of the student success course to address the varying degrees of development and diversity of the community college student.

The first set of theories relates to psychosocial development and focuses on how students relate to themselves and others. Here, the content of that development is examined and involves how students define themselves, their relationships with others, and what they want to do with their lives (Evans, et al., 1998; Napoli & Wortman, 1988). These theories draw on Erickson's sequential age-related perspective on life events to identify significant questions and tasks to be addressed during the pivotal

transition period of the first year (Berger, 2014). As the focus expanded to include a community college focus, issues such as self-efficacy and the development of positive coping strategies became highly relevant (Bean & Eaton, 2000; Mangan, 2014). The development of these psychosocial skill sets is enhanced by high-impact activities, and the student success course is identified as such an activity (CCSSE, 2013; Kuh, 2011; Pascarella & Terenzini, 2005).

The second set of theories relate to cognitive-structural development and examine changes in the way students view the world or make sense of their experiences. Derived from Piagetian psychology, cognitive-structural stages are a “set of assumptions students use to adapt and organize their environment” (Evans, et al., 1998). William Perry’s cognitive theory and Kohlberg’s theory of moral development extended this application to address the diversity of experiences related to gender, religion, and eventually ethnicity (Berger, 2014). The importance of understanding how students “structure values, beliefs, and assumptions” (p. 2) in the situations they are experiencing and providing guidance as students reason through these experiences, while continuing to develop their identity, are central to the foundation of the student success course (Chickering & Reisser, 1993). Connecting with every student in a meaningful, personal way, through an activity or positive role model, is a fundamental principle of the student success course (Bean & Eaton, 2000; Carlson, 2014; Kuh, 2007).

The third set of theories relates to typology/person-environment development and is most often addressed through career planning, internship and service learning activities (Evans, et al., 1998; Focus, 2006; University of Calvary, 2014). This focus

on student interaction as a social function within the college environment became a focal point for identifying good practices in undergraduate education and deliberately designing environments that facilitate this developmental category (Astin, 1984; CCSSE, 2012, 2013; Evans, et al., 1998; Kuh, 2011; NSSE, 2013; Pascarella & Terenzini, 2005). One design approach was to recognize that the college environment is novel to the majority of community college students and to provide pathways through the use of these activities to support student retention. The classroom could address the ‘runaround’ problem in which students cannot get the information or help they need, and would help eliminate a large barrier to student retention (Choy, 2001; Cunningham, 2012; Focus, 2006; Kuh, 2007; McDonald, 2003).

The last set of theories relates to humanistic existential development, and concentrate on certain philosophical concepts about human nature: freedom, responsibility, self-actualization. They posit that education and personal growth are encouraged by self-disclosure, self-acceptance and self-awareness (University of Calgary, 2014). Although some in academia might say this is in the realm of “counseling,” it is an essential area in which many students develop during their college years (Downing, 2014). It reflects Tinto’s sentiment that “the more faculty members interact with and become engaged with students, the more likely students are to stay in college” (Escobedo, 2007, p 12). This interaction is most likely to occur in the classroom.

Schlossberg’s Transition theory (Anderson, Goodman, & Schlossberg, 2012; Cox, 2013; Cunningham, 2010, Schlossberg, 1981) is described as a transition model that can be adapted to meet the needs of first generation and minority college

freshmen, and can be used to address crises that may arise as students adjust to life in college. The model describes both anticipated and unanticipated events and non-events “that result in changed relationships, routines, assumptions and roles” (p. 550, Cox, 2013). For example, in the life of a freshman, attending college may be an anticipated transition, but the level of academic and personal changes is an unexpected event. Schlossberg (1981) describes four sets of potential resources that may be used in a student success course to help students cope with the changes required for academic success. The “Four S’s” provide a theoretical framework to assist students to evaluate their circumstances in the areas of Self, Strategies, Situation and Support (Anderson, Goodman, & Schlossberg, 2012). Consequentially, the student success course provides a safe place to identify these challenges and facilitate the creation of an action plan the student can use to implement new strategies (Downing, 2014) and provides the transitional support required over an extended period of time.

### **Research Related to Student Success Courses**

Researchers often report on the impact of student success courses without the use of an experimental design (Gampert & Jones, 2013), measuring success through a comparison of grade point averages (GPA), individual course grades, within-semester retention or graduation rates (Redmond, Boucebeci, & Engstrom, 2013). Researchers have considered use of randomly assigned groups; yet this could become an ethical problem, as the process of selecting only some students to receive the support service may not be fair or equitable. The use of pre and post surveys have become the

trademark of national studies from Achieving the Dream, CCSSE, CCRC and Survey of Entering Student Engagement (SENSE), to name a few.

In 2008, the Advisory Committee on Student Financial Assistance [ACFSA] completed a report for Congress and the Secretary of Education that recognized the need to strengthen the community college pathway. Through its research, the Committee noted three critical transition points: enrollment, persistence, and transfer. The barriers that students encounter at each point were identified in five categories: academic, social, informational, complexity, and financial (USDOE, 2008). They recommended that student success courses have been designed in such a way that each barrier category could be addressed throughout a semester. This structure and content were determined to be beneficial not only to the non-traditional student but also to the traditional student as an effective method to meet the identified barriers (Focus, 2009; Headden, 2009; Lumina Foundation, 2009; Royal & Taylor, 2008). Therefore, a proactive approach to meeting the needs of the student is to connect the student to the services within the classroom in a structured way, rather than waiting for the students to take the first step (Karp & Bork, 2012; Karp, et al., 2012).

Some researchers have utilized qualitative methods (e.g., Gardner, n.d.; O’Gara, Karp, & Hughes, 2009; Thompson & Thornton, 2002). Qualitative methods using interviews and case studies are considered to provide a grounded view of the human experience in addition to the statistical information analyzed. Asking meaningful questions about the quality of a success course can enhance the institution’s recognition of areas that are ready for change. This reflective information

has shown the impact of students building important relationships with professors and peers, and influenced the use of resources.

Most research has adopted quasi-experimental designs, comparing student cohorts who have and do not have the student success experience and measuring retention and degree completion (e.g., Keup & Barefoot, 2005; Rhodes & Carifio, 1999; Schwitzer, 1997). The increase in longitudinal studies led to a significant increase in information (Prince & Jenkins, 2005; Leinbach & Jenkins, 2008). Cho and Karp (2013) reported on an experimental study that examined whether student success course enrollment, as well as student and institutional characteristics, had positive associations with shorter-term student outcomes within the first year and persistence into the second year. The study found that students who enrolled in a success course in the first semester were 6% more likely to earn any college-level credits within the first year and were more likely to persist to the second year. Impact studies such as these follow the first-time student from term-to-term, then year-to-year (Bashford, 2008; Kuh, et al., 2006; Rutschow, Cullinan, & Welbeck, 2012).

Methods to analyze the effectiveness of student success courses were expanded to consider directional hypotheses (Howard & Jones, 2000) and multiple factors related to retention (Barefoot, 2004; Fain, 2012; Scrivener, Weiss, & Sommo, 2012). Most recently, large associations began to implement surveys to thousands of students to see which factors were associated with student success (Dougherty, Long, & Singer, 2009; Lumina Foundation, 2005; NSSE, 2013). National benchmarks were established for institutional comparison to assist colleges in their efforts to increase retention



(CCSSE, 2012; 2013) and surveys were extended from four-year colleges to community colleges as well (CCCSE, 2007; 2010; 2013).

Researchers have also increased their focus on how the characteristics of community college students influence the effect of student success courses on retention (CCCSE, 2012, 2013; CCRC, 2008; Gardner, n.d.). Current research is focused on addressing the diversity of goals and students that attend a community college (Jenkins, 2008; Prince & Jenkins, 2005; Scrivener & Coghlan, 2011) and the importance of high-impact activity of a student success course for those students (Kuh, 2009). The CCRC (2002) showed that after controlling for student characteristics, those enrolled in student success courses in Florida Community Colleges were eight percent more likely to earn a credential. Among students who took remedial coursework, participation in the student success course was associated with a five percent increase in completion (Florida Department of Education, 2006). The Houston Community College System, an Achieving the Dream college that institutionalized a student success course in 2007, also showed gains in retention rates for developmental and non-developmental students taking the freshman success courses. Their results, documented through cohort tracking, showed that developmental students surpassed the baseline group with term-to-term retention gains of 9 percentage points for the first fall to spring, 7 percentage points for the first fall to fall, and 23 percentage points for the first fall to the second spring (CCCSE, 2007).

Zeidenberg, Jenkins, and Calcagno (2007) also analyzed student characteristics and success course enrollment. Their approach examined the effects of enrolling in a student success course, rather than completing the course (Florida Department of

Education, 2006). This approach addressed the concern that selecting just those students who completed the success course would bias the results toward students who might have other characteristics, such as a unique summer school experience or personality types that are highly organized and conscientious, which might increase the student's likelihood of completing the success course (CCRC, 2007).

### **Student Characteristics**

Who are community college students? What individual experiences do they bring to postsecondary education, and how do their distinctive characteristics make a difference in their chances for obtaining a postsecondary credential? These questions and more remain central to the research on retention and degree completion. Retention literature addresses gender, race and ethnicity, age, socioeconomic status and first generation as central points in student background characteristics. There is an understanding that the interaction of these variables with retention are as diverse as the variance within any group of students, such as the difference between men and women or African Americans and Hispanics, as diversity is almost always greater within than between groups (Escobedo, 2007, Focus, 2006; Kuh, 2009). Understanding what the characteristics are and how they interact will result in research that will increase the use of strategies which can better prepare students for college success (Gonzalez, 2012; Kuh, et al., 2006, Perin, 2002). Inquiry conducted in this area spans large national organizations, regional associations and individual colleges (Kingsley, Edmonson, & Slate, 2010; Mullin 2012a; NCEE, 2013).

National studies such as *Achieving the Dream* (CCSSE, 2008) examined engagement levels for low-income students, minority students, and students exhibiting known risk factors. They found that in each case these students were more engaged than a comparison group of students who reported little or no engagement with faculty and staff, other students or subject matter. Both traditional and non-traditional students at the community college are often at risk; the study demonstrated the benefit from a college strategy that engages students in ‘high impact’ activities (Kinzie & Kuh, 2004; Laird, Shoup, & Kuh, 2005; Schrevener & Coghlin, 2011). Therefore, it was not surprising that “Active and Collaborative Learning” was the most powerful and versatile of the five CCSSE benchmarks for predicting student success, using several different outcome measures.

‘At risk’ students are characterized by several additional factors, including being the first in their family to go to college (first generation), enrolled in school part time, and have off-campus employment. They frequently meet financial aid requirements, care for dependents, and are likely to be the single head of a household (Cavote & Kopera-Frye, 2007, Focus, 2006; Kuh, et al., 2006; NEBHE, 2012; Pascarella & Terezine, 2005). Interruptions in their enrollment patterns are common and can reduce their chances of earning a degree. According to Pascarella and Terenzini (2005), “Stopping-out not only increases time-to-degree, but also reduces the likelihood of degree completion, whether an associate or baccalaureate degree” (p. 381). Given these findings, more attention and resources on supporting these students in their first semester should be a priority (CCSSE, 2007).

## **Gender**

The community college participation rate of women has increased 10 percent, an increase from 51 percent to 61 percent, while the proportion of men going on to a community college increased only by about 4 percent, from 41 percent to 45 percent (Berkner & Choy, 2008; NEBHE, 2012; The College Board, 2013; The Pell Institute, 2011; Zhai & Monzon, 2001). Yet, the proportion of male and female undergraduates has been roughly the same for the past ten years. In terms of degree completion, 16% of females and 13% of males earned an associates degree within six years, and correspondingly 9% of females and 8% of males earned a certificate (The College Board, 2013).

Kuh, et al. (2006) referenced several reasons why more women than men are enrolling in college. Women have begun to outperform men on the determinants of going to college – taking college preparatory classes, increasing high school grades and test scores. The number of women who take advanced science and math classes has increased. Another factor is the current societal attitude of accepting women in the workplace along with an increased expectation that women in families will share in the provision of family income. The recognition of greater economic benefits from obtaining a college credential for females also appears to be a factor.

Kuh's (2006) survey results reported a gender disparity in college predisposition among ethnically and racially similar students who attended high-minority, low-income middle and high schools. African American females were

significantly more likely to earn higher grades in high school, which affected parental expectations for college and directly influenced the student's college predisposition. Similarly, White females were more likely to have parents who expected them to attend college, which was the strongest predictor for predisposition to college. These factors and others appear to have contributed to this increase in women attending college. Mangan's (2014) survey results further showed that both genders respond favorably to a college experience that builds strong personal connections on the campus, holds students to high expectations, has instructors who are committed to their achievement, and are intensely engaged in the academic experience, both in and out of the classroom. This effect of experiencing positive relationships appears as an essential part of a student's success.

How colleges use this information has resulted in a growing field of retention applications and a significant increase in success courses. Community colleges continue to test some of the promising strategies to help students perform better academically (Scrivener & Coghlan, 2011). Activities such as evening tutoring, summer modular prep classes in math, vocabulary and reading, increasing male advisors and use of peer or professional mentors and high impact activities such as success courses can particularly assist male students' persistence toward degree completion.

## **Race and Ethnicity**

Minority students constitute 30 percent of community college enrollments nationally, with Hispanic students representing the fastest growing racial/ethnic population (Focus, 2006). CCRC (2002) found that 50 percent of Hispanic students start at a community college, along with 31 percent of African American students. In comparison, 28 percent of White students begin at community colleges. There are also large discrepancies in being college ready, enrollment, and completion rates between Whites, African Americans and Hispanics (Kuh, et al., 2006; Mangan, 2014). The National Center for Education Statistics (NCES) reported that among full-time, first-time students, White men and women had higher completion rates (about 25 percent), followed by Hispanics/Latinos (about 20 percent) and African Americans (about 15 percent) (Berkner & Choy, 2008; Community College Times Staff, 2012). Only 5-10 percent of African-American males and Hispanic males attending community colleges earn degrees or certificates within three years, compared with 32 percent of White males (CCRC, 2002; Derby & Watson, 2006; Mangan, 2014). Derby and Watson reported that African-American students contribute 12-16% to community college enrollments for 15-18 year olds and had a 10% completion rate, rates that continue as reported by *The Completion Arch* (The College Board, 2013). In preliminary research among ethnic groups, I found Hispanic students had a higher percentage of enrollment in student success courses at a community college, even after excluding those who qualified for English as a Second Language (McGill, 2012).

Overall, only 54 percent of students who enrolled in a community college for the first time in 2007 had a certificate or degree to show for it six years later (Mangan, 2013). Kuh et al (2008) reported that in six years the completion rate for African American and Latino students was only 46% (Bailey, Hughes & Smith, 2012). “If these trends continue, educational attainment in the United States could actually decline over the next 15 years if we are unable to close the gap between education levels of Whites and other racial and ethnic populations” (p. 18), as stated in the National Center for Public Policy and Higher Education 2005 report (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006). The Maryland Higher Education Student Persistence Program (2012) showed that while African Americans, Hispanic and first-generation college students reap greater academic gains from various effective ‘high touch’ practices, they are less likely than their White counterparts to take advantage of the services (Kue, 2010; Kuh, 2008). These results support the position that mandatory participation in student success courses is highly recommended, as posited by Scrivener and Coghlan (2011).

## **Age**

The effect of student age upon community college completion rates is unclear (Durkin & Kircher, 2010). While community college students are usually older than the average university student, about 60 percent of adults (25 years and older) who study at the undergraduate level are enrolled in two year community colleges (Focus, 2006; Pike & Pike 2008). The United States Government Accountability Office

reported age demographics for community colleges in the fall of 2011: 45.6% were under the age of 21, 41.6% were 22-39 years of age, and 12.8% were 40 years old and over (Emrey-Arras, 2013). The CCSSE (2005) and the Lumina Foundation (Focus, 2009) support the view that students 25 and older demonstrate more focus and engagement, particularly women. In 2006, a study by Calcagno, Jenkins and Bailey found that after controlling for cognitive mathematical ability, older students were more likely to complete a program, lending weight to the hypothesis that older students are more mature and committed. Older students may have a greater commitment to career goals, and therefore may be more motivated to complete coursework (Swing, 2004).

On the other hand, older students are also more likely to have families or jobs, which can increase interference in consistent enrollment. *The Completion Arch* reports the completion rate for an Associate Degree for students under 23 years old at 31% and for a certificate at 13%, compared to 25% for each achievement among adults 24 years and older (The College Board, 2013). Additional studies have asserted that commonly studied demographic factors, such as age, race, ethnicity or gender, had little demonstrable effect on student success, but that the interval between completing high school (or completing a GED) and entering community college was significantly related to student retention (Durkin & Kircher, 2010). Having been away from the classroom for years – sometimes decades – adult students often find that their academic skills have atrophied and their study habits have slipped (Focus, 2009). Even though length of time of stop-outs was not a focus for the current study, it



demonstrates that questions remain on what needs to be addressed for this non-traditional group of students.

### **Socioeconomic Status**

Community college students have a higher probability of being from low-income families (Pike & Pike, 2008). Astin (1993) found that students' socioeconomic status was the best predictor of earning a bachelor's degree after controlling for academic ability, thereby demonstrating the long-term impact of income on college student success. Perin's research data showed that 44 percent of low-income students (those with family incomes of less than \$25,000 per year) attend community colleges as their first college after high school (CCRC, 2002). *The Completion Arch* showed that only 12% of students from the lowest income bracket completed an Associate's Degree within 6 years and 7% completed a certificate (The College Board, 2013).

The higher the family income, the more likely it is that a student will aspire to earn a college degree, intend to enroll in college, complete an application, and attend a college (Kuh, et al., 2006). Berkner and Choy's (2008) data revealed that where a student enrolls was related to family income. Students with family incomes of \$60,000 or more were less likely to enroll in a public 2-year institution (34%) than students with family incomes less than \$59,000 (90%).

Unfortunately for community college students, a greater percentage of them have risk factors related to time demands, in particular, their personal necessity to work is significant. Thirty percent of students who work full time also attend classes

full time; among students 30-39 years old, the rate of working full time climbs to 41 percent (Focus, 2006; Mullin, 2012b). CCSSE (2006) reports that part-time students work more than 20 hours a week and commute 6-20 hours a week; these students are more likely to be from a minority group and/or low income. As with older students, because of their need to work, low income students are forced to stop-out for periods of time.

Time can be referred to as a core unit of human capital (Mullin, 2012). In the higher education context, time-to-degree is a key element in most analyses (Focus, 2009; Lumina, 2012). It is generally thought, and is often true, that a shorter time-to-degree implies a more efficient or “better” higher education experience (Mullin, 2012). However, this is not always the case, especially when the needs and patterns of nontraditional students (who are now the norm in American higher education) are factored into the equation. Low-income students may not have the same time to engage in college as do those from more affluent families, but they must be given the same opportunities and assigned the same value in reference to time-to-degree completion (Focus, 2009). A low income, single parent with a part-time job off campus may be unlikely to be attracted by opportunities to serve on college committees. Older part-time students, who are working, may be less attracted to college events. College administrators recognize the significance of connecting the students to the college community, yet the conflicting difficulty and importance of becoming actively involved as learners are especially pronounced for minority students, older students, vocationally oriented students, and students who have not previously been successful in educational pursuits is pronounced (Barefoot, 2006;

Beatty-Guenter, 1994; Focus, 2006). For this population, implementing an effective strategy will require a greater emphasis on institutional efforts to create connections within the classroom where positive relationships can be nurtured and high impact activities can be planned into the curriculum.

### **First Generation**

Being the first in a family to go to college has always been closely tied to income, ethnicity, and the competing demands of nontraditional students, such as work, family and culture, described in Prince and Jenkins' (2005) *Building Pathways to Success* report. The Pell Institute Fact Sheet (2011) and NSSE (2005) define first generation as students who come from families where neither parent has earned a bachelor's degree or higher. First generation students were more likely to be female, older, have lower incomes, to be married, and to have dependents. Racial and ethnic minority groups are also disproportionately represented among first-generation students (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006). Barriers to access and barriers to retention for this population are also relevant to all the student characteristics addressed in this study.

Cross (1981) classifies three types of barriers that affect retention for first generation students and their ability to participate in college related learning activities: situational, institutional, and dispositional. Situational barriers refer to conditions at a given time that limit a student's ability to access and pursue higher education (Cross, 1981). Finances and lack of time are the most commonly cited. These factors, plus

other conditions such as family and job commitments, can limit the ability of first generation students to access and persist towards their higher education goals.

Institutional barriers consist of practices and procedures which may discourage or exclude students from pursuing postsecondary education (Cross, 1981). For the first generation student, institutional barriers may include problems with scheduling or transportation, difficulties understanding the faculty-student relationship and classroom expectations, a lack of knowledge regarding the bureaucratic issues and general lack of adequate information about the postsecondary process (Cross, 1981).

Dispositional barriers refer to student perceptions of their ability to access and complete learning activities (Cross, 1981). For example, first generation students may have negative perceptions of their abilities, may have experienced low self-esteem in previous academic areas, and may not know how to navigate the resources and opportunities available to them. In addition, they may experience anxiety and fear because they have limited or no family or community reference for support (Cross, 1981; Prince & Jenkins, 2005; Kue, 2010).

Barriers to retention were also classified by Bean and Metzner (1985) in their model of nontraditional student attrition. Even though their emphasis is on the external environment and deemphasizes the importance of social integration, their four barriers have overlapping constructs with Cross' barriers: academic performance; intent to leave; background and defining variables; and environmental variables (Cross, 1981). Poor academic performance may lead to a student dropping out. The intent to leave is affected by both academic performance and psychological factors. Background factors, such as age, high school performance, gender, ethnicity, and environmental factors

which the institution cannot control, such as finances, hours of employment, and family responsibility, all suggest that the odds are stacked against first-generation students succeeding in college.

Additional research supports the impact of these barriers. Yazzie-Mintz (2010) reports that first generation students were less likely to take advanced math and advance placement classes, were less knowledgeable about how to apply for college and financial aid, had lower grades, and were less engaged overall in high school. As a result, these students are more likely to delay enrollment after high school, attend part time, and work full time, all of which contribute to their being less likely to get involved and have more difficulty adjusting to college (Berkner & Choy, 2008; Pascarella & Terenzini, 2005; Pike & Kuh, 2005; Reason, Terenzini, & Domingo, 2006). Even after controlling for socioeconomic status, institution type, and enrollment patterns, first-generation status still had a negative effect on degree completion (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006). If these obstacles were not enough, first-generation students typically have less well developed time management and other personal skills, less family and social support for attending college, less knowledge about higher education, and less experience navigating bureaucratic institutions (Pascarella & Terenzini, 1991). This research has looked at how different students' perceptions are with regard to the amount of homework required and their ability to work while going to school, and identified these as a priority to be addressed for many first-generation students.

For this host of reasons, no wonder first-generation college students are more likely to drop out (73%, compared to 60% of non-first-generation students) or to stop

out of college for a period of time (19% versus 8%, respectively) (Horn & Carroll, 1998; The Pell Institute Fact Sheet, 2011; Yazzie-Mintz, 2010). “Students whose parents held a bachelor’s degree or higher were five times more likely to earn a bachelor’s degree than were similar first-generation students (50% versus 11%)” (Pascarella & Terenzini 2005, p. 590). Yet research shows that students’ chances of obtaining a post-secondary degree appear to be enhanced by interactions with faculty, academic achievement, and academic involvement (CCSSE, 2014; Pascarella & Terenzini, 2005). By creating a learning community within the classroom students can teach each other, inspire each other, and thereby establish an environment of “reciprocity which is the soul of the community college system” (p. 24) (Focus, 2006). It makes sense to develop institutional models for student success that can benefit a significant number of undergraduate students, thereby serving this increasingly diverse student population (peerReview, 2013).

### **The Present Study**

The conceptual model illustrated in Appendix B represents the current research by presenting the major momentum points and milestones of the community college student experience toward degree completion. The timeline in the model represents the pathway to degree completion, as defined by McClenney and Marti (2006). These stages of completion represent pivotal points along the continuum to degree completion and, although not exclusively connected to the college environment, are rooted in the individual experiences and interactions as well as shaped by societal

dynamics (Kamimura, 2010). The benefit of this model is that it identifies retention at multiple time points, and accommodates the complex enrollment patterns common at a community college (i.e., “swirl” effects). As a result, the retention behavior of students who took a success course can be examined over an extended period of time.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **Overview and Design**

This was a longitudinal, non-experimental, correlational study analyzing categorical institutional data from a six-year period. The purpose of using a longitudinal approach was to allow comparisons of the trajectories of students across six subsequent years of college, disaggregating the more general completion rates of national surveys and allowing a consideration of the disparate enrollment patterns.

The institutional data used in this study comes from a commuter 2-year community college in the American Northeast. As an ‘open enrollment institution’ the following assumptions were made: A high percentage of students would be part time versus full time, and requiring developmental courses would significantly affect completion ratios. The low retention rate accentuates the importance of taking the longitudinal method approach to assess the retention and eventual success of students enrolled in developmental courses and student success courses. A random assignment could not be applied to the population being studied for ethical reasons, so a quasi-experimental method was applied.



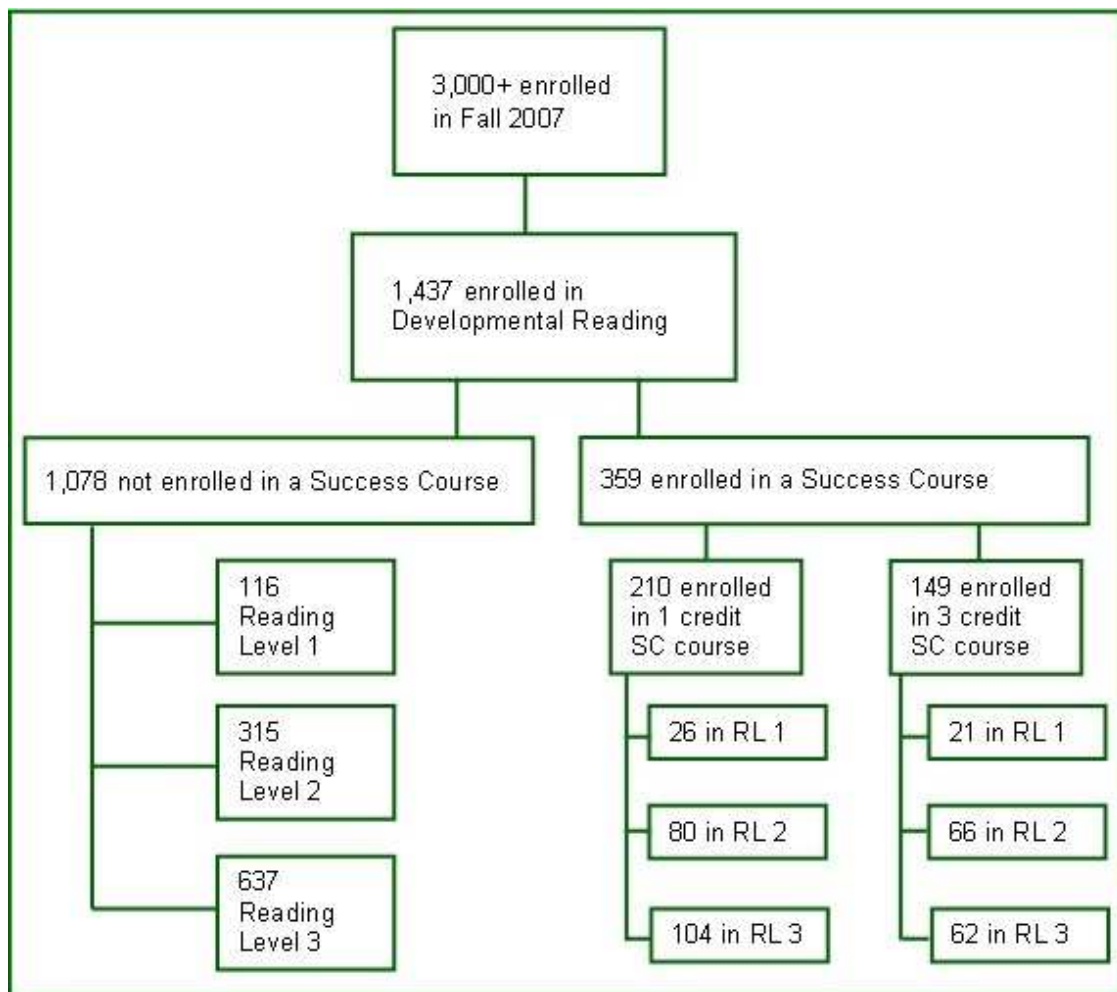
## **Participants**

The sample for this study was drawn from the institutional database of first-time undergraduate students entering a public, non-residential community college in the Northeast in the fall of 2007. According to IPEDS (2008), the entire student cohort in the fall of 2007 was 2,262 full time and 1,248 part-time students, representing a total of 3,510 first time students. The 2007 student enrollment at the community college in this study was reported to be 0.6% American Indian, 2.6% Asian/Pacific, 8% African American, 10.6% Hispanic, and 65.6% Caucasian (percentages do not total 100% due to non-reported ethnicity). The percentages were representative of the ratio in the sample used in this study.

Of these, 1,427 students (40.6%) placed into a developmental reading course on the Accuplacer test and were analyzed in this study. English as a Second Language students in the original cohort were given a different placement exam and were not included in the present analysis. From the total of 1,427 students who placed into developmental courses, a total of 359 (25.2%) also enrolled in a student success course (see flow chart, Figure 3.1).

Figure 3.1

Flow of Participant Enrollment



Institutional student records provided demographic and course data, the nationally recognized College Board Accuplacer was used to determine developmental reading placement, and IPEDS reports are frozen at the time of the reporting period, to provide comparative completion data. Demographics for gender, race/ethnicity,

socioeconomic and first generation college student status are provided in Table 3.1 for the total developmental cohort, and Table 3.2 for the success course cohort. The ratio of 50 participants per predictor variable needed to address stability and power was exceeded (Harlow, 2005).

Table 3.1

*Total developmental cohort (n=1,427) Gender, race/ethnicity, student age, social economic status, and first generation*

Category	Participants	
Gender		
Male	590	41.3%
Female	837	58.7%
Race / Ethnicity		
American Indian or Native Indian	3	0.2%
Asian, Asian American or Pacific Islander	43	3.0%
Black or African American, Non-Hispanic	148	10.4%
Hispanic or Latino, Spanish	273	19.1%
White, Non-Hispanic	742	52.0%
No Response	211	14.8%
More than one race reported	7	0.5%
Student Age		
24 or Under	1290	90.4%
25 and over	137	9.6%
Socioeconomic Status		
Low Income	680	47.7%
Not Low Income	747	52.3%
First Generation		
Yes	307	21.5%
No	775	54.3%
No Response	345	24.2%

Table 3.2

*Developmental And Success Course Cohort Participants (n=359) Gender, Race/Ethnicity, Student Age, Social Economic Status, and First Generation*

Category	Participants	
Gender		
Male	146	41.0%
Female	213	59.0%
Race / Ethnicity		
American Indian or Native Indian	1	0.3%
Asian, Asian American or Pacific Islander	7	0.2%
Black or African American, Non-Hispanic	34	10.0%
Hispanic or Latino, Spanish	60	17.0%
White, Non-Hispanic	193	54.0%
No Response	62	17.0%
More than one race reported	2	0.6%
Student Age		
17 or Under	69	19.0%
18 – 24	282	78.0%
25 – 34	4	1.0%
35 and over	4	1.0%
Socioeconomic Status		
Low Income	180	50.0%
Not Low Income	179	50.0%
First Generation		
Yes	72	20.0%
No	211	59.0%
No Response	76	21.0%

*Source: Community College Statistics: Office of Institutional Research and Planning*

## Measures

Predictor variables consisted of developmental reading placement, student success course enrollment, gender, race/ethnicity, low income, 1<sup>st</sup> generation and age. Outcome variables consisted of enrollment into a developmental writing course, a gateway writing course, continuous enrollment into the 2<sup>nd</sup> and 4<sup>th</sup> semester, completion of a certificate, Associate's degree, or transfer ready status. The term "developmental" was used to reflect pre-college coursework required of the under-prepared student.

*Developmental Reading Placement.* The Accuplacer placement exam, developed by the College Board, assessed entering students for placement into developmental reading courses. Scores are calculated via computer for reading skills including vocabulary, word analysis, reading rate and accuracy, resulting in three levels of increasing skills (1-low, 2-medium, and 3-high) which are then used to guide course recommendations.

*Student Success course.* The two versions address the same basic information and differ primarily by length of time the student spends working on skill sets (one credit /15 hours and three credit/ 45 hours). The course requires students to build a personal plan that includes: participation in educational and career assessments to identify personal goals, an orientation to college resources and personnel to develop self-advocacy skills, and an awareness of career opportunities. An overview of the syllabus is provided in Appendix A.

*Demographics.* Gender was coded as male and female by the participating institution. Race and Ethnicity were recoded to reflect White and Non-White students for analyses. Low Income was determined by an indicator variable for students receiving federal aid (Pell Grant). First Generation was defined as a student whose parent did not have a college degree. The Age variable was recoded from a continuous variable to a binary variable for the logistic regression analysis, and to address the disparate size between age groups. The original data showed 351 students ages 25 years or less, and 8 students age greater than 25 years, so the split was set at 18/19 years.

*Developmental Reading Courses.* The Level 1 course focused on building a foundation for college reading by mastering the skills that underlie successful reading, including vocabulary development, word analysis, reading rate and accuracy, and literal reading comprehension. The Level 2 course focused on reading skills essential for success in college and everyday life, including strategies for developing vocabulary and improving comprehension and retention of college textbook material. The Level 3 course focused on the critical reading and thinking skills essential for college and workplace success, including an enhanced vocabulary, understanding an author's purpose and point of view, drawing inferences and applying advanced comprehension strategies.

*Developmental Writing Courses.* The Developmental writing course is a three-credit pre-requisite to the Gateway Writing Course. The focus is on the writing process: planning, organizing, developing, drafting and revising. Course activities

begin with paragraphs and progress to essays and include research documentation assignments.

*Gateway Writing Course (Composition).* Required for students entering the college without prior writing credit, for most majors. This three-credit course enables students to write fluent, accurate and effective essays, including research and documentation.

*Second and Fourth Semester Enrollment.* Defined by the academic calendar, beginning with the students' first enrollment as being enrolled in the first spring (2<sup>nd</sup> semester) and in the second spring (4<sup>th</sup> semester).

*Transfer Ready Status.* The completion of 24 or more college credits.

*Associate's Degree.* Completion of a sixty-credit academic program.

*Certificate.* Focused set of academic courses leading to a work-ready credential, usually 16-40 credits.

## **Procedures**

The Office of Institutional Research and Planning provided an excel data file consisting of demographic information, course and term enrollment for a six-year history of the freshman cohort from fall 2007. Permission was obtained prior to start of the study from the community college's Vice President of Student Affairs and the Office of Institutional Research and Planning. Authorization to conduct the study was also received from the Institutional Review Board and Human Subjects Office of the

University of Rhode Island. Recruitment and informed consent were not applicable to this study's use of historical, secondary data.

### Data Collection and Preparation

All identifying information (student name and social security number) was removed by the community college. Student records were coded with a numeric identification code to further maintain anonymity. All printed records were kept in locked file cabinets at the community college and password-protected web-based files or on an encrypted USB flash drive. Random assignment was not applied to the sample being studied.

### Overview of Analyses

This quasi-experimental study employed categorical historical data. Pearson chi-square analysis was used to examine group differences and the relationship between variables. Logistic regression was used to predict group membership and indicate the likelihood of students falling into the outcome variables of retention and attainment of academic goals while controlling for student characteristics. A longitudinal method addressed the disaggregated data over time. The sequence and overlapping momentum points and milestones defined as key components are displayed in Appendix B.



## **CHAPTER FOUR**

### **RESULTS**

Quantitative data were analyzed using The Statistical Package for Social Sciences (SPSS 22 and 23). Descriptive statistics provided a comprehensive view of the percentages among the predictor and outcome variables. Because the data available were mostly categorical, relationships between the variables were examined by Pearson chi-square analyses to determine appropriate factors for inclusion in a logistic regression analysis (Leinbach & Jenkins, 2008; CCRC, 2008). Logistic regression, a multivariate prediction method was used to analyze the multiple categorical predictors and categorical outcomes. Effect sizes and confidence intervals were also examined. The Phi coefficient was used to determine effect size on 2x2 tables, and Cramer's V on tables greater than 2x2. Cohen's d was the reference for interpreting effect size and Fischer's Exact Test was applied when the cell count was less than five.

#### **Research Question 1**

To address the question, "Were students more likely to enroll in any success course (1 or 3 credit) if they were placed at a lower developmental level?" a 3 x 2 Chi Square for Reading Level (1, 2, or 3) and Success Course (enrolled or not enrolled) was performed. Results were not statistically significant,  $X^2(2, 359) = 2.20, p = .33$ ,  $ES = .08$ . Students who had placed at reading level 2 were most likely to enroll in the success course (43.9%), while students who placed at reading level 3 were least likely

(20.7%). Of the students at the lowest reading level, only 28.8% enrolled in the success course (Table 4.1).

Table 4.1

*Reading Level and Success Course Enrollment (Combined Courses)*

	Developmental Reading Level			Total
	1	2	3	
Number Enrolled	47 (28.8%)	146 (43.9%)	166 (20.7%)	359
Number Not Enrolled	116 (71.2%)	315 (56.1%)	637 (79.3%)	1068
Total	163	461	803	1427

## Research Question 2

Research Question 2 asked, “Was there an association between enrollment in a success course and achievements, including progressing to the second and fourth semesters and completing a momentum point or milestone?” Each will be addressed in turn.

*Second Semester Reenrollment.* A 2 x 2 Chi Square for enrollment in any success course (1 or 3 credits) and enrollment in the second semester was not significant. Overall, 966 (68%) of the original 1,427 developmental students were enrolled in the second semester. Ten percent more students who enrolled in a success

course (75%) enrolled in the second semester than students who did not take a success course (65%) (Table 4.2).

Table 4.2

*Second Semester Enrollment for Total Developmental Students*

	Enrolled in Success Course	Not Enrolled in Success Course
Enrolled in 2 <sup>nd</sup> Sem.	271 (75%)	695 (65%)
Not Enrolled in 2 <sup>nd</sup> Sem.	88 (25%)	373 (35%)

A follow-up analysis examined whether the enrollment in a one or three credit version of the success course made a difference in second semester enrollment. Results indicated no significant association between the one credit success course and second semester enrollment,  $X^2(1, 966) = .04, p = .85, ES = .01$ . The chi-square test indicated a slight association between the three credit success course and second semester enrollment,  $X^2(1, 966) = 3.27, p = .05, ES = .06$ . Overall, 48% more students in the one credit success course and 52% more students in the 3 credit success course enrolled in the second semester. There was a 4% difference in favor of the 3 credit success course (Table 4.3).

Table 4.3

*Second Semester Enrollment for Success Course Students Only*

	Enrolled 1 credit Success Course	Enrolled 3 credit Success Course
Enrolled in 2 <sup>nd</sup> Sem.	155 (74%)	116 (78%)
Not Enrolled in 2 <sup>nd</sup> Sem.	55 (26%)	33 (22%)

*Fourth Semester Reenrollment.* The same analyses were conducted for enrollment in the fourth semester. Overall, 600 (42%) of the original 1,427 students were enrolled in the second semester. Although not statistically significant, 9% more students who enrolled in a success course (49%) enrolled in the second semester than students who did not take a success course (40%) (Table 4.4).

Table 4.4

*Fourth Semester Enrollment for Total Developmental Students*

	Enrolled in Success Course	Not Enrolled in Success Course
Enrolled in 4 <sup>th</sup> Sem.	175 (49%)	425 (40%)
Not Enrolled in 4 <sup>th</sup> Sem.	184 (51%)	643 (60%)

A followup analysis examined whether the enrollment in the one vs the three credit version of the success course made a difference in fourth semester enrollment.

Results indicated a significant association between the one credit success course and fourth semester enrollment,  $X^2 (1, 600) = 5.47, p = .02, ES = .1$ , and showed no significant association between the three credit success course and fourth semester enrollment,  $X^2 (1, 600) = 1.74, p = .19, ES = .06$ . Overall, 6% more students in the 1 credit success course enrolled and 16% fewer students in the 3 credit success course were enrolled in the fourth semester (Table 4.5), compared to peers not enrolled.

Table 4.5

*Fourth Semester Enrollment for Success Course Students Only*

	Enrolled 1 credit Success Course	Enrolled 3 credit Success Course
Enrolled in 4 <sup>th</sup> Sem.	112 (53%)	63 (42%)
Not Enrolled in 4 <sup>th</sup> Sem.	98 (47%)	86 (58%)

*Developmental Writing Course Enrollment*

Of the whole sample, 705 (49.4%) enrolled in the Developmental Writing course. In a 2 x 2 Chi Square analysis, a significant association was found between enrollment in a success course and enrollment in the developmental writing course,  $X^2 (1, 1427) = 13.97, p = .00, ES = .03$ . Of the students enrolled in a success course, 58% met the milestone of enrolling in the developmental writing course, while 46% of students not enrolled in a success course met this momentum point, a gap of 12% (Table 4.6).

Table 4.6

*Developmental Writing Enrollment and Success Course Enrollment*

	Total Enrolled in Success Course	Total Not Enrolled in a Success Course
Yes enrolled	208	497
Dev Writing	(58%)	(46%)
Not enrolled	151	571
Dev Writing	(42%)	(54%)
Total	359	1068

An additional Chi Square analysis examined the two versions of the course. Results indicated no differences in the statistically significant association between either the one or the three credit success course and the developmental writing course enrollment,  $X^2(1, 359) = .77, p = .083, ES = .02$  (Table 4.7).

Table 4.7.

*Developmental Writing Enrollment for Each Type of Success Course*

	Enrolled in 1 credit Success Course	Enrolled in 3 credit Success Course
Yes enrolled	123	85
Dev Writing	(59%)	(57%)
Not enrolled	87	64
Dev Writing	(41%)	(43%)
Total	210	149

Note: Developmental Writing is a pre-requisite course to the Gateway Composition course.

### *Gateway Writing Course Enrollment*

Overall, 566 (39.7%) from the total sample of students progressed to enrollment in the Gateway (Composition) Writing course. For the total sample, a significant association was found between enrollment in a success course and Gateway writing course enrollment,  $X^2(1, 1427) = 10.20, p = .001, ES = .03$ . Of the total sample of students, 47% enrolled in a success course achieved this momentum point, while only 37% of students who did not enroll in a success course met this momentum point, a gap of 10% (Table 4.8).

Table 4.8

#### *Momentum Point: Gateway Writing and Success Course Enrollment*

	Total Enrolled in Success Course	Total Not Enrolled in a Success Course
Yes enrolled	168	398
Gateway Writing	(47%)	(37%)
Not enrolled	191	670
Gateway Writing	(53%)	(63%)
Total	359	1068

Note: Gateway enrollment is less than Developmental Writing enrollment due to particular academic programs not requiring both writing courses.

Additional Chi Squares analyzed the two versions of the course. Results indicated no differences in significance levels for the association between the one and three credit success courses with respect to the Gateway writing course enrollment,  $X^2(1, 359) = .64, p = 4.24, ES = .04$ . Of the students who enrolled in a one credit success course, 49% enrolled in a Gateway writing course, and of the students enrolled in a

three credit success course, 44% enrolled in a Gateway writing course, a difference of 5% (Table 4.9).

Table 4.9.

*Gateway Writing and Success Course Enrollment, All Students*

	Enrolled in 1 credit Success Course	Enrolled in 3 credit Success Course
Yes enrolled	102	66
Gateway Writing	(49%)	(44%)
Not enrolled	108	83
Gateway Writing	(51%)	(56%)
Total	210	149

**Associate's Degree Milestone**

At the end of six years, 152 (10.7%) students from the total sample had completed their Associate's Degree. A significant association resulted between total enrollment in a success course and completion of an Associate's degree,  $X^2(1, 1427) = 10.10, p = .001, ES = .03$ . From the total sample of students enrolled in a success course, 15% achieved this milestone, compared to 9% of students who did not enroll in a success course, a gap of 6% (Table 4.10).



Table 4.10

*Associate's Degree completed within Six Years and Success Course Enrollment*

	Total Enrolled in Success Course	Total Not Enrolled in a Success Course
Yes Associate's Degree	55 (15%)	97 (9%)
No Associate's Degree	304 (85%)	971 (91%)
Total	359	1068

An additional Chi Square analysis compared the two versions of the success course. There was a significant association for both success courses and completion of an Associate's degree,  $X^2(1, 359) = .96, p = .003, ES = .05$ . There were no differences in completion rates between the students enrolled in the one or three credit success course (Table 4.11).

Table 4.11.

*Associate's Degree completed within Six Years by Type of Success Course*

	Enrolled in 1 credit Success Course	Enrolled in 3 credit Success Course
Yes Associate's Degree	32 (15%)	23 (15.4%)
No Associate's Degree	178 (85%)	126 (84.6%)
Total	210	149

### Certificate Milestone

Too few students were completed the Certificate programs ( $n = 8$ ) to conduct a valid analysis.

### Transfer Ready Milestone

A total of 342 (24.0%) students from the total sample reached the milestone of transfer-ready status (24 credits) in six years. The association between total sample of students enrolled in a success course and transfer ready status was not significant,  $X^2(1, 342) = .07, p = .79, ES = .02$ . Of the total sample of students enrolled in a success course, 28% reached Transfer Ready status, while 22% of students who did not enroll in a success course reached this milestone (Table 4.12), a difference of 6%.

Table 4.12

#### *Transfer Ready and Success Course Enrollment Completed within Six Years*

	Total Enrolled in Success Course	Total Not Enrolled in a Success Course
Yes Transfer Ready	99 (28%)	243 (22%)
Not Transfer Ready	260 (72%)	842 (78%)
Total	359	1068

An additional Chi Square analysis compared the two versions of the course. Results also indicated no significant association between the either of the success course options and transfer ready status,  $X^2(1, 99) = 1.38, p = .71, ES = .12$  (Table 4.13).

Table 4.13.

*Transfer Ready Status by Type of Success Course*

	Enrolled in 1 credit Success Course	Enrolled in 3 credit Success Course
Yes Transfer Ready	62 (30%)	37 (25%)
Not Transfer Ready	148 (70%)	112 (75%)
Total	210	149

### Research Question 3

Research Question 3 asked whether “Students who enter with social disadvantages (gender, race, age, economic status, and 1<sup>st</sup> generation status) will be significantly less likely to complete momentum points and milestones regardless of success course enrollment.” This question was addressed by a series of binomial Logistic Regression (LR) analyses. LR allows an analyses of the multiple categorical (dichotomous) demographic predictors and outcomes (momentum points and milestones) (Harlow, 2005). In this study, separate LRs were initially conducted for independent effects of predictor variables of gender, race, age, economic level and first

generation, followed by an examination within a full model on each of the momentum points and milestones. The full Logistic Regressions were conducted to assess the effect of the combined five predictor variables on the Momentum points and Milestone completions. While controlling for the other variables, the question addressed here was “Does the inclusion of other variables in the full model erase the effect of the independent predictor variable? “

LR analysis provided a control for student characteristics hypothesized to be related to enrollment into or the completion of a momentum point or milestone. The Cox & Snell R square and the Nagelkerke R square values provided an indication of the amount of variation in the predictor variable explained by the model. A conventional 0.05 alpha level was used for this analysis (CCRC, 2007; Harlow, 2005; Hendel, 2007; Zeidenberg, Jenkins, & Calcagno, 2007). Odds Ratios (OR) provide an index of the corresponding weights between the set of predictors and the outcomes. Odds ratios less than 1 were inverted for ease of interpretation. Confidence intervals (CI) were reported in order to represent the level of certainty about the estimate within which the true value would fall and address the question of how strong the association is between variables (Agresti, 2009).

Table 4.14 provides descriptive data on students completing their milestones, to examine whether the categories were balanced. Not all students provided complete demographic information so numbers vary. The majority of student demographics were close to a 40-60% comparison, except for the 1<sup>st</sup> generation category, with 20% indicating 1<sup>st</sup> generation status. The Age variable was recoded from a continuous variable to a binary variable for the logistic regression analysis, and to address the

disparate size between age groups. The original data showed 296 students ages 25 years or less, and 6 students age greater than 25 years, so the split was set at 19 years.

Table 4.14

*Developmental and Gateway Writing, Certificate, Associate's Degree (List 1),*

*Transfer Ready (List 2)*

		List 1	%	List 2	%
Gender	Male	120	40%	33	42%
	Female	177	60%	46	58%
Race	White	193	65%	54	68%
	Non-White	104	35%	25	32%
Age*	<=18	206	69%	78	79%
	19+	91	31%	21	21%
Low Income	Yes	144	48%	35	44%
	No	153	52%	44	56%
1st Gen	Yes	59	20%	19	24%
	No	173	58%	43	54%

Note: List 1, 1<sup>st</sup> Gen No Response = 65 (22%); List 2, 1<sup>st</sup> Gen No Response = 17 (22%); \* Age was the only variable that maintained n=99

### Developmental Writing

In the initial independent analysis, Gender ( $X^2 (1, 359) = 6.319, p = .012$ ), Race ( $X^2 (1, 359) = 5.856, p = .016$ ) and 1<sup>st</sup> Generation ( $X^2 (1, 359) = 6.569, p = .010$ ) were statistically significant predictors of enrolling in Developmental Writing. Odds ratios (with those <1 inverted for interpretation) revealed that enrollment was 1.7 times more

likely for males, 1.8 times more likely for White students, and 2.4 times more likely for 1<sup>st</sup> Generation students. Age and Low Income were not statistically significant.

The full model was found to be statistically significant from the null (constant-only) model at  $p < .01$  ( $X^2 = 14.51$ ,  $df = 6$ ,  $p = .02$ ; model fit = 6.71,  $p = .57$ ), indicating that the model was able to distinguish between students who enrolled and did not enroll in Developmental Writing. The model as a whole explained 6% of the variance in enrolling in a Developmental Writing course, and correctly classified 62% of cases, this was 6% more than classifying by chance. The strongest predictor of enrolling in Developmental Writing was 1<sup>st</sup> Generation. First Generation students were 2.6 times more likely to enroll in Developmental Writing, controlling for other factors in the model (Table 4.15). In comparison with the full LR model, 1<sup>st</sup> Generation continued to be an effective predictor variable from the independent analysis level.

Table 4.15

*Logistic Regression Interaction Predicting Likelihood of Enrolling into a Developmental Writing Course*

				Odds	95% C.I.	
	B	X <sup>2</sup>	Sig.	Ratio	Lower	Upper
Gender	-0.50	1.645	.200	.729	.450	1.182
Race	-0.32	3.842	.050	.579	.336	1.000
Age	0.31	.118	.731	1.362	.233	7.966
Low income	-0.20	.521	.470	.822	.483	1.399
First gen	-0.95	5.665	.017	.388	.178	.846
Constant	.33	.111	.739	1.386		

## Gateway Writing

Of the five predictor variables, only Gender ( $p = .008$ ), and Race ( $p = .024$ ) were significantly associated with enrolling in Gateway Writing in the individual analyses. Males and White students were each 1.8 times more likely to enroll. The full model was found to be statistically significant from the null (constant only) model at the  $p < .01$  ( $X^2 = 13.763$ ,  $df = 6$ ,  $p = .032$ ; model fit = 4.036,  $p = .776$ ), indicating that the model was able to distinguish between students who enrolled and did not enroll in Gateway Writing. The model as a whole explained 6% of the variance in enrolling in a Gateway Writing course, and correctly classified 59% of cases, 5% more than classifying by chance. The strongest predictor of enrolling in a Gateway Writing class was Race, recording an odds ratio of .5. The confidence interval did not contain the value of 1, indicating that White students were 2 times more likely to enroll in Gateway Writing, controlling for other factors in the model (Table 4.16). In comparison with the full Logistic Regression model, Race continued to be an effective predictor variable from the independent analysis level.

Table 4.16

*Logistic Regression Interaction Predicting the Likelihood of Enrolling into a Gateway Writing Course*

	B	Wald	Sig.	Odds	95% C.I.	
				Ratio	Lower	Upper
Gender	-0.45	3.284	.070	.641	.396	1.037
Race	-0.69	5.975	.015	.501	.288	.872
Age	-0.95	1.107	.293	.386	.065	2.274
Low income	-0.32	1.422	.233	.724	.426	1.231
First_gen	-0.19	.244	.621	.829	.394	1.744
Constant	1.82	3.394	.065	6.178		

### **Associate's Degree**

In the individual effects analyses, race was the only statistically significant predictor for completing an Associate's Degree ( $p = .047$ ): White students were 2.0 times more likely to complete their degree. The full model found none of the predictors to be statistically significant from the null (constant only) model at the  $p < .01$  ( $X^2 = 5.10$ ,  $df = 6$ ,  $p = .53$ ; model fit = 3.64,  $p = .889$ ). All confidence intervals contained the value of 1 indicating equal probability of completing the Associate's Degree (Table 4.17).



Table 4.17

*Logistic Regression Interaction Predicting Likelihood of Completing an Associate's Degree*

	B	Wald	Sig.	Odds Ratio	95% C.I.	
					Lower	Upper
Gender	-0.03	.010	.922	.969	.514	1.828
Race	0.78	3.767	.052	2.173	.992	4.756
Age	0.24	.045	.833	1.270	.138	11.708
Low income	0.06	.024	.876	1.056	.531	2.100
First gen	-0.09	.027	.870	.918	.327	2.577
Constant	-2.52	4.025	.045	.080		

### Transfer Ready

In the individual analyses, Gender was the only significant predictor of Transfer Ready Status, ( $p = .047$ , indicating that males were 2.4 times more likely to complete Transfer Ready status. The full model was found to be statistically significant from the null (constant only) model at the  $p < .01$  ( $X^2 = 13.10$ ,  $df = 6$ ,  $p = .04$ ; model fit = 7.51,  $p = .48$ ), indicating that the model was able to distinguish between students who obtained and did not obtain Transfer Ready status. The model as a whole explained 21% of the variance in completing Transfer Ready status, and correctly classified 65% of cases; this was 10% more than classifying by chance. The strongest predictor of completing Transfer Ready status was Race ( $p = .026$ ). White

students were 4.8 times more likely to obtain Transfer Ready status, controlling for other factors in the model (Table 4.18).

Table 4.18

*Logistic Regression Interaction Predicting the Likelihood of Completing Transfer Ready Status*

	B	Wald	Sig	Odds Ratio	95% C.I.	
					Lower	Upper
Gender	0.91	2.823	.093	2.475	.860	7.123
Race	-1.57	4.974	.026	.209	.053	.827
Age	-.61	.151	.697	.541	.025	11.892
Low income	-1.22	3.279	.070	.294	.078	1.106
First gen	-0.84	1.867	.172	.430	.128	1.442
Constant	1.07	1.474	.225	2.918		

## **CHAPTER FIVE**

### **DISCUSSION**

The intent of this study was to examine secondary data over a six-year period to ascertain if enrollment into a student success course could contribute to subsequent enrollment and completion of momentum points and milestones for students at a community college, and to examine other factors which influence enrollment completion. Although enrollment in community colleges has increased, completion rates continue to be low, generally less than 12% in three years, compared to 58% in six years for four-year college students (The College Board, 2013).

#### **Success Course Enrollment and Developmental Placement**

This study emerged from local and national concern about one possible cause of this low rate in the open-admission environment of community colleges – a number of students are underprepared, necessitating additional time taking developmental courses. Recent studies estimate 58% to 63% of entering community college students take at least one developmental course (Adelman, 2005; Attewell, Bailey, 2009; Collins, 2009; Domina & Levey, 2006; Lavin, CCSSE, 2007; NCEE, 2013). At the community college studied here, 40.6% of the students placed into one of the three developmental levels on the Accuplacer exam, although English as a Second Language students were not included since they took a different exam and had a different remediation path.

In spite of this evident need, only 25% of the students testing at one of the three developmental levels actually enrolled in the Success course. Furthermore, the students who would appear to have needed the course the most were not the ones who enrolled. No support was found for the first research question, “Were students more likely to enroll in any success course (1 or 3 credit) if they placed at the lower reading level?” It was anticipated that the lowest enrollments for the success course would be among the students placing at Level 3 (20.7%), but the percentage for students placing at Level 1 was also low (28.8%). These enrollments are a concern, as students entering with developmental needs face more academic challenges. Academic advisors were given the liberty to decide when to recommend a student to the success course. This decision was usually based on the number of developmental courses or level of developmental courses a student placed into, and the limited sections available for enrollment. It is possible that students placing at Level 1 were advised to enroll in the course, yet the enrollment numbers could have been affected by the limited number of available success courses in the fall semester. Further, prior educational experiences may have affected a student’s decision to enroll in a student success course. Negative perceptions of ‘extra help classes’ and lack of knowledge of the benefits of the student success course may have affected the student’s choice to enroll in the success course (Kue, 2010).

## **Success Course and Subsequent Enrollment, Momentum Points and Milestones**

To evaluate Question Two, Chi Square analyses examined the relationship between success course enrollment and subsequent enrollment, momentum points and milestones. For 2<sup>nd</sup> and 4<sup>th</sup> semester enrollments, results were mixed; there was no significant impact for the overall sample of students taking the success course, but statistically significant associations were found between the 3-credit success course and second semester enrollment and between the 1-credit success course and fourth semester enrollment. Overall, students who did not enroll in the success course were 10% less likely to continue to enroll into the second and fourth semester.

On the other hand, results were more positive for momentum points, enrollment in specific courses which are required in succession for students placing in the developmental writing levels. Results showed a statistically significant positive association between the success course, in either version, and enrollment in both the Developmental writing course and the Gateway writing course. Students who enrolled in a success course were 12% and 10%, respectively, more likely to enroll in a required writing course.

Results were also mixed for the milestones of completing an Associate's degree or Transfer Ready status (24+ transferable credits). Students were significantly more likely to complete their Associate's degree within six years if they had enrolled in either of the success courses, a difference of 6%. Although comparisons for transfer-ready status were not statistically significant, the general pattern of students enrolled in the success course being more likely to complete a milestone was observed. Overall,

students who did not enroll in a success course were 15% and 6% less likely to complete the Associate's degree and/or Transfer Ready status, respectively.

The findings for fourth-semester enrollments and transfer ready status raise concerns voiced by Calcagno and Long (2007), who questioned the long-term effect of success courses and the continued reports of low retention and completion rates for community college students. At the same time, enrollment in momentum point: writing courses, and completion of the milestone: associate's degree were significantly greater for students who had taken the success course, and indeed almost all of the individual and full-sample analyses indicated a higher percentage of persistence for students who had taken the success course.

As noted earlier, the College Board (2013) estimates that only 12% of community college students are still enrolled three years later, although many do eventually complete their objectives. Overall, from semester to semester and momentum points to milestones, enrollment declines were substantial for the already at-risk students in the present study. However, even small improvements can be instructive: of the students enrolled in a success course, 15% completed an Associate's degree and 28% made it to transfer-ready status. In comparison, of the students who did not enroll in a success course, 9% reached the Associate's milestone, while 22% reached transfer ready status, a gap of 6% in favor of the students who had taken the course.

This observation heightens the urgency of interventions to improve retention. If we focus only on degree completion, this college is achieving about half the rate indicated in the national survey by NCEE (2013), whose results showed over 70% of

students who enroll in remedial programs fail to earn a degree or certificate. However, NCEE included students who completed certificates, which involve fewer credits and are more focused on work-related skills (and may be funded by employers), and the institution studied here had too few students enrolled in a certificate program to analyze. Thus one would expect a smaller number than NCEE. If we include all students achieving either transfer-ready status or an associate's degree, the results of this study are in line with NCEE and Fike and Fike (2008), who found that students in developmental programs who enrolled in a success course achieved a 30% completion rate.

The findings are also consistent with similar research which has reported a positive impact of a student success course at the start of a student's career (Gampert & Jones, 2013). Impact studies utilizing a longitudinal format also show similar outcomes. The Community College Research Center reports among students who took remedial coursework, participation in the student success course was associated with a five percent increase in completion (USDOE, 2008), as did the Florida Department of Education (2006). Zeidenberg, Jenkins, and Calcagno (2007) showed that "students who enrolled in a "student life skills" course were eight percent more likely than their peers to earn a credential, holding all else constant." (p. 3).

### **Demographic Predictors of Student Success**

To evaluate the last question posed in this study, a series of logistic regression analyses were performed on students who had taken a success course to assess the

impact of demographic predictors on the completion of Momentum Points and Milestones. The predictors were selected from those described in the literature as potentially putting students at risk for non-completion: low income, first generation, a minority race/ethnicity, and to a lesser extent, being male and older.

Across all the outcome variables, being a member of an ethnic racial/minority group was associated with significantly lower persistence; White students were from two to almost five times more likely to continue enrollment and achieve milestones. The only exception was that first-generation students were more likely to enroll in the developmental writing course, which may have been the product of lower scores and more active advising for these students. The age category was not very different from the national average reported by Emery-Arras (2013) for students  $\leq 25$  and  $> 25$  (75:25), and age had no significant association with the outcome variables.

These results are consistent with the large discrepancies reported for completion rates among Whites, African Americans and Hispanics (CCRC, 2002; Derby & Watson, 2006; Kuh, et al., 2008; Mangan, 2013, 2014). The National Center for Education Statistics (2012) reported White men and women had higher completion rates (~25%), followed by Hispanic/Latino (~20%) and African Americans (~15%). Achieving the Dream (2008) reports that among a sample of over 250,000 predominantly underrepresented minority and low-income community college students, 59% of beginning students were referred to developmental courses. U.S. DOE's (2008) Transition Matters and the National Center on Education and the Economy (2013) show similar statistics. Bailey, Hughes and Smith's (2011) Complete College America reports that too many entering freshmen need remediation, and if



they are African-American, Hispanic, or a low-income student, they are more likely to require remediation (92.2%, 81.4% and 92.8%, respectively).

### **Theoretical Implications**

The research supporting the effectiveness of the success course suggests the incorporation of high impact activities that strengthen first-year adjustment (CCCSE, 2012; Cho & Karp, 2013; Glenn, 2011; Howard & Jones, 2000). Transition theories conclude that during the first year, at-risk students benefit from focused reflection on self, strategies, situations, and support (Cox, 2013; Cunningham, 2010). Furthermore, across several outcomes, the intensity of the success course – one vs. three credits of similar content – either resulted in the same outcomes or were not consistently different. This suggests that the content of the course, rather than the amount of time spent in delivery, is what matters most. Thus, a community college such as this one can feel comfortable offering more sections of the one-credit version, thereby reaching more students for the same amount of money, at a lower cost to the student in terms of time and money.

These results demonstrate the value of early intervention with students who begin in developmental courses, consistent with the data gathered from the Achieving the Dream colleges (2008) and other researchers (e.g., Pascarella, 1985). Their assumption was that the engagement of the student in the college environment that a success course created was positively related to the time and energy devoted to educationally purposeful activities. In this particular course, this may have been

achieved by incorporating Bridges, Cambridge, Kun, and Leegwater's (2005) *Seven Principles for Good Practice in Undergraduate Education*. Research has also strongly suggested applied engagement helps students increase not only their general abilities but also critical thinking (Astin, 1993; Pascarella & Terezini, 1991). Therefore, this study recommends an adjustment to the number of one-credit success courses available as a means to improve the persistence rate and subsequently improve the rates of program completion.

The third analysis demonstrated that any intervention is enmeshed in a number of personal considerations. For example, psychological, inter-relationship, pre-enrollment characteristics, and cultural perspectives influence adjustment and engagement behaviors, and have respective importance to the retention of the first year student. Students who completed graduation or transfer outcomes were significantly more likely to be White and 1<sup>st</sup> generation. The challenges to college success for minority students and students from families without a history of college education are well documented. The Maryland Higher Education Student Persistence Program (2012) results showed that while African Americans, Hispanic and first-generation college students reap greater academic gains from various effective 'high touch' practices, they were less likely than their White counterparts to take advantage of the services (Kue, 2010; Kuh, 2008). These results subsequently, support the position that mandatory participation in student success courses is highly recommended as posited by Scrivener and Coghlan (2011) and O'Gara, Karp and Hughes (2009). Future versions of the success course should be conducted with sensitivity to these challenges and barriers, and adopt content to help students overcome them.

The present findings support the success course as an important factor associated with persistence among the developmental reading student. The unique variety of students who are drawn to and served by community colleges, result in a greater proportion of students enrolling with at-risk factors (Mullin, 2012a). Data from the National Student Clearinghouse Research Center also show that characteristics of at-risk students: developmental placement, employed more than 20 hours, parents, and part-time attendees were the least likely to graduate within six years (Adelman, 2005; Calcagno, Crosta, Bailey & Jenkins, 2007; Mangan, 2013a). Research, from 2007 to the current day, has demonstrated that the positive effect of enrolling in a student success course for these students is large and statistically significant. This optimism must be tempered, however, by the reality that ethnic and racial minorities continue to lag behind their White peers, and much more needs to be done to see their success rates catch up.

### **Limitations**

The study employed categorical, historical samplings of students in a 2-year community college in a Northeastern state of the United States. This led to several limitations of the methodology applied. Strong statistical support for the research questions was hampered by a large disparity in sample sizes between the two groups and the chi square analyses, which in general suffer from low power and consequently smaller effect sizes. Potential faults could occur by the selection bias of pre-existing differences, by having unequal sample sizes and mortality bias. Late registration by

students may cause them to withdraw early in the semester due to the inability to secure funding, child care, and incompatibility with work schedules. For example, full time and part time enrollment patterns shift frequently with the community college student population making it difficult to assess the effect on momentum points and milestones. Thus, mortality is a reality in this context as students' swirl, dropping out, to return at a later date. One way to address the sample concern would be to work proactively to track students starting in their first year, and collect the additional data through surveys at multiple time points.

There was no control for the involvement of the instructors or the focus on course content; therefore, a proactive study which also assessed course content would be useful. Although the number of students over 25 years old was relatively small, it is important to acknowledge the differences between the maturation process of traditional-age students and returning adults (Swing, 2004). Additional covariates would include parental education, cultural views, self-esteem, motivation, decision making and critical thinking skills.

As a result of employing a non-random assignment, causality is inferred but cannot be demonstrated and the generalizability of the findings to other institutions is also questionable. Unlike studies using causal path models (Napoli & Wortman, 1988) that employed multi-institutional samples, the present study was conducted using a single urban-suburban community college sample, thus limiting generalization. Course availability is another essential part of the equation, as only 13% of the incoming class in this study were able to enroll in a success course. An awareness of the importance of academic preparedness is understood to be a pre-requisite for

retention, and data shows 60-90% of newly enrolled community college students are at risk. It would be expected that colleges would provide an environment to meet the needs of at-risk students for 'retention related knowledge' in their first semester.

### **Implications**

Student development theory is concerned with the psychosocial, cognitive, environmental, humanistic aspects of development, and research on community college students continues to support the importance of addressing each area. The implications from the findings of this study will contribute to the direction needed to address the importance of providing an institutional structure based on data and derived from theory that will support retention and completion goals. The potential impact is enormous for the economic wellbeing of students, their families and the community, even with a small percentage increase in completion rates. Community college administrators recognize the significance of connecting the students to the support services at a college community, yet the challenges to becoming actively involved as learners are especially pronounced for minority students, older students, vocationally oriented student, and academically challenged students. Given the importance of time to degree completion for this population, implementing an effective strategy will require a greater emphasis on institutional efforts that creates connections within the classroom where positive relationships can be nurtured and high impact activities can be planned into the curriculum (Barefoot, 2006; Beatty-Guenter, 1994; Focus, 2006).

Lastly, individual student characteristics must be given individual attention in the student success course. It has been demonstrated that each individual characteristic comes with multiple risk factors, many of which could be addressed in the context of a success course. The interaction of these factors with retention are as diverse as the variance within any group of students. Research indicates that support is essential for minorities, 1<sup>st</sup> generation, females, and low income students (Cross, 1981; Gonzalez, 2012; Kuh, et al., 2006). Institutions can increase the college experience that builds strong personal connections on the campus by creating a learning community within the classroom. Research shows this can be done by implementing practices that benefit all students, such as: holding students to high expectations, having instructors who are committed to their achievement, and intensely engaging students in the academic experience of high touch activities which have been identified as related to persistence, both in and out of the classroom. The imperative cannot be understated that as a nation, we need to increase supportive resources in the form of a student success course.

Future analysis should also consider assessing the correlation of mediating variables, the latent constructs of biographical and demographical data such as family structure, and high school grades. Alternative statistical analyses could include event history modeling or a counterfactual model. Event history modeling is appropriate for a longitudinal study. As a single risk (yes-no) discrete time hazard model event history uses a person-period data set, in which the end goal or outcome is the event of focus. To address the selection bias of creating a control group for this study, the counterfactual model would be appropriate. Yielding a propensity score for sample and

control groups allows for the construction of nearly identical background characteristics. Also the use of time-invariant variables which remain consistent while giving different values to time-varying variables, such as time of registration and the accumulation of credits, would focus attention on the overlaps between a student's experiences and those coincident in historical time providing an additional level of analysis. Such logistic regression models predict the probability of each student enrolling in a success course and its impact on enrollment and completing academic goals.

Finally, additional analysis should be conducted with the course content to focus on what types of curricular work is best for different types of students. A multi-level model could evaluate separate campuses, classrooms, or instructors. Research has shown that low income and first generation students have positive experiences when social integration enhances self-efficacy or assignments result in mastery of the college experience. These factors have been assessed to be more effective with the student population identified in this study. Early intervention activity in the success course would proactively identify students who are likely to struggle and match them with college supports they need to be successful.

### **Conclusions and Future Directions**

Even given the many challenges, the success course was a significant factor associated with meeting several of the momentum points and milestones. Although not all the comparisons were statistically significant, for each outcome

variable, the students who had enrolled in the success course were 6-15% more likely to be achieving those goals. Any consistent improvement in student retention is worth exploring in greater depth, to enhance the effectiveness of the success course at this institution. Indeed, a 6% increase in number of students completing either their Associate's or transfer-ready status translates to 154 additional citizens being more fully prepared to contribute to the workforce.

This study is only the beginning of research on the retention of community college students in developmental reading and student success course enrollment. Future research will need to further examine the differences as aggregated groups to compare student success with a longitudinal lens. Failure to recognize the socio-economic impact of ignoring the factors associated with retention and degree completion will be detrimental to the success of our students, their potential, our community and our nation. The next steps should include analysis of semester GPAs, number of credits per semester, and high school transcripts. Implementing qualitative pre-post surveys will facilitate our understanding of students' identity development (Chickering & Reisser, 1993) during their college experience and allow targeted activities to meet the needs of traditional and nontraditional students. Institutional changes should include redesigning instructional methods to shorten time to degree. With a focus on academic and non-academic experiences that benefit all students, institutional policies can mandate success course enrollment.

Predictive analytics of early intervention data would allow institutions to better understand the likelihood of success for developmental reading students. For the many students who aspire to complete a milestone, early support, guidance and resources



that provide a more positive experience will increase the likelihood that they will remain in college. The first semester of the community college experience is a pivotal point in the student's academic career and should provide the wrap around support of a success course. This closer look at the type of instruction in the success course, and the student use of academic supports might provide valuable insight (Bailey, 2009; McClenny & Marti, 2006; Nelson, 2011; Perin, 2013). The answer rests in the question, "How can we reshape our students' experiences in the one place where ... 'all of them' ... will be while they are on campus: in the classroom"? (p. 3) (Tinto, 2007).

## Appendix A

### Sample of Student Success Course Curriculum

Appendix A. All sections of the course must include Chapters 1-9 in On Course\* as well as the topics listed below.

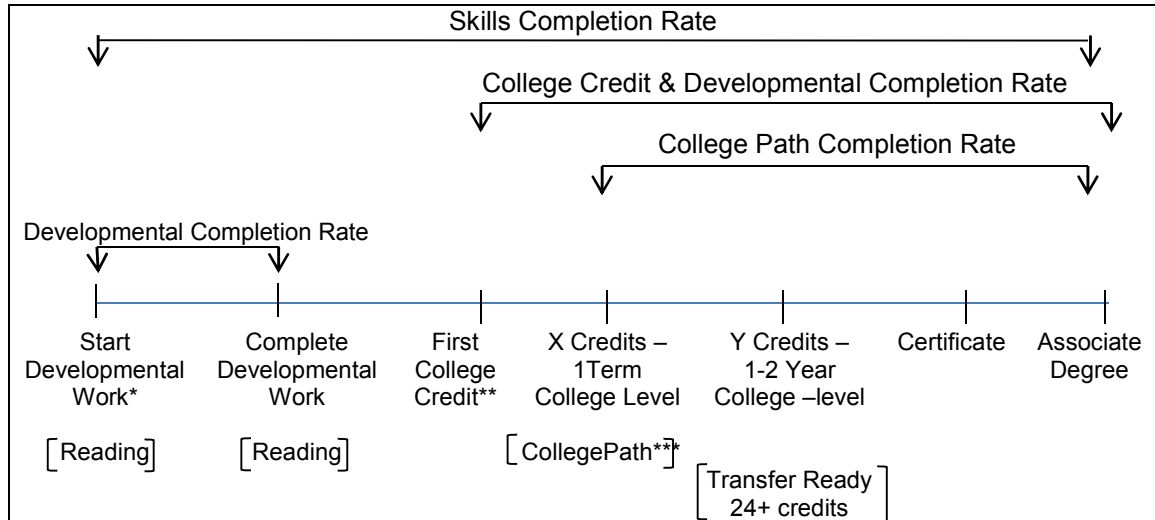
- Identify reasons for enrolling in the Seminar on Student Success course.
- Describe the results of the LASSI (Learning and Study Skills Inventory) and explain various study skills strategies.
- Evaluate the responses of the learning style and LASSI inventories and develop a personal learning strategies plan.
- Describe the difference between intrinsic and extrinsic motivation and list examples of both.
- Identify components of short and long-term goal setting (based on values, interest structure, personality and skill assessments); develop educational plan for upcoming semester.
- Develop Student Success Plan including course materials per directions of instructor.
- Identify several aspects of college academic policies and schedules such as: the Add/Drop period; withdrawal deadlines; grading policies; registration dates; student rights and responsibilities, computer access and responsibilities, etc.
- Participate in a group project that composes a presentation on learning strategies (or topics assigned by instructor).
- Log on to the campus college system and participate in an online discussion group and registration.
- Develop the ability to recognize and use specific interpersonal, communication and listening skills through group collaboration and public speaking assignments.
- Write journal entries that discriminate the difference between your previous educational experiences and college and assess the development of personal, career and academic goals.
- Complete a library assignment using HELIN or other identified Library resources.
- Identify the roles and locations of: the Success Centers; the Academic Department related to your major, the Library, Campus Security, the Enrollment Services Office, Advising & Counseling Center, Bursars Office, Co-Operative Education Program, Career Center, Computer Labs, Writing Center, Math Labs, College Bookstore, among others.
- Interview an instructor or staff person and present a brief report of the meeting.
- Through written work and classroom assignments, demonstrate your awareness of the importance of career goal setting and identify relevant campus resources.
- List various student clubs and organizations and describe those you would consider joining.
- Attend one campus-sponsored event OR one campus-sponsored workshop and provide proof of attendance by means of a brochure, playbill, certificate of attendance, etc.

Reproduced from the Community College Success Center website.

\*S. Downing (2013) On Course: Strategies for Success in College and in Life. 7th Edition. Wadsworth/Cengage Learning.

## Appendix B.

### Momentum Points and Milestone Pathway Over Six Years



Adapted from K. M. McClenney and C. N. Marti (2006)

\*Often students planning to transfer to programs like Talent Development (a TRIO 4 year student support program) may choose not to take developmental courses to minimize transfer time.

\*\*Students testing into developmental courses may also take college level classes.

\*\*\* This category represents the first semester student completed developmental reading courses.

## Bibliography

Achieving the Dream. (2007). *CCLP 25 Steps to Effective Developmental Education*.

Retrieved 3/4/16 from <http://www.achievingthedream.org/resource/12819/25-steps-to-effective-developmental-education>

Achieving the Dream (2008). *Promising instructional reforms in Developmental*

*Education: A case study of three achieving the dream colleges*. Retrieved 3/4/16 from <http://www.achievingthedream.org/resource/173/promising-instructional-reforms-in-developmental-education-a-case-study-of-three-achieving-the-dream-colleges>

Adelman, C. (2005). *Moving into town - and moving on: The community college in the lives of traditional-age students*. Washington, DC: U.S. Department of Education.

Retrieved 2/22/16 from <http://www2.ed.gov/rschstat/research/pubs/comcollege/index.html>

Agresti, A., & Finlay, B. (2009). *Statistical methods for the social sciences* (4th ed.).

Upper Saddle River, NJ: Pearson Prentice Hall.

Allen Kamimura, M. (2010). *Multiracial college students: Understanding*

*interpersonal self-concept in the first year*. (Unpublished Doctor of Philosophy).

The University of Michigan, Retrieved 2/22/16

[http://gateway.proquest.com/openurl?url\\_ver=Z39.88-](http://gateway.proquest.com/openurl?url_ver=Z39.88-)

2004&res\_dat=xri:pqdiss&rft\_val\_fmt=info:ofi/fmt:kev:mtx:dissertation&rft\_dat=xri:pqdiss:3429254

Anderson, M. L., Goodman, J., & Schlossberg, N. K. (2012). *Counseling adults in transition: Linking schlossberg's theory with practice in a diverse world*. 4<sup>th</sup> Edition, New York, NY, Springer Publishing Co.

Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.

Astin, A. W. (1999). Student involvement: A developmental theory for higher education. [Originally published in 1984] *Journal of College Student Development*, 40(5), 519-529. Retrieved 2/22/16 from [http://www.ydae.purdue.edu/lct/hbcu/documents/Student\\_Involvement\\_A\\_Developmental\\_Theory\\_for\\_HE\\_Astin.pdf](http://www.ydae.purdue.edu/lct/hbcu/documents/Student_Involvement_A_Developmental_Theory_for_HE_Astin.pdf)

Attewell, P., Lavin, D., Domina, T., & Levey, T. (2006). New evidence on college remediation. *The Journal of Higher Education*, 77(5), 886-942. Retrieved 2/22/16 from <http://www.completecollege.org/docs/CCA-Remediation-summary.pdf>

Bailey, T. (2009). Challenge and opportunity: Rethinking the role and function of developmental education in community college. In *New directions for community colleges* (145th ed., pp. 11-30). New York, NY: Wiley Periodicals, Inc. Retrieved 2/22/16 [http://www.sjsu.edu/advising/docs/Bailey\\_2009.pdf](http://www.sjsu.edu/advising/docs/Bailey_2009.pdf)

- Bailey, T., Hughes, K., & Smith, S. (2012). *Remediation: Higher education's bridge to nowhere*. Washington, DC: Complete College America. Retrieved 2/22/16 from <http://www.completecollege.org/docs/CCA-Remediation-summary.pdf>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.
- Banta, T. W., & Kuh, G. D. (1998). A missing link in assessment: Collaboration between academic and student affairs professionals. *Change, March/April*, 40-46, Retrieved 3/4/16 from [https://www.researchgate.net/publication/240539146\\_A\\_Missing\\_Link\\_in\\_Assessment\\_Collaboration\\_Between\\_Academic\\_and\\_Student\\_Affairs\\_Professionals](https://www.researchgate.net/publication/240539146_A_Missing_Link_in_Assessment_Collaboration_Between_Academic_and_Student_Affairs_Professionals)
- Barefoot, B. (2004). Foundations of excellence: A new model for first-year assessment. *Assessment Update*, 16(2), 5-7. Retrieved 2/22/16 from <http://eric.ed.gov/?id=EJ790721>
- Bashford, J. (2008). Using student tracking data from an institutional perspective. *New Directions for Community Colleges*, 31-36. Retrieved 2/22/16 from [doi:10.1002/cc.333](https://doi.org/10.1002/cc.333)
- Bean, J., & Metzner, B. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research*, 55(4), 485-540. Retrieved 2/22/16 from <http://eric.ed.gov/?id=EJ330749>
- Bean, J. P. (1986). *Assessing and reducing attrition*. San Francisco: Jossey-Bass.

Bean, J. P., & Eaton, S. B. (2000). A psychological model of student retention. In J. M. Braxton (Ed.), *Reworking the Student Departure Puzzle* (pp. 48-61). Nashville, TN: Vanderbilt University Press.

Beatty-Guenter, P. (1994). Sorting, supporting, connecting, and transforming: Retention strategies at community colleges. *Community College Journal of Research and Practice*, 18, 113-129. Retrieved 2/22/16 from <http://eric.ed.gov/?id=EJ479903>

Belcheir, M. J. (1997). *An evaluation of the early impacts of the cluster program and first year experience seminar on new freshmen*. (Research Report 97-02, March). Idaho: Boise State Univ. Retrieved 2/22/16 from <http://files.eric.ed.gov/fulltext/ED409769.pdf>

Berger, K. (Ed.). (2014). *The developing person through the life span* (9th ed.). New York, NY: Worth Publishers.

Berkner, L., & Choy, S. (2008). *Descriptive summary of 2003–04 beginning postsecondary students: Three years later* (NCES 2008-174). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC Retrieved 2/22/16 from <http://nces.ed.gov/pubs2008/2008174.pdf>

- Bers, T. H. (2008). Conclusion and the future. *New Directions for Community Colleges*, 93-95. Wiley Periodicals, Inc. Retrieved 2/22/16 from doi:10.1002/cc339
- Braxton, J. M. (2000). *Reworking the student departure puzzle*. Nashville, T.N.: Vanderbilt University Press.
- Braxton, J. M., Hirschy, A. S., & McClendon, S. A. (2004). *Understanding and reducing college student departure*. (ASHE-ERIC Higher Education Report No. 30.3). San Francisco: Jossey-Bass. Retrieved 2/22/16 from <http://eric.ed.gov/?id=ED501184>
- Bridges, B., K., Cambridge, B., Kuh, G. D., & Leegwater, L. H. (2005). Student engagement at minority-serving institutions: Emerging lessons from the BEAMS project. *New directions for institutional research* (125<sup>th</sup> ed.) 25-43 Wiley Periodicals, Inc. Retrieved 2/22/16 from <http://eric.ed.gov/?id=EJ760575>
- Bryk, A., & Toch, T. (2012). Essay on reforming remedial education at community colleges. *Inside Higher Ed*, 2013(5/1), 06/14/2013. Retrieved 2/22/16 from <https://www.insidehighered.com/views/2012/05/01/essay-reforming-remedial-education-community-colleges>
- Calcagno, J. C., Crosta, P., & Bailey, T. & Jenkins, D. (2007). Stepping stones to a degree: The impact of enrollment pathways and milestones on community college



student outcomes. *Research in Higher Education*, 48(7), 775-801. Retrieved 2/22/16 from doi:10.1007/s11162-007-9053-8

Calcagno, J. C., & Long, B. T. (2008). *The impact of postsecondary remediation using a regression discontinuity approach: Addressing endogenous sorting and noncompliance*. (NCPR Working Paper Series No. 14194). Cambridge, MA: National Bureau of Economic Research. Retrieved 2/22/16 from [http://www.ies.ed.gov/director/conferences/08ies\\_conference/pdf/calcagno\\_long.pdf](http://www.ies.ed.gov/director/conferences/08ies_conference/pdf/calcagno_long.pdf)

Campbell, D. (2006). Keeping them in college. *National CROSSTALK: A Publication of the National Center for Public Policy and Higher Education*, 2013(1/15). Retrieved 2/22/16 from <http://www.highereducation.org/crosstalk/ct0406/front.shtml>

Carlson, S. (2014). A caring professor may be key in how a graduate thrives. *The Chronicle of Higher Education*, May (6), 09/2014-5. Retrieved 2/22/16 from <http://chronicle.com/article/A-Caring-Professor-May-Be-Key/146409/>

Carnevale, A. P., Smith, N., & Strohl, J. (2010). *Help wanted: Projections of jobs and education requirements through 2018*. (Executive Summary, June). Washington, DC: Georgetown University Center on Education and the Workforce Retrieved 2/22/16 from <https://cew.georgetown.edu/report/help-wanted/>

- Carrol, R., Kersh, L., Sullivan, E., & Fincher, M. (2012). Developmental education in Arkansas: Practices, costs, and a model approach. *Community College Journal of Research and Practice*, 36, December 17, 2013-743-751. Retrieved 2/22/16 from doi:10.1080/10668920903178961
- Cavote, S., & Kopera-Frye, K. (2004). Subject-based first year experience courses: Questions about program effectiveness. *Journal of the First-Year Experience*, 12(2), 85-102. Retrieved 2/22/16 from [http://wolfweb.unr.edu/homepage/scavote/dissertation/JourOfFYE\\_Article\\_Fall\\_04.pdf](http://wolfweb.unr.edu/homepage/scavote/dissertation/JourOfFYE_Article_Fall_04.pdf)
- Cavote, S., & Kopera-Frye, K. (2006-2007). Non-traditional student persistence and first year experience courses. *College Student Retention*, 8(4), 477-489. Retrieved 2/22/16 from <http://eric.ed.gov/?id=EJ757075>
- Community College Survey of Student Engagement. (2007). *Committing to student engagement: Reflections on CCSSE's first five years*. Retrieved 2/22/16 from [https://www.ccsse.org/center/resources/docs/publications/2007\\_National\\_Report.pdf](https://www.ccsse.org/center/resources/docs/publications/2007_National_Report.pdf)
- Community College Survey of Student Engagement. (2012a). *National Report*. Retrieved 2/22/16 from [http://nsse.indiana.edu/NSSE\\_2012\\_Results/pdf/NSSE\\_2012\\_Annual\\_Results.pdf](http://nsse.indiana.edu/NSSE_2012_Results/pdf/NSSE_2012_Annual_Results.pdf)

Center for Community College Student Engagement. (2012b). *A matter of degrees: Promising practices for community college student success (A first look)*.

Retrieved 2/22/16 from [http://www.ccsse.org/docs/Matter\\_of\\_Degrees.pdf](http://www.ccsse.org/docs/Matter_of_Degrees.pdf)

Center for Community College Student Engagement. (2012c). *Why focus on student engagement?* Retrieved 2/22/16 from

[http://www.ccsse.org/center/about\\_cccse/focus.cfm](http://www.ccsse.org/center/about_cccse/focus.cfm)

Center for Community College Student Engagement. (2013a). *Understanding survey results: Key findings*. Retrieved 2/22/16 from

[http://www.sfcc.edu/ccsse/understanding\\_survey\\_results](http://www.sfcc.edu/ccsse/understanding_survey_results)

Center for Community College Student Engagement. (2013b). *A matter of degrees: Engaging practices, engaging students (high-impact practices for community college student engagement)*. Austin, TX: The University of Texas at Austin,

Community College Leadership Program. Retrieved 2/22/16 from

[http://www.ccsse.org/docs/Matter\\_of\\_Degrees\\_2.pdf](http://www.ccsse.org/docs/Matter_of_Degrees_2.pdf)

Center for Community College Student Engagement (2014). *Aspirations to achievement: Men of color and community colleges (A special report from the center for community college student engagement)*. Retrieved 2/22/16 from

[http://www.ccsse.org/docs/MoC\\_Special\\_Report.pdf](http://www.ccsse.org/docs/MoC_Special_Report.pdf)

Chickering, A. W., & Reisser, L. (1993). *Education and identity* (2nd ed.). San Francisco: Jossey-Bass.

Choy, S. (2001). *Students whose parents did not go to college: Postsecondary access, persistence, and attainment*. (No. 126). Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved 2/22/16 from <http://nces.ed.gov/pubs2001/2001126.pdf>

Cho, S., & Karp, M. (2013). Student success courses in the community college: Early enrollment and educational outcomes. *Community College Review*, 41(1), 86-103. Retrieved 3/4/16 from [https://www.researchgate.net/publication/258131031\\_Student\\_Success\\_Courses\\_in\\_the\\_Community\\_College](https://www.researchgate.net/publication/258131031_Student_Success_Courses_in_the_Community_College).

Community College Times Staff. (2012). *A clearer picture of student success*. Washington, D. C.: American Association of Community Colleges. Retrieved 2/22/16 from <http://www.ccdaily.com/Pages/Campus-Issues/A-clearer-picture-of-student-success.aspx>

Cook, L. (2016). *How Georgia State University plans to use predictive analytics to address the national achievement gap*. Retrieved 3/4/16 from <http://www.academicimpressions.com/news/how-georgia-state-university-plans-use-predictive-analytics-address-national-achievement-gap>

Corradetti, A., Cuomo, M., Fichera, V., & Madera, S. (2013). The freshman academies assessment protocol: A reflective tool for student success. *peerReview*, 15(2), 23-24. Retrieved 2/22/16 from <https://www.aacu.org/publications->

research/periodicals/freshman-academies-assessment-protocol-reflective-tool-student

Cortez, L. J. (2011, September 23). A road map to their future: What Latino students need to graduate. *The Chronicle of Higher Education*, pp. 1-8. Retrieved 2/22/16 from <http://chronicle.com/article/A-Road-Map-to-Their-Future-/129091/>

Cox, J. A. (2013, December). Teaching coping skills to first-year college students on academic probation. *Academic Advising Today*, 36(4), 02/12/2014. Retrieved 2/22/16 from <https://www.nacada.ksu.edu/Resources/Academic-Advising-Today/View-Articles/Teaching-Coping-Skills-to-First-Year-College-Students-on-Academic-Probation.aspx>

Cross, K. P. (1981). *Adults as learners: Increasing participation and facilitating learning*. San Francisco: Jossey-Bass.

Cumming, G. (2012). *Understanding the new statistics: Effect sizes, confidence intervals, and meta-analysis*. New York: Routledge.

Cunningham, A. (2010). *Factors associated with the persistence of students receiving learning support in a two-year college*. (Unpublished Doctor of Education). University of Georgia, Athens, Georgia. Retrieved 2/22/16 from [https://getd.libs.uga.edu/pdfs/cunningham\\_alfonza\\_201012\\_edd/cunningham\\_alfonza\\_201012\\_edd.pdf](https://getd.libs.uga.edu/pdfs/cunningham_alfonza_201012_edd/cunningham_alfonza_201012_edd.pdf)

- Dartmouth College. (2014). *Student development theory: The basics*. Retrieved 3/12/15 from [http://www.dartmouth.edu/stulife/greek-soc/docs/student\\_development\\_theory.pdf](http://www.dartmouth.edu/stulife/greek-soc/docs/student_development_theory.pdf)
- Derby, D. C., & Watson, L. W. (2006-2007). African-American retention within a community college: Differences in orientation course enrollment. *Journal of College Student Retention*, 8(3), 377-390. Retrieved 2/22/16 from <http://eric.ed.gov/?id=EJ757069>
- DeRemer, M. A. (2002). *The adult student attrition process (ASADP) model* (Doctor of Philosophy University of Texas at Austin. Retrieved 2/22/16 from <http://www.lib.utexas.edu/etd/d/2002/deremerma029/deremerma029.pdf>
- DiSalio, P. (2014). New Directions for Higher Education: Q&A with Ed Dept's Study on College Ratings, Feds. *The New England Journal of Higher Education*. Retrieved 2/22/16 from <http://www.nebhe.org/thejournal/new-directions-for-higher-education-qa-with-jamienne-studley-of-the-u-s-department-of-education/>
- Dolinsky, B., Matthews, R. S., Greenfield, G. M., Curtis-Tweed, P., & Evenbeck, S. E. (2007). Assessment is essential for implementing successful first-year experience programs. *Assessment Update*, 19(6), 9-11. Retrieved 3/4/16 from <http://onlinelibrary.wiley.com/doi/10.1002/au.196/abstract>
- Downing, S. (2014). *On course: Strategies for creating success in college and in life* (7th ed.). Boston, MA: Wadsworth.

Driscoll, A. K. (2007). *Beyond access: How the first semester matters for community college students' aspirations and persistence* (California Education Policy Brief 07-2 ed.). University of California, Stanford University. Retrieved 2/22/16 from <http://eric.ed.gov/?id=ED498154>

Education Commission of the States: ECS (1988). *Fostering student retention and success at the community college*. Policy Paper. Denver Colorado. Retrieved 2/23/16 from [http://programs.honolulu.hawaii.edu/intranet/sites/programs.honolulu.hawaii.edu.intranet/files/RRC-2265-Fostering%20Success\\_0.pdf](http://programs.honolulu.hawaii.edu/intranet/sites/programs.honolulu.hawaii.edu.intranet/files/RRC-2265-Fostering%20Success_0.pdf)

Emrey-Arras, M. (2013). *Community colleges: New federal research center may enhance current understanding of developmental education*. (GAO-13-656). Washington, D.C.: United States Government Accountability Office. Retrieved 2/22/16 from <http://www.gao.gov/products/GAO-13-656>

Engle, J., Bermeo, A., & O'Brien, C. (2006). *Straight from the source: What works for first-generation college students*. (December). Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education. Retrieved 2/22/16 from [http://www.tgslc.org/pdf/files-sfts\\_what\\_works.pdf](http://www.tgslc.org/pdf/files-sfts_what_works.pdf)

Engle, J., & Tinto, V. (2008). *Moving beyond access: College success for low-income, first-generation students*. Washington, DC: The Pell institute. Retrieved 2/22/16 from <http://files.eric.ed.gov/fulltext/ED504448.pdf>

- Escobedo, G. (2007). A retention/persistence intervention model: Improving success across cultures. *Journal of Developmental Education*, 31(1), 12-37. Retrieved 2/22/16 from <http://search.proquest.com/openview/b1cab3caba7603178b67e1e183a46f07/1?pq-origsite=gscholar>
- Ewell, P., & Jenkins, D. (2008). Using state student unit record data to increase community college success. *New Directions for Community Colleges*, 143, 71-81). Retrieved 2/22/16 from <http://onlinelibrary.wiley.com/doi/10.1002/cc.337/abstract>
- Fain, P. (2012). *Student success courses catch on, slowly, at community colleges. Inside Higher Ed*. Retrieved 2/22/16 from <https://www.yc.edu/v5content/student-services/docs/successdocs/drtinto/CCSuccessCourses.pdf>
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). California, USA: Sage Publications, Inc.
- Fike, D. S., & Fike, R. (2008). Predictors of first-year student retention in the community college. *Community College Review*, 32(2), 68-88. Retrieved 2/22/16 from <http://crw.sagepub.com/content/36/2/68.short>
- Florida Department of Education. (2006). In Florida Community Colleges & Workforce Education: Putting Minds to Work (Ed.), *Taking student life skills*



*course increases academic success* (Data Trend #31 ed.) Retrieved 2/22/16 from <http://www.fldoe.org/core/fileparse.php/3/urlt/dt31.pdf>

Focus. (2006, Winter). *Barrier busters: Community colleges and their students embrace challenges* Lumina Foundation. Retrieved 2/22/16 from <http://www.worldcat.org/title/barrier-busters-community-colleges-and-their-students-embrace-challenges/oclc/69335867>

Focus. (Fall 2008). *Remediation redux: Colleges revisit developmental ed in a bid to boost student success*. Indianapolis, IN: Lumina Foundation for Education. Retrieved 2/22/16 from [https://folio.iupui.edu/bitstream/handle/10244/394/Focus\\_Fall\\_2008.pdf?sequence=1](https://folio.iupui.edu/bitstream/handle/10244/394/Focus_Fall_2008.pdf?sequence=1)

Fong, J., & Jarrat, D. (2013). *Measuring post-traditional student success: Institutions making progress, but challenges remain*. Washington, D.C.: UPCEA & Inside Track. Retrieved 2/22/16 from <http://www.insidetrack.com/wp-content/uploads/2014/10/post-traditional-student-success.pdf>

Gampert, R. D., & Jones, C. (2013). Mapping first-year engagement and educational success. *Peer Review*, 15(2), 8-9. Retrieved 2/23/16 from <http://www.aacu.org/publications-research/periodicals/mapping-first-year-engagement-and-educational-success>

- Gardner, J. N. (n.d.). *Foundations of Excellence: First Year Focus – Foundational Dimensions*. Retrieved 3/31/16 from <http://www.jngi.org/foe-program/foundational-dimensions/first-year-focus-two-year/>
- Glenn, D. (2011). An award-winning dissertation draws lessons from 9 community-college students who persisted in their studies. *The Chronicle of Higher Education*, April 15, 2011. Retrieved 2/23/16 from <http://chronicle.com/article/An-Award-Winning-Dissertation/127076/>
- Gonzalez, J. (2012). Multiyear study of community-college practices asks: What helps students graduate? *The Chronicle of Higher Education*, pp. 1-5. Retrieved 2/23/16 from <http://chronicle.com/article/Community-College-Study-Asks-/130606/>
- Gonzalez, J. (2012). Tribal colleges offer basic education to students 'not prepared for college'. *The Chronicle of Higher Education*, (8), February 18, 2013-5. Retrieved 2/23/16 from [http://chronicle.com/article/Tribal-Colleges-Offer-Basic/131457/.jobs\\_\\_topjobs-slider](http://chronicle.com/article/Tribal-Colleges-Offer-Basic/131457/.jobs__topjobs-slider)
- Grabinski, C. J. (2005). Environments for development. *New directions for adult and continuing education* (no. 108 ed., pp. 79-89) Wiley Periodicals, Inc. Retrieved 2/23/16 from <http://onlinelibrary.wiley.com>
- Grant, A. M., & Franklin, J. (2007). The transtheoretical model and study skills. *Behaviour Change*, 24(2), 99-113. Retrieved 2/23/16 from <http://journals.cambridge.org/action/displayAbstract?aid=8496537>

Gulf Coast Community College. (2011). *Community college retention and recruitment of "at-risk" students*. Panama City, FL. Retrieved 2/23/16 from [http://www.gulfcoast.edu/institutional\\_effectiveness/data\\_reports/research\\_papers/Community%20College%20Retention%20and%20Recruitment%20of%20At-Risk%20Students.pdf](http://www.gulfcoast.edu/institutional_effectiveness/data_reports/research_papers/Community%20College%20Retention%20and%20Recruitment%20of%20At-Risk%20Students.pdf)

Gupton, J. T., Castelo-Rodriguez, C., Martinez, D. A., & Quintanar, I. (2009). Creating a pipeline to engage low-income, first-generation college students. In D. R. Harper, & S. J. Quaye (Eds.), *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations* (pp. 243-260). New York, NY: Routledge.

Hagedorn, L. S. (2006). *How to define retention: A new look at an old problem*. (Research No. 1415). Los Angeles, California: Transfer and Retention of Urban Community College Students Project (TRUCCS). Retrieved 2/23/16 from [http://www.academia.edu/2737771/How\\_to\\_define\\_retention](http://www.academia.edu/2737771/How_to_define_retention)

Harlow, L. L. (2005). *The essence of multivariate thinking: Basic themes and methods*. NJ, USA: Lawrence Erlbaum Associates.

Harney, J. O. (2012). Developing story: A forum on improving remedial education. *New England Journal of Higher Education*, 1/30/2013. Retrieved 2/22/16 from <http://www.nebhe.org/thejournal/developing-story-a-forum-on-improving-remedial-education>

- Hayek, J. C., & Kuh, G. D. (2004). Principles for assessing student engagement in the first year of college. *Assessment Update: Progress, Trends, and Practices in Higher Education*, 16(2), 11-13. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ790726>
- Headden, S. (2009). 'Adult ed' grows UP. *Lumina Foundation Focus*, Fall, 3-21. Retrieved 2/23/16 from [https://www.luminafoundation.org/files/wp-content/uploads/2011/02/Focus\\_Fall\\_2009.pdf](https://www.luminafoundation.org/files/wp-content/uploads/2011/02/Focus_Fall_2009.pdf)
- Hendel, D. D. (2006-2007). Efficacy of participation in a first-year seminar on student satisfaction and retention. *Journal of College Student Retention*, 8(4), 413-423. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ757071>
- Horn, L. J., & Carroll, C. D. (1998). *Stopouts or stayouts? Undergraduates who leave college in their first year*. (Statistical Analysis Report, September). Washington, DC: National Center for Education Statistics. Retrieved 2/23/16 from <http://nces.ed.gov/pubs99/1999087.pdf>
- Hotchkiss, J. L., Moore, R. B., & Pitts, M. M. (2006). Freshman learning communities, college performance, and retention. *Education Economics*, 14(2), 197-210. Retrieved 2/23/16 from doi:10.1080/09645290600622947
- Howard, H., & Jones, W. (2000). Effectiveness of a freshman seminar in an urban university: Measurement of selected indicators. *College Student Journal*, 34, 509.

Retrieved 2/23/16 from <http://www.freepatentsonline.com/article/College-Student-Journal/69750047.html>

IBM (2014). Boosting community college retention with predictive analytics. White Paper. Retrieved 2/25/16 from <http://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=SA&subtype=WH&htmlfid=YTW03396USEN>

Jamelske, E. (2009). Measuring the impact of a university first-year experience program on student GPA and retention. *Higher Education*, 57, 373-391. doi:10.1007/s10734-008-9161-1 Retrieved 2/23/16 from [https://www.researchgate.net/publication/225327472\\_Measuring\\_the\\_impact\\_of\\_a\\_university\\_first-year\\_experience\\_program\\_on\\_student\\_GPA\\_and\\_retention](https://www.researchgate.net/publication/225327472_Measuring_the_impact_of_a_university_first-year_experience_program_on_student_GPA_and_retention)

Jenkins, D., Jaggars, S. S., Roksa, J., Zeidenberg, M., & Cho, S. W. (2009). *Strategies for promoting gatekeeper course success among students needing remediation: Research report for the Virginia community college system*. Teachers College, Columbia University, New York, NY: Community College Research Center. Retrieved 2/23/16 from <http://ccrc.tc.columbia.edu/media/k2/attachments/strategies-promoting-gatekeeper-course.pdf>

Karp, M. M. (2011). *Toward a new understanding of non-academic student support: Four mechanisms encouraging positive student outcomes in the community college*. (CCRC Working Paper No. 28). New York: Teacher's College, Columbia University. Retrieved 2/23/16 from <http://files.eric.ed.gov/fulltext/ED516148.pdf>

Karp, M., Bickerstaff, S., Rucks-Ahidiana, Z., Bork, R., Barragan, M., & Edgecombe, N. (2012). *College 101 courses for applied learning and student success*. (No. 49). Teachers College, Columbia University: Community College Research Center. Retrieved 2/23/16 from <http://files.eric.ed.gov/fulltext/ED536682.pdf>

Karp, M. M., & Bork, R. H. (2012). *"They never told me what to expect, so I didn't know what to do": Defining and clarifying the role of a community college student*. (CCRC Working Paper No. 47). New York: Teacher's College, Columbia University. Retrieved 2/23/16 from <http://files.eric.ed.gov/fulltext/ED535078.pdf>

Keenan, K., & Gabovitch, R. (1995). *Evaluating the impact of a freshman seminar program on student development and retention*. (Paper presented at the 22nd Annual Conference of the North East Association for Institutional Research,). South Carolina, 2-12. Retrieved 2/23/16 from <http://files.eric.ed.gov/fulltext/ED395614.pdf>

Keup, J. R. (2004). The cooperative institutional research program freshman survey and your first college year: Using longitudinal data to assess the first year of college. *Assessment Update: Progress, Trends, and Practices in Higher Education*, 16(2), May, 2012-16. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ790718>

Keup, J. R., & Barefoot, B. O. (2005). Learning how to be a successful student: Exploring the impact of first-year seminars on student outcomes. *Journal of the*

*First-Year Experience and Students in Transition*, 17(1), 11-47. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ795799>

Kingsley, E., Edmonson, S., & Slate, J. R. (2010). Community college persistence among minority students: A conceptual analysis of the literature. *The Connexions Project*, 1-13. Retrieved 2/23/16 from <http://www.ncpeapublications.org/index.php/volume-5-number-4-july-september-2010/329-community-college-persistence-among-minority-students-a-conceptual-analysis-of-the-literature>

Kinzie, J., & Kuh, G. D. (2004). Going deep: Learning from campuses that share responsibility for student success. *About Campus*, 2-8. Retrieved 2/23/16 from <http://nsse.indiana.edu/institute/documents/Kinzie%20&%20Kuh%20article.pdf>

Kue, M. O. X. (2010). *Predictors of college persistence: Learning strategies, use of campus services, and beliefs about intelligence*. (Unpublished Doctor of Philosophy in Psychology). University of Rhode Island Retrieved 2/23/16 from <http://digitalcommons.uri.edu/dissertations/AAI3415499/>

Kuh, G. D. (2003). What we're learning about student engagement from nsse: Benchmarks for effective educational practices. *Change*, (March/April), 25-32. Retrieved 2/23/16 from <http://cpr.indiana.edu/uploads/Kuh%20%282003%29%20What%20We're%20Learning%20About%20Student%20Engagement%20From%20NSSE.pdf>

- Kuh, G. D. (2005). 7 steps for taking student learning seriously. *Trusteeship AGB*, 13(3), 20-24. Retrieved 2/23/16 from <http://eric.ed.gov/?id=ED496448>
- Kuh, G. D. (2007). How to help students achieve. *Chronicle of Higher Education*, 53(41), 12-13. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ771702>
- Kuh, G. D. (2009). The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research*, (No. 141), 20. Retrieved 2/23/16 from [https://www.researchgate.net/publication/227735477\\_The\\_National\\_Survey\\_of\\_Student\\_Engagement\\_Conceptual\\_and\\_empirical\\_foundations\\_New\\_Directions\\_for\\_Institutional\\_Research\\_141\\_5-20](https://www.researchgate.net/publication/227735477_The_National_Survey_of_Student_Engagement_Conceptual_and_empirical_foundations_New_Directions_for_Institutional_Research_141_5-20)
- Kuh, G. D. (2011). *Promising practices in student engagement and retention*. Indiana University, Center for Postsecondary Research: Kent State University. Retrieved 2/23/16 from <http://www.kent.edu/sites/default/files/dr-george-kuh-powerpoint.pdf>
- Kuh, G. D., Kinzie, J., Buckley, J. A., Bridges, B., K., & Hayek, J. C. (2006). *What matters to student success: A review of the literature*. U.S. Department of Education, Washington, D.C.: National Postsecondary Education Cooperative. Retrieved 2/23/16 from [http://nces.ed.gov/npec/pdf/Kuh\\_Team\\_Report.pdf](http://nces.ed.gov/npec/pdf/Kuh_Team_Report.pdf)
- Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J., & Associates. (2005). Documenting effective educational practice (DEEP) project. *Student success in*



*college: Creating conditions that matter* (pp. 1-8). San Francisco: Jossey-Bass.

Retrieved 2/23/16 from <http://www.wiley.com/WileyCDA/WileyTitle/productCd-047059909X.html>

Kuh, G. D., Cruce, T. M., Shoup, R., & Kinzi, J. & Gonyea, R. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *The Journal of Higher Education*, 79(5), 540-563. Retrieved 2/23/16 from <http://www.yorku.ca/retentn/rdata/Unmaskingtheeffects.pdf>  
doi:10.1353/jhe.0.0019

Laird, T. F. N., Shoup, R., & Kuh, G. D. (2005). Measuring deep approaches to learning using the national survey of student engagement. *Annual Meeting of the Association for Institutional Research*, Chicago, IL. 1-28. Retrieved 2/23/16 from [http://nsse.indiana.edu/pdf/conference\\_presentations/2006/air2006deeplearningfinal.pdf](http://nsse.indiana.edu/pdf/conference_presentations/2006/air2006deeplearningfinal.pdf)

Langsam, D. M. (1994). Portfolios: A capstone activity for students in freshmen seminar. *Paper Presented at the Annual National Conference on the Freshman Year Experience*, Columbia, SC. 1-18. Retrieved 2/23/16 from <http://files.eric.ed.gov/fulltext/ED371702.pdf>

Leinbach, D. T., & Jenkins, D. (2008). Using longitudinal data to increase community college student success: A guide to measuring milestone and momentum point attainment. *Community College Research Center Research Tools*, 2, 1-24. Retrieved 2/23/16 from <http://files.eric.ed.gov/fulltext/ED499922.pdf>

Leong, F. T. L., & Austin, J. T. (Eds.). (2006). *The psychology research handbook: A guide for graduate students and research assistants* (2nd ed.). CA, USA: Sage Publications.

Lillibridge, F. (2008). Retention tracking using institutional data. *New Directions for Community Colleges*, (148), July, 2013-19-30. Retrieved 2/23/16 from <http://onlinelibrary.wiley.com/doi/10.1002/cc.332/abstract>

Lumina Foundation. (2005). In Bailey T. R., Alfonso M.(Eds.), *Paths to persistence: An analysis of research on program effectiveness at community colleges* (Education New Agenda Series, 6-1 ed.). Retrieved 2/23/16 from <http://files.eric.ed.gov/fulltext/ED484239.pdf>

Lumina Foundation. (2012). *A stronger nation through higher education*. Indianapolis, IN: Lumina Foundation for Education. Retrieved 2/23/16 from <http://strongernation.luminafoundation.org/report/>

Lumina Foundation. (March 2012). *How and why americans must achieve a big goal for college attainment*. Indianapolis, IN: Lumina Foundation for Education. Retrieved 2/23/16 from [https://www.luminafoundation.org/stronger\\_nation](https://www.luminafoundation.org/stronger_nation)

Mangan, K. (2012). National groups call for big changes in remedial education. Retrieved 2/23/16 from <http://chronicle.com/article/National-Groups-Call-for-Big/136285/>

- Mangan, K. (2013). College-completion rates remain at last year's pace. *The Chronicle of Higher Education*, 11/26/2013-1-2. Retrieved 2/23/16 from <http://chronicle.com/article/College-Completion-Rates/143191/>
- Mangan, K. (2013). Despite push for college completion, graduation rates haven't budged. *The Chronicle of Higher Education*, January 7, 2014. Retrieved 2/23/16 from <http://chronicle.com/article/College-Completion-Push-Fails/143619/>
- Mangan, K. (2013). Higher-education groups unveil alternative to federal student-success measures. *The Chronicle of Higher Education*, 7/2/2013-6. Retrieved 2/23/16 from <http://chronicle.com/article/Higher-Education-Groups-Unveil/139981/>
- Mangan, K. (2013). Report signals promising strategies for remedial education. *The Chronicle of Higher Education*, 9/17/2013-1-3. Retrieved 2/23/16 from <http://chronicle.com/article/Higher-Education-Groups-Unveil/139981/>
- Mangan, K. (2013). Tactics that engage community-college students get few takers, study finds. *The Chronicle of Higher Education*, 11/26/2013-1-4. Retrieved 2/23/16 from <http://chronicle.com/article/Tactics-That-Engage/142373/>
- Mangan, K. (2014). Minority male students face challenge to achieve at community colleges. *The Chronicle of Higher Education*, 03/05/2014-6. Retrieved 2/23/16 from <http://chronicle.com/article/Minority-Male-Students-Face/144979/>

- Maryland Higher Education Commission. (2012). *Higher education student persistence program: A state model for discussion*. Retrieved 3/13/15 from <http://www.mhec.maryland.gov/publications/research/AnnualReports/2015RetGratTransRatCCs.pdf>
- Maxwell, S. E. (2004). The persistence of underpowered studies in psychological research: Causes, consequences, and remedies. *Psychological Methods*, 9(2), 147-163. Retrieved 2/23/16 from [http://psych.colorado.edu/~willcutt/pdfs/Maxwell\\_2004.pdf](http://psych.colorado.edu/~willcutt/pdfs/Maxwell_2004.pdf)
- McClenney, K. M., & Marti, C. N. (2006). *Exploring relationships between student engagement and student outcomes in community colleges*. (Report on Validation Research). University of Texas at Austin: The Community College Leadership Program. Retrieved 2/23/16 from <http://eric.ed.gov/?id=ED529075>
- McClenney, K., Marti, C. N., Adkins, & Courtney. (2007). *Student engagement and student outcomes: Key findings from CCSSE validation research*. University of Texas at Austin: Community College Survey of Student Engagement. Retrieved 2/23/16 from <http://www.ccsse.org/aboutsurvey/docs/CCSSE%20Validation%20Summary.pdf>
- McCormick, A. C., & McClenney, K. (2012). Will these trees *ever* bear fruit? A response to the special issue on student engagement. *The Review of Higher Education*, 35(2), 307-333. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ974145>

- McDonald, J. C. (2003). *Barriers to participation in educational programs as perceived by first-time enrolling freshmen in higher education* (Doctor of Philosophy). Retrieved 2/23/16 from [http://etd.lsu.edu/docs/available/etd-0407103-205042/unrestricted/McDonald\\_dis.pdf](http://etd.lsu.edu/docs/available/etd-0407103-205042/unrestricted/McDonald_dis.pdf)
- McNair, T. (2013). Creating community college roadmaps for success: Developing a community college student roadmap. *Peer Review*, 15(2), July 2013. Retrieved 2/23/16 from <http://www.aacu.org/roadmap>
- MDRC. (2013a). *Developmental education: A barrier to a postsecondary credential for millions of Americans*. Retrieved 2/23/16 from <http://www.mdrc.org/publication/developmental-education-barrier-postsecondary-credential-millions-americans>
- MDRC. (2013b). *Improving college readiness in the age of the common core*. Retrieved 2/23/16 from <http://www.mdrc.org/publication/improving-college-readiness-age-common-core>
- Meeting the developmental education challenge. (2014). *OCTAE Connection, U.S. Department of Education*, pp. 1-3. Retrieved 2/23/16 from <http://content.govdelivery.com/accounts/USED/bulletins/d01457>
- Morgan, D. L., & Michaelides, M. P. (2005). *Setting cut scores for college placement*. (Research No. 2005-9). New York: The College Board. Retrieved 2/23/16 from

<http://professionals.collegeboard.com/profdownload/accuplacer-setting-cut-scores.pdf>

Mullin, C. M. (2012a). *It's a matter of time: Low-income students and community colleges (policy brief 2012-02PBL)*. Washington, D. C.: American Association of Community Colleges. Retrieved 2/23/16 from [http://www.aacc.nche.edu/Publications/Briefs/Documents/itsamatteroftime\\_04162012.pdf](http://www.aacc.nche.edu/Publications/Briefs/Documents/itsamatteroftime_04162012.pdf)

Mullin, C. M. (2012b). *Why access matters: The community college student body*. (Policy Brief 2012-01PBL). Washington, DC: American Association of Community Colleges. Retrieved 2/23/16 from [http://www.aacc.nche.edu/Publications/Briefs/Documents/PB\\_AccessMatters.pdf](http://www.aacc.nche.edu/Publications/Briefs/Documents/PB_AccessMatters.pdf)

Mullin, C. M. (2011). *The road ahead: A look at trends in the educational attainment of community college students*. (Policy Brief 2011-04PBL). Washington, D. C.: American Association of Community Colleges. Retrieved 2/23/16 from [http://www.aacc.nche.edu/Publications/Briefs/Documents/PB\\_RoadAhead.pdf](http://www.aacc.nche.edu/Publications/Briefs/Documents/PB_RoadAhead.pdf)

Mullin, C. M., & Phillippe, K. (2013, January). *Community college contributions*. (Policy Brief No. 01PB). Washington, DC: American Association of Community Colleges. Retrieved 2/23/16 from [http://www.aacc.nche.edu/Publications/Briefs/Documents/2013PB\\_01.pdf](http://www.aacc.nche.edu/Publications/Briefs/Documents/2013PB_01.pdf)

- Murtaugh, P. A., Burns, L. D., & Schuster, J. (1999). Predicting the retention of university students. *Research in Higher Education*, 40(3), 355–371. Retrieved 2/22/16 from <http://www.jstor.org/stable/40196350>
- Nakajima, M. A., Dembo, M. H., & Mossier, R. (2012). Student persistence in community colleges. *Community College Journal of Research and Practice*, 36(8), 591-613. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ971700>
- Napoli, A. R., & Wortman, P. M. (1998). Psychosocial factors related to retention and early departure of two-year community college students. *Research in Higher Education*, 39(4), 419-455. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ568888>
- National Survey of Student Engagement. (2012). *Promoting student learning and institutional improvement: Lessons from NSSE at 13*. Bloomington, IN: Indiana University Center for Postsecondary Research. Retrieved 2/23/16 from [http://nsse.indiana.edu/NSSE\\_2012\\_Results/pdf/NSSE\\_2012\\_Annual\\_Results.pdf](http://nsse.indiana.edu/NSSE_2012_Results/pdf/NSSE_2012_Annual_Results.pdf)
- National Survey of Student Engagement. (2013). *Benchmarks of effective educational practice*. Retrieved 2/23/16 from [http://nsse.indiana.edu/pdf/nsse\\_benchmarks.pdf](http://nsse.indiana.edu/pdf/nsse_benchmarks.pdf)
- National Center on Education and the Economy - NCEE. (2013a). *What does it really mean to be college and work ready? The mathematics and english literacy required of first year community college students*. (Executive Summary).

Washington, D.C. Retrieved 2/23/16 from [http://www.ncee.org/wp-content/uploads/2013/05/NCEE\\_ExecutiveSummary\\_May2013.pdf](http://www.ncee.org/wp-content/uploads/2013/05/NCEE_ExecutiveSummary_May2013.pdf)

National Center on Education and the Economy - NCEE. (2013b). *Statistic of the month: Comparing community college completion rates*. Retrieved 2/23/16 from <http://www.ncee.org/2013/05/statistic-of-the-month-comparing-community-college-completion-rates/>

Nelson, L. A. (2011). Measuring Completion. *Inside Higher Ed*. 06/14/2013-1. Retrieved 2/23/16 from <https://www.insidehighered.com/news/2011/11/30/committee-measures-student-success-issues-final-report>

Nes, L. S., Evans, D. R., & Segerstrom, S. C. (2009). Optimism and college retention: Mediation by motivation, performance, and adjustment. *Journal of Applied Social Psychology*, 39(8), 1887-1912. Retrieved 3/4/16 from [http://scholar.google.com/scholar?hl=en&q=Optimism+and+college+retention%3A+Mediation+by+motivation%2C+performance%2C+and+adjustment.+&btnG=&as\\_sdt=1%2C40&as\\_sdtp=](http://scholar.google.com/scholar?hl=en&q=Optimism+and+college+retention%3A+Mediation+by+motivation%2C+performance%2C+and+adjustment.+&btnG=&as_sdt=1%2C40&as_sdtp=)

New England Board of Higher Education. (2012). In Chan M., & Srey C.(Eds.), *Policy snapshot: Assessing and increasing college readiness in new england*. Boston, MA: NEBHE's Policy and Research Department. Retrieved 2/23/16 from [http://www.nebhe.org/info/pdf/events/boardmeetings/sept2012/NEBHE-Policy\\_Snapshot\\_Increasing\\_College\\_Readiness.pdf](http://www.nebhe.org/info/pdf/events/boardmeetings/sept2012/NEBHE-Policy_Snapshot_Increasing_College_Readiness.pdf)



- Obama, B. (2009). *The American graduation initiative: Stronger American skills through community colleges*. Retrieved 2/23/16 from <http://www.aacc.nche.edu/Advocacy/aginitiative/Documents/ccfactsheet.pdf>
- Obama, B. (2010). *Building American skills through community colleges*. Retrieved 2/23/16 from <http://www.whitehouse.gov/issues/education/higher-education/building-american-skills-through-community-colleges>
- O'Brien, C. (2005). *Indicators of opportunity in higher education*. (Status Report). Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education. Retrieved 2/23/16 from [http://www.pellinstitute.org/downloads/publications-Indicators\\_of\\_Opportunity\\_in\\_Higher\\_Education\\_2005\\_Status\\_Report.pdf](http://www.pellinstitute.org/downloads/publications-Indicators_of_Opportunity_in_Higher_Education_2005_Status_Report.pdf)
- O'Gara, L., Karp, M., & Hughes, K. L. (2009). Student success courses in the community college: An exploratory study of student perspectives. *Community College Review*, 36(3), 195-218. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ823183>
- Orozco, V., & Cauthen, N. K. (2009). *Work less, study more, & succeed: How financial supports can improve postsecondary success*. New York, NY: Postsecondary Success Series, Demos. Retrieved 2/23/16 from [http://www.demos.org/sites/default/files/publications/WorkLessStudyMore\\_Demos.pdf](http://www.demos.org/sites/default/files/publications/WorkLessStudyMore_Demos.pdf)

Osborn, E. (2013, 2013). *Giving second chances at community colleges*. Retrieved 2/23/16 from <http://chronicle.com/blogs/onhiring/giving-second-chances-at-community-colleges>

Palmer, J. (1998). *Policy paper: Fostering student retention and success at the community college*. (Policy Paper). Denver, CO: Education Commission of the States. Retrieved 2/23/16 from <http://files.eric.ed.gov/fulltext/ED439768.pdf>

Pascarella, E. (1985). College environmental influence on learning and cognitive development: A critical review and synthesis. In J. Smart, *Higher education: Handbook of theory and research* Volume 1. New York: Agathon. Retrieved 2/23/16 from <http://www.worldcat.org/title/higher-education-handbook-of-theory-and-research-volume-1/oclc/12385054>

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students: Ten directions for future research*. San Francisco: Jossey-Bass. Retrieved 2/23/16 from [http://geekyartistlibrarian.pbworks.com/f/Zach\\_EDHE6520\\_How%2520College%2520Affects%2520Students.pdf](http://geekyartistlibrarian.pbworks.com/f/Zach_EDHE6520_How%2520College%2520Affects%2520Students.pdf)

Pascarella, E. T., & Terrenzini, P. T. (2005). *How college affects students: A third decade of research* (2nd ed.). San Francisco: Jossey-Bass. Retrieved 2/23/16 from <http://eric.ed.gov/?id=ED498537>

- Perin, D. (2013). Literacy skills among academically underprepared students. *Community College Review*, 41(2), 118-136. Retrieved 3/4/16 from <http://crw.sagepub.com/content/early/2013/04/16/0091552113484057.abstract>
- Perin, D. (2002). *Summary of themes and issues. 2001-2002 seminar series: New roles of community colleges; academic preparedness and remediation in community colleges; dual enrollment in high schools and community college; accountability and learning outcomes in community colleges*. (Proceedings-Descriptive No. ED475755). New York, NY: Community College Research Center. Retrieved 2/22/16 from <http://files.eric.ed.gov/fulltext/ED475755.pdf>
- Pike, G. R., & Kuh, G. D. (2005). A typology of student engagement for american colleges and universities. *Research in Higher Education*, 46(2), 185-209. Retrieved 2/23/16 from [http://www.academia.edu/3265732/A\\_typology\\_of\\_student\\_engagement\\_for\\_American\\_colleges\\_and\\_universities](http://www.academia.edu/3265732/A_typology_of_student_engagement_for_American_colleges_and_universities)
- Potts, G., & Schultz, B. (2008). The freshman seminar and academic success of at-risk students. *College Student Journal*, 42, 647-648. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ816964>
- Prince, D. (2008). Chapter 6 tracking low-skill adult students longitudinally: Using research to guide practice. *New directions for community colleges* (pp. 59-69) Wiley Periodicals, Inc. Retrieved 3/4/16 from doi:10.1002/cc.336

Prince, D., & Jenkins, D. (April 2005). *Building pathways to success for low-skill adult students: Lessons for community college policy and practice from a statewide longitudinal tracking study*. Teachers College, Columbia University: Community College Research Center. Retrieved 2/23/16 from <http://ccrc.tc.columbia.edu/publications/low-skill-adults-policy.html>

Pritchard, M. E., & Wilson, G. S. (2003). Using emotional and social factors to predict student success. *Journal of College Student Development*, 44(1), 18-28. Retrieved 2/23/16 from <http://eric.ed.gov/?id=EJ658839>

Prochaska, J. O. (1994). Strong and weak principles for progressing from pre-contemplation to action on the basis of twelve problem behaviors. *Health Psychology*, 13(1), 47-51. Retrieved 2/23/16 from <http://www.ncbi.nlm.nih.gov/pubmed/8168471>

Raymondo, J. (2003). The effect of an abbreviated freshman year seminar program on student retention and student academic performance. *Research for Educational Reform*, 8(2), 46-55. Retrieved 2/23/16 from <http://connection.ebscohost.com/c/articles/10313289/effects-abbreviated-freshman-year-seminar-program-student-retention-student-academic-performance>

Reason, R. D., Terenzini, P. T., & Domingo, R. J. (March 2006). FIRST THINGS FIRST: Developing academic competence in the first year of college. *Research in Higher Education*, 47(2), 149-175. Retrieved 2/23/16 from

[https://www.researchgate.net/publication/225354385\\_First\\_Things\\_First\\_Developing\\_Academic\\_Competence\\_in\\_the\\_First\\_Year\\_of\\_College](https://www.researchgate.net/publication/225354385_First_Things_First_Developing_Academic_Competence_in_the_First_Year_of_College)

Redmond, J. C., Boucebc, M. E. T., & Engstrom, J. D. (2013). Engaging the roadmap to student success. *Peerreview*, 15(2), 5-7. Retrieved 2/23/16 from <https://www.aacu.org/publications-research/periodicals/engaging-roadmap-student-success>

Reid, K. M. (2009). *A multiple case study of college first-year seminars*. (Unpublished PhD). University of Nevada, Las Vegas. Retrieved 2/23/16 from <http://digitalscholarship.unlv.edu/thesesdissertations/74/>

Reyna, R. (2010). *Complete to compete: Common college completion metrics*. NGA Center for Best Practices. Washington, D.C.: National Governors Association. Retrieved 2/22/16 from <http://www.nga.org/files/live/sites/NGA/files/pdf/1007COMMONCOLLEGEMETRICS.PDF>

Rhodes, L., & Carifio, J. (1999). Community college students' opinions regarding the value of their freshman seminar experience. *Community College Journal of Research and Practice*, 23, 511-523. Retrieved 2/24/16 from <http://eric.ed.gov/?id=EJ588429>

Rodriguez, V. P. (2011). *Relationships between student characteristics and student persistence in online classes at a community college*. (Unpublished Doctoral

dissertation). California State University, 2011, Long Beach, California. (345377)  
Retrieved 2/24/16 from <http://gradworks.proquest.com/3485377.pdf>

Rutschow, E. Z., Cullinan, D., & Welbeck, R. (2012). *Keeping students on course: An impact study of a student success course at Guilford Technical Community College*. (Executive Summary). New York, NY: MDRC. Retrieved 2/24/16 from <http://files.eric.ed.gov/fulltext/ED531181.pdf>

Rutschow, E. Z., & Schneider, E. (2011). *Unlocking the gate: What we know about improving developmental education* (MDRC paper). Retrieved 2/24/16 from [www.mdrc.org/publication/unlocking-gate](http://www.mdrc.org/publication/unlocking-gate)

Sander, L. (2013). More colleges track nontraditional students' success. *The Chronicle of Higher Education*, 7/2/2013-4. Retrieved 2/24/16 from [http://chronicle.com/article/More-Colleges-Track/140013/.jobs\\_\\_topjobs-slider](http://chronicle.com/article/More-Colleges-Track/140013/.jobs__topjobs-slider)

Schlossberg, N. K. (1981). A model for analyzing human adaptation to transition. *The Counseling Psychologist*, 9(2), Retrieved 3/10/16 from doi: 10.1177/001100008100900202

Schrader, P. G., & Brown, S. W. (2008). Evaluating the first year experience: Students' knowledge, attitudes, and behaviors. *Journal of Advanced Academics*, 19(2), 310-343. Retrieved 2/24/16 from <http://files.eric.ed.gov/fulltext/EJ794107.pdf>

Scrivener, S., & Coghlan, E. (2011). *Opening doors to student success: A synthesis of findings from an evaluation at six community colleges*. New York, NY: MDRC.

Retrieved 2/24/16 from <http://files.eric.ed.gov/fulltext/ED517453.pdf>

Scrivener, S., Weiss, M. J., & Sommo, C. (2012). *What can a multifaceted program do for community college students?* New York, NY: MDRC. Retrieved 2/24/16 from

[http://www.mdrc.org/sites/default/files/full\\_625.pdf](http://www.mdrc.org/sites/default/files/full_625.pdf)

SENSE: Survey of Entering Student Engagement. (2014). *Effective track to college readiness*. Retrieved 2/24/16 from

[http://www.csse.org/sense/survey/bench\\_efftrack.cfm](http://www.csse.org/sense/survey/bench_efftrack.cfm)

Sherwin, S. (2011). Boosting underprepared students: Salish Kootenai College uses research to build success. *Tribal College Journal*, 22(4), 20-25. Retrieved 2/24/16 from <http://eric.ed.gov/?id=EJ949689>

Smith, J. S., Lim, S., & Bone, S. (May-June 2008). Community college strategies: Assessing the impact of a first-year experience course on student outcomes in a community college. *Assessment Update*, 20(3), 11-13. Retrieved 3/4/16 from [doi.10.1002/au.203](https://doi.org/10.1002/au.203)

Spence, D. (2010). Not ready for college: States must have a systemic, comprehensive agenda for college preparation. *National CROSSTALK: A Publication of the National Center for Public Policy and Higher Education*, 267-269. Retrieved 2/24/16 from

<http://www.highereducation.org/crosstalk/ctbook/pdfbook/SpenceNotReadyBookLayout.pdf>

Stuart Hunter, M. (2006). Fostering student learning and success through first-year programs. *Peerreview*, 8(3), 4-7. Retrieved 2/24/16 from <http://www.aacu.org/publications-research/periodicals/fostering-student-learning-and-success-through-first-year-programs>

Student achievement measure: SAM. (2013). Retrieved 2/24/16 from [www.studentachievementmeasure.org](http://www.studentachievementmeasure.org)

*Student voices on the higher education pathway: Preliminary insights & stakeholder engagement considerations* (2012). San Francisco, CA: WestEd. Retrieved 2/24/16 from <http://files.eric.ed.gov/fulltext/ED533644.pdf>

Study: Remedial work drains time, money. (2012). *Education Week*, 31(33), 4. Retrieved 2/24/16 from <http://www.edweek.org/ew/articles/2012/06/06/33brief-5.h31.html>

Swing, R. L. (2004). What's so special about assessment in the first year of college? *Assessment Update*, 16(2), 1-16. Retrieved 2/24/16 from <http://eric.ed.gov/?id=EJ790723>

The College Board. (2008). *ACES placement validity report for ACCUPLACER sample*. (Sample No. 02-01). New York: The College Board. Retrieved 2/24/16



from <https://professionals.collegeboard.com/profdownload/aces-sample-placement-validity-report-accuplacer.pdf>

The College Board. (2013). *The completion arch: Measuring community college student success*. Retrieved 2/24/16 from <http://completionarch.collegeboard.org>

The Pell Institute for the Study of Opportunity in Higher Education. (2009). *National studies find TRIO programs effective at increasing college enrollment and graduation*. Washington, DC. Retrieved 2/23/16 from [http://www.pellinstitute.org/downloads/publications-Studies\\_Find\\_TRIO\\_Programs\\_Effective\\_May\\_2009.pdf](http://www.pellinstitute.org/downloads/publications-Studies_Find_TRIO_Programs_Effective_May_2009.pdf)

Thompson, B. R., & Thornton, H. J. (2002). The transition from extrinsic to intrinsic motivation in the college classroom: A first-year experience. *Education*, 122(4), 785-792. Retrieved 2/24/16 from <http://search.proquest.com/openview/68ba44851ffceabb86e9d374c076a782/1?pq-origsite=gscholar>

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press. Retrieved 2/24/16 from <http://eric.ed.gov/?id=ED371658>

Tinto, V. (2004). Student retention and graduation: Facing the truth, living with the consequences. Occasional Paper 1. *The Pell Institute for the Study of Opportunity in Higher Education*. Retrieved 2/24/16 from <http://eric.ed.gov/?id=ED519709>

- Tinto, V. (2006-2007). Research and practice of student retention: What next? *Journal of College Student Retention*, 8(1), 1-19. Retrieved 2/24/16 from [https://www.uaa.alaska.edu/governance/facultysenate/upload/JCSR\\_Tinto\\_2006-07\\_Retention.pdf](https://www.uaa.alaska.edu/governance/facultysenate/upload/JCSR_Tinto_2006-07_Retention.pdf)
- Trends & indicators in higher education. (2009). *The New England Journal of Higher Education*, (Spring), 33-60. Retrieved 2/24/16 from [http://www.nebhe.org/info/journal/issues/NEJHE\\_Spring09.pdf](http://www.nebhe.org/info/journal/issues/NEJHE_Spring09.pdf)
- U.S. Department of Education, Advisory Committee on Student Financial Assistance. (2008). *Transition matters: Community college to bachelor's degree*. (Proceedings Report) Retrieved from <http://www.ed.gov/acsf>
- U.S. Department of Education. (2011). *Meeting the nation's 2020 goal: State targets for increasing the number and percentage of college graduates with degrees*. Retrieved 2/24/16 from [https://www.whitehouse.gov/sites/default/files/completion\\_state\\_by\\_state.pdf](https://www.whitehouse.gov/sites/default/files/completion_state_by_state.pdf)
- University Indianapolis. (2008). *First-year programs: A practice brief based on beams project outcomes* Retrieved 2/24/16 from <http://files.eric.ed.gov/fulltext/ED501536.pdf>
- Upcraft, M. L., Gardner, J. N., & Associates. (1989). *The freshman year experience*. San Francisco: Jossey-Bass. Retrieved 2/24/16 from <http://eric.ed.gov/?id=ED310664>

- Upcraft, M. L., Gardner, J. N., Barefoot, B. O., & Associates. (2005). *Challenging and supporting the first-year student: A handbook for improving the first year of college*. San Francisco: Jossey-Bass. Retrieved 2/24/16 from <http://eric.ed.gov/?id=ED496369>
- Vacha-Haase, T., & Thompson, B. (2004). How to estimate and interpret various effect sizes. *Journal of Counseling Psychology*, 51(4), 473-481. Retrieved 3/4/16 from <http://psycnet.apa.org/journals/cou/51/4/473/>
- Vargas, J. H., & Miller, M. S. (June 2011). Early college designs. *The School Administrator*, 68(6), 12/5/2013-5. Retrieved 2/24/16 from <http://eric.ed.gov/?id=EJ940596>
- Veenstra, C. P. (January 2009). A strategy for improving freshman college retention. *The Journal of Quality & Participation*, 31(4), 19-23. Retrieved 2/24/16 from <http://search.proquest.com/openview/3216ab5cec3a94eca6e1cc6579a399ae/1?pq-origsite=gscholar>
- Vogt, W. P., & Johnson, R. B. (2011). *Dictionary of statistics & methodology: A nontechnical guide for the social sciences* (4th ed.). California: SAGE Publication, Inc. Retrieved 2/24/16 from <https://akisugi.files.wordpress.com/2014/06/dictionary-of-statistics-methodology-a-nontechnical-guide-for-the-social-sciences.pdf>

- Voorhees, R., & Lee, J. (2009). *Basics of longitudinal cohort analysis*. Columbia University: Achieving the Dream: Community Colleges Count. Retrieved 2/24/16 from [http://www.ccsse.org/center/SSBTN/docs/Publications/ATD\\_Longitudinal\\_Cohort\\_Analysis.pdf](http://www.ccsse.org/center/SSBTN/docs/Publications/ATD_Longitudinal_Cohort_Analysis.pdf)
- West, S. G. (2009). Alternatives to randomized experiments. *Current Directions in Psychological Science*, 18(5), 299-304. Retrieved 2/23/16 from <http://jstor.org/stable/20696053>
- What works in student retention?* (2010). Fourth National Survey, Community Colleges Report. Iowa City, IA: ACT, Inc. Retrieved 2/24/16 from <http://files.eric.ed.gov/fulltext/ED515409.pdf>
- Wild, L., & Ebbers, L. (2002). Rethinking student retention in community colleges. *Community College Journal of Research and Practice*, 26, 503-519. Retrieved 2/24/16 from <http://www.tandfonline.com/doi/abs>
- Wischusen, S. M., Wischusen, E. W., & Pomarico, S. M. (2011). Impact of a short pre-freshman program on retention. *Journal of College Student Retention*, 12(4), 429-441. Retrieved 2/24/16 from <http://eric.ed.gov/?id=EJ917301>
- Yosso, T. J., & Solorzano, D. G. (2006). Leaks in the Chicana and Chicano educational pipeline. *Latino Policy & Issues Brief*, 13, 2/18/2013. Retrieved 2/24/16 from <http://files.eric.ed.gov/fulltext/ED493404.pdf>

Zajacova, A., Lynch, S. M., & Espenshade, T. J. (2005). Self-efficacy, stress, and academic success in college. *Research in Higher Education*, 46(6), 677-706.

Retrieved 2/24/16 from

<http://www.princeton.edu/~tje/files/Self%20Efficacy%20and%20Stress%20Zajacova%20Lynch%20Espenshade%20Sept%202005.pdf>

Zeidenberg, M., Jenkins, D., & Calcagno, J. C. (2007). *Do student success courses actually help community college students succeed?* (Community College Research Center Brief No. 36). New York: Community College Research Center, Teachers College, Columbia University. Retrieved 2/24/16 from

<http://academiccommons.columbia.edu/catalog/ac:157602>

Zhai, L., & Monzon, R. (2001). *Community college student retention: Student characteristics and withdrawal reasons*. (Conference presentation). Annual Meeting of the California Association for Institutional Research (26th): Office of Institutional Research, San Diego Community College District. Retrieved 2/24/16 from <http://files.eric.ed.gov/fulltext/ED473676.pdf>