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The Connection Program: An Examination of One Developmental Education Program

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by

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A Dissertation submitted to the Education Faculty of Lindenwood University in partial fulfillment of the requirements for the degree of

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

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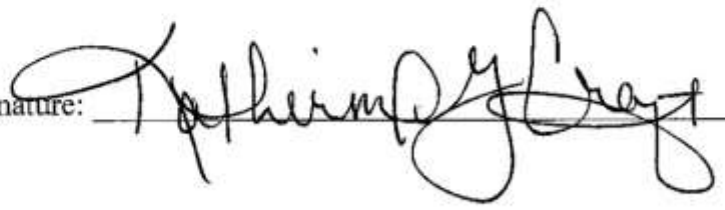
Signature:  Date: 12/8/14

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Abstract

Developmental education continues to be an area of concern for higher education institutions. Understanding and developing programs to provide support and increase retention, completion, and success rates for developmental education students is vital to increasing degree attainment in the United States. This study explored one developmental education program at a Midwest community college implemented in 2011. A mixed-methods approach was executed to compare completion and success rates two years prior to implementation and two years following implementation, as well as to obtain qualitative information regarding perceptions of the program. Quantitative data analysis revealed increases in developmental education rates for qualifying Connection Program students when viewed holistically; however, varying degrees of program effectiveness were seen in discipline-level results. Qualitative data analysis revealed four emerging themes: 1) Flawed Placement, 2) Positive Intentions, 3) Flawed Execution, and 4) Student Ambiguity. These findings coincided with research in the developmental education field as areas of importance in regard to increasing degree attainment for these students.

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Chapter One: Introduction

Nearly 40% of students entering two-year and four-year postsecondary institutions require at least one developmental, or remedial, education course intended to prepare them for college-level courses ("Remedial and Developmental," n.d.). According to Achieving the Dream (2014), an initiative funded by the Lumina Foundation for Education that focuses on improving developmental education, the number of students requiring at least one developmental education course increases to 60% for students entering community colleges. With initiatives such as Achieving the Dream, the spotlight on developmental education has taken a front seat as a nationwide problem affecting postsecondary institutions. From a political perspective, the emphasis on improving retention and graduation rates through performance-based funding measures is pushing postsecondary institutions to reexamine their developmental education programs to determine the best means by which to help the large volume of students entering college unprepared (National Conference of State Legislators, 2014). On a nationwide scale, "fewer than half of students directed to take one or more remedial classes…complete them" (Foderaro, 2011, para. 11). With such staggering statistics, it is understandable that institutions are implementing programs aimed at increasing completion and success rates for developmental education students.

This study's intent was to measure the success of one such program implemented at a Midwest community college. Developmental education courses are traditionally offered in English, math, and reading and are intended to prepare both traditional and non-traditional students in need of remediation for college-level coursework (Bailey, 2009). Given the percentage of students entering community colleges with remediation needs, it is no wonder community colleges are often referred to as "the centerpiece of the

dream of opening higher education to all Americans regardless of prior educational opportunity or success" (Mellow & Heelan, 2008, p. 165). The scope of community colleges is to provide open-access to traditional students, a venue for those seeking to improve their lives, as well as a setting to provide re-training for other jobs following job loss, or switch career paths (Bailey, 2009). Therefore, remediation within community colleges is seen at greater rates than traditional four-year institutions (Bailey, 2009). In an effort to increase completion and success rates, the institution included in this study has developed a program intended to better support students who test into more than one developmental education course. The following sections within this chapter provide historical information, a conceptual framework, a discussion of the problem, and the purpose of this study.

Background of the Study

The idea of remedial education is not new; as early as the 1600s, "Harvard College provided tutors in Greek and Latin for those underprepared students" (Merisotis & Phipps, 2000, p. 68). As long as there has been a recognized need for developmental education, there has also been opposition to providing remediation at the postsecondary level. The Yale Report of 1828, arguably one of the most influential documents in higher education, called for institutions to "reaffirm [their] role…to provide a classical and not a practical education" (Parker, Bustillos, & Behringer, 2010, p. 12), and addressed underprepared students in saying, "not all individuals would have the intellectual acumen to engage in this kind of training" (Parker et al., 2010, p. 12). Such arguments against developmental education are prevalent even today.

While the Yale Report played such an integral role in our liberal arts programs, the need for developmental education remained a concern in the years following the publication of the report, and eventually, institutions began to recognize and develop programs to address the issue. Famously, leaders at the University of Wisconsin created the nation's first formal remediation program in reading, writing, and arithmetic in 1849, incidentally in the same areas of study that still have the greatest need for remediation (Merisotis & Phipps, 2000). Parker et al. (2010) stated:

> The UW [University of Wisconsin] program served as a model for other programs across the country and by the end of the 19th century, nearly 40% of all first-year students in the nation were enrolled in remedial courses (Ignash, 1997) and approximately 80% of postsecondary institutions had a preparatory department. (p. 9)

Startling is the fact that not much has changed since the 19th century in terms of the number of underprepared students entering postsecondary institutions.

On the heels of the creation of the first developmental education program came the Morrill Act. States within the Union were granted 30,000 acres of land for each congressional delegation, providing an influx of land-grant colleges aimed at giving all Americans an opportunity to seek higher education ("Morrill Act," 2010). This act played an important role in higher education because postsecondary institutions became more accessible, allowing a new class of students to attend a growing number of universities, colleges, and community colleges ("Morrill Act," 2010). Initiatives and acts such as the GI Bill, the Civil Rights Act of 1964, and the Higher Education Act of 1965 paved the way for Americans who thought postsecondary education was out of their

reach to pursue such a goal (Parker et al., 2010). As junior colleges, commonly referred to as community colleges, began to take hold, the idea of open enrollment in these institutions heightened access to new levels. These new institutions were viewed by many as vehicles by which to prepare underprepared students, and a new movement to eliminate developmental education from four-year institutions began to take shape (Parker et al., 2010).

In the late 1990s, a huge push was made to end developmental education in four-year institutions, and in 1998, "the trustees of the City University of New York (CUNY) voted to phase out remedial education in the system's 11 four-year institutions" (Merisotis & Phipps, 2000, p. 67), requiring the burden of remediation to fall solely on the shoulders of the state's community colleges (Merisotis & Phipps, 2000).

Recent developmental education initiatives have brought new light to this issue and have paved the way for institutions to shun the stigma of embarrassment associated with developmental education so that, hopefully, true solutions to an age-old issue may be developed. However, research shows that there is still much ground to cover (Bailey, 2009; Merisotis & Phipps, 2000; Tinto, 2012).

Many high school students entering college are unaware they are not prepared for college-level work. Foderaro (2011) reported, "Students are often surprised to learn that they still have hurdles to clear before they can begin college-level work" (para. 18). To emphasize that point, a 2008 survey found "Nearly four out of five remedial students had a high school grade point average of 3.0 or higher" (Strong American Schools, 2008, p. 4), leading some to believe high school grade point average (GPA) may be a stronger

indicator of college preparedness than commonly used placement tests (Strong American Schools, 2008).

Finding solutions that ensure students entering postsecondary institutions are prepared for college-level work continues to be a struggle. However, a recent analysis by the Bill and Melinda Gates Foundation's Strong American Schools (as cited in Vandal, 2010), "estimated that remedial education costs States and students up to $2.3 billion annually" (p. 4), with $700 million of those dollars falling to students and families (Handel & Williams, 2011). While many organizations continue to invest, Habley, Bloom, and Robbins (2012) noted, "Despite the heavy investment in developmental education, there is a lack of high-quality research on the impact and effectiveness of such initiatives" (p. 255).

Legislators hesitate to use state funds to essentially pay double for basic skills that should have been obtained in secondary education, even though proponents are quick to point out that "remediation typically costs less than 10% of education as a whole, and, in most cases, this figure is in the 1% to 2% range" (Saxon & Boylan, 2001, p. 8). The cost of developmental education falls on the student's shoulders, and in states where developmental education courses carry no college credit, students may find themselves ineligible for financial aid, as they fall below full-time enrollment (Saxon & Boylan 2001). In many institutions, students are required to pay college-rate tuition for developmental education courses, but Bailey (2009) noted, "even if no tuition is charged, remedial students bear the opportunity cost of lost earnings" (p. 13).

Others believed blame lay at the doorstep of K-12 institutions that are sending students to college unprepared. However, Wellman and Vandal (2011) expressed the

futility of this train of thought by pointing out that most postsecondary institutions do not have "college-ready standards" easily accessible to not only high school students but also non-traditional students. With a growing population of non-traditional students attempting to attain degrees, putting the issue solely on the backs of K-12 education is unrealistic. As postsecondary institutions are asked to do more with less and strive to reach the goal set by President Obama to "have the highest college attainment rate in the world by 2020" (Vandal, 2010, p. 4), postsecondary institutions must find reliable, effective solutions to providing developmental education to traditional and non-traditional students efficiently (Vandal, 2010).

Conceptual Framework

The conceptual framework of this study was drawn from theories which guided decisions in regard to the research project. While not distinctly focused on the study itself, this framework provided the structure by which research was organized, data were collected, and findings were discussed. Understanding the importance of increasing completion and success rates within developmental education and the effect it had on graduation and student success rates provided motivation in pursuing an understanding of the role retention plays as it applies to student self-concept and engagement within the higher education system. The theory which provided the most appropriate framework was Tinto's (2012) idea that student engagement through classrooms and support systems are vital to determining successful degree attainment. By examining Tinto's (2012) research on retention, success, and student perception in basic skills courses and how the program examined in this study addressed the principles in Tinto's work, an

understanding of outcomes could be better assessed within the framework of developmental education success.

Tinto (2012) highlighted four areas of focus that are able to increase student success: expectations, support, assessment and feedback, and involvement. While these areas are applied to students of any academic level, a large focus is placed on those in need of developmental education (Tinto, 2012). Of the four, the most important for successfully retaining developmental education students—thereby increasing completion and success rates—falls under support, mainly academic and social cognitive support (Tinto, 2012). These underprepared students benefit best from intrusive advising, classroom engagement, and stronger self-efficacy perceptions (Tinto, 2012).

Expectations and support. Choi (2005) stated self-efficacy is "primarily a cognitive appraisal of one's capabilities to perform a prospective performance based on past performances" (p. 198). Tinto (2012) and Choi drew from Bandura's (1986) work on cognitive theory in relation to self-efficacy, or the idea that students' perceptions of their capabilities play a large role in determining their success or failure. Students' belief in their own capabilities will color their perceptions and influence their decisions (Tinto, 2012). Given the knowledge that many students entering higher education are unaware of the need for remedial education, it is no surprise this group of students often carry a lower self-efficacy than their non-developmental counterparts (Bailey, 2009). Tinto (2012) believed that giving necessary support to first-year students would increase students' self-efficacy and raise the likelihood of success and retention.

In line with raising self-efficacy, Karp and Hughes (2008) contended that providing students with feelings of integration through structured support systems, such

as student success courses, increases persistence into the following semesters. Along with Tinto (2012), they also supported the idea of "helping professors to develop student-centered pedagogies…to help students develop substantive relationships with one another" (Karp & Hughes, 2008, p. 14), and that as institutions forge new programs, administrators should "think through unintended consequences of their policies and ascertain that they promote, rather than inhibit, student participation" (Karp & Hughes, 2008, p. 14).

Assessment and feedback. As explained by Casaza (1998), following Vygotsky's framework, instructors should serve as facilitators who "gradually release the responsibility of learning to the learner" (p. 6). Furthermore, one need only look at Freire's (2011) banking concept of education in which the normal role of the teacher is to deposit information into the minds of students. Tinto (2012) argued institutions "have begun to address the pedagogical skills of faculty who teach basic-skills courses [and are] better aligning…developmental education course sequence[s]" (p. 44) that allow students to see the validity of successfully completing these courses.

Involvement. Along with Tinto's (2012) theory of retention and the importance of providing support, Bonham and Boylan (2011) suggested higher education institutions place importance on "affective factors." This idea stemmed from Bandura's (1993) work within social cognitive theory and again places strong importance on the idea that "student's belief about the value of the learning experience, their expectations of success, and their enjoyment of it…will motivate them to engage" (Bonham & Boylen, 2011, p. 4). Further evidence suggested providing external support in the form of learning communities, tutors, and college success courses and providing students with a clear

sequence can help developmental education students view their likelihood of success in a better light (Rutschow & Schneider, 2011). Bailey (2009) provided a pessimistic outlook on developmental education but also explained optimism is on the horizon as more institutions are willing to implement new programs that reinvent their developmental education programs and include stronger intrusive support systems.

Since developmental education students come from varying backgrounds, learning to recognize and support them individually is paramount to increasing retention (Casazza, 1998). Tinto (2012) placed large emphasis on the role the classroom plays in success of developmental education students. He stated institutions "must focus on improving success in the classroom, particularly during the first year and lead to changes in the way classes are structured and taught and…experienced by students" (Tinto, 2012, p. 6). By analyzing cognitive development theorists, it becomes obvious that what happens in the classroom is as important as the external support factors provided by an institution.

Using Tinto's (2012) theory on retention and related theoretical work procured the best means of examination and analysis of any increases in completion and success rates of a new developmental education program at a Midwest community college. In light of the overwhelming evidence that support and classroom instruction play on student perception, it was imperative to examine the perceptions of both students and faculty engaged in the developmental education program as well.

Statement of the Problem

Current developmental education programs often follow a traditional track of teaching, meaning students testing into developmental courses are expected to enroll in a

typical 16-week course aimed at providing remedial education that will prepare them for college-level courses (Bailey, 2009). With students already discouraged by the thought of taking developmental courses, it is no wonder they avoid taking them when possible. Bailey (2009) referred to data from Achieving the Dream when stating the following:

> About 21 percent of those students referred to developmental math do not enroll in any remedial math course within three years of initial registration. For developmental reading, the comparable figure is 33 percent....within three years of their initial assessment, about 44 percent of those referred to developmental reading complete their full sequence….only 31 percent of those referred to developmental math complete their sequence….in addition, many students who successfully complete one or more developmental courses do not show up for the subsequent course. (pp. 3–5)

Furthermore, developmental education students struggle to complete degrees. The National Education Longitudinal Study (as cited in Bailey, 2009) tracked eighth grade students beginning in 1988 until 2000 and found "less than one quarter of community college students…enrolled in developmental education complete a degree or certificate within eight years of enrollment in college" (p. 5).

Bailey (2009) also referred to A Strong American Schools study that found most developmental education students "believed that they were prepared for college [and this] unexpected gap between their understanding of their own skills and the discouraging results of the assessment tests can cause students to become frustrated and to give up and leave college" (p. 14). Students entering developmental education courses often enter with a lower self-confidence, leading to a belief that success is out of their reach. The

additional stress of the stigma they often associate with themselves can result in a more negative mentality, which could lead students to drop out of college altogether (Bailey, 2009). In fact, "research shows that the leading predictor that a student will drop out of college is the need for remedial reading" (The Alliance, 2006, p. 3). As students leave postsecondary education, they enter a cycle that "perpetuates[s] low achievement, low wages, and poor life outcomes" (Roper, 2009, p. 3).

Bailey (2009) further stated, "a dramatic expansion in experimentation with new approaches has taken place. There is…growing commitment to better evaluation and quantitative analysis of student progression" (p. 1) and programs targeted at providing solutions that increase retention in developmental education students. Handel and Williams (2011) insisted there has been enhanced awareness and cite information from the Center of Postsecondary Research that "identifies 10 studies that passes muster as 'rigorous' in assessing the effectiveness of remedial education" (p. 30). It has become evident that educators cannot expect to "improve students' college-level skills by making them do precisely the same thing in college that they failed to do in high school—only faster and online" (Handel & Williams, 2011, p. 30).

With no college credit, or elective credit, being given for these courses, it is not hard to imagine why students might resist them. It becomes imperative for the field to look at new programs to determine their effectiveness and share that knowledge with other institutions (Achieving the Dream, 2014).

Purpose of the Study

The purpose of this study was to examine the effectiveness of one developmental education program, given the pseudonym of the Connection Program, at a Midwest

community college. Implemented in 2011, the Connection Program provided a scripted course sequence for students testing into at least two developmental education courses. This approach also implemented principles aligned with Tinto's (2012) four principles, including expectations, support, assessment and feedback, and involvement.

By examining the completion and success rates prior to the implementation and comparing that information to completion and success rates following the implementation of the Connection Program, the program's success was determined. Demographic information was also gathered regarding gender and age in order to determine the effect, if any, those characteristics had on completion and success rates in this program. To support quantitative data, qualitative data regarding student and faculty perception were also pursued.

Research questions. The following questions examined elements of the Connection Program and guided the research in this study:

1. What difference, if any, exists in the course completion rate of developmental education students who have participated in the Connection Program, as compared to students who did not?

$H1_{O:}$ There is no difference in completion rates for developmental education courses when compared to completion rates prior to the implementation of the Connection Program

2. What difference, if any, exists in course success rate, as measured by obtaining a grade "C" or higher, of developmental education students who have participated in the Connection Program, as compared to students who did not?

$H2_{O:}$ There is no difference in success rates in developmental education courses when compared to success rates prior to the implementation of the Connection Program.

3. What difference, if any, exists in course completion and success rates of developmental education students who have participated in the Connections Program, as compared to students who did not when based upon gender or age?

$H3_{O:}$ There is no difference between developmental education students based upon gender or age.

4. What difference, if any, exists in success rates in first college-level course of developmental education students who participated in the Connection Program, as compared to students who did not?

$H4_{O:}$ There is no difference in success rates in the first college-level course when compared to rates prior to the implementation of the Connection Program.

5. What are the perceptions of developmental education students concerning the Connection Program?

6. What are the perceptions of faculty and staff in regard to students in the Connection Program?

Definitions of Key Terms

The following defined terms are prevalent throughout the document and will help clarify the text for the reader:

Developmental education. Courses within a higher education institution aimed at providing remedial education to students underprepared for college-level coursework in English, math, and/or reading (Tinto, 2012).

Graduation rate. The total number of students who achieve graduation (Integrated Postsecondary Education Data System [IPEDS], 2013).

Non-traditional students. Any student who is not a "first-time, full-time, straight out of high school, college student" (National Orientation Directors Association, 2014).

Placement exam. Exams used to determine a student's skill level and course placement in English, mathematics and reading ("What are College," 2013). The most common exams are ACCUPLACER and COMPASS (Habley et al., 2012).

Retention rate. The total number of returning students from previous semesters (Tinto, 2012).

Success rates in developmental education. The attainment of a grade "C" or higher in a developmental education courses that allows students to progress to the next course in the sequence (Bailey, 2009).

Traditional students. Any student who "begins college immediately after high school [and] enrolls full-time" (Deil-Amen, 2011, p. 1).

Transfer rates. The total number of students transferring to a four-year university from a community college (Bailey, 2009).

Limitations and Assumptions

The following limitations were identified in this study:

Population demographics. The population in this study was comprised of developmental education students at one Midwest community college who qualified for the Connection Program. Based on ACT or COMPASS placement exam scores, students placed into more than one developmental education course are placed in the Connection

Program. This study examined students who met these qualifications two years prior to the program implementation and two years following the implementation.

Instrument. The original intent was to conduct interviews with no less than 10 developmental education students attending the program, as well as to conduct a focus group with six to eight faculty and staff involved in developmental education. However, upon execution of the research phase, the researcher was unable to procure student participation through the means allowed. In other words, of over 75 students emailed over the course of several weeks, there were only two responses from Connection Program students. Only one student agreed to participate in the interview. Of eight faculty and staff contacted to participate in the focus group, only six responded favorably; however, of the six, there was no feasible time to meet. Therefore, the researcher held interviews with faculty and staff and did not conduct interviews with students.

Fraenkel, Wallen, and Hyun (2012) contended that personal interviews are "probably the most effective survey method for enlisting the cooperation of the respondents" (p. 398) because "rapport can be established, questions can be clarified, unclear…answers can be followed up on, and so on" (p. 396). Interviews with six developmental education faculty and staff were conducted with questions created by the researcher, also posing a limitation.

The following assumptions were accepted:

1. The responses of the participants were offered honestly and without bias.
2. Grades are fairly consistent across the years.

Summary

With nearly 60% of entering students into community colleges in need of developmental education courses, it is imperative to understand the history and problems surrounding the issue, as well as to investigate strategies that can make a difference in developmental education outcomes (Achieving the Dream, 2014). Historically, developmental education has been needed and the percentage has remained relatively unchanged over the past 50 years (Parker et al., 2010). Understanding the implications of the developmental education issue for students and society allows educators in the field to examine new ways of addressing these concerns.

The following chapter provides an in-depth examination of the most prevalent literature available in developmental education, which includes the state of developmental education, cognitive theories about student perception, retention, and student engagement.

Chapter Two: Review of Literature

Winston Churchill (1930/2010) said, “Where my reason, imagination or interest were not engaged, I would not or I could not learn” (p. 13). Community colleges provide an open enrollment opportunity for students to enter postsecondary education, meaning many come through the doors underprepared for the work ahead of them (Bailey, 2009). For developmental education students, maintaining their interest and reminding them of their reasons for being there has traditionally been a challenge. Bandura, Caprara, Barbaranelli, Gerbino, and Pastorelli (2003) believed that an individual’s perception of self-efficacy plays an integral role in how that individual approaches challenges, including stress, resiliency, and perseverance. Examining the very issues that influence perception and self-efficacy is paramount to understanding directions currently taken in developmental education. This chapter explores the literature that analyzes the current state of developmental education, cognitive theories and how perception is influenced, student retention in developmental education, and the importance of student engagement.

The State of Developmental Education

Tinto (2012) said, “On a range of outcomes—from personal development, health, and the like—evidence abounds that college graduates fare far better than nongraduates” (p. 1). Furthermore, those graduates who earn at the minimum an associate’s degree will earn, in their lifetime, approximately “$354,000 more than people who only complete high school” (Tinto, 2012, p. 1). As addressed in Chapter One, community colleges saw nearly 60% of all entering students in need of developmental education; that rate jumped to 90% for low-income and minority students in some colleges (Achieving the Dream, para. 2, 2014). However, Bailey and Cho (2010) found many students placed in

developmental education either do not complete the sequence after enrollment or never enroll in the courses. Of the students who did enroll, "30% failed or withdrew from one of the developmental education courses [and] ten percent dropped out of their developmental sequences without ever failing a course" (Bailey & Cho, 2010, p. 47).

Developmental education initiatives. Over the past 10 years, several initiatives have begun to address developmental education. These initiatives have inspired leaders of higher education institutions to reassess developmental education programs and provide viable, data-driven solutions to increase retention in these courses (Bailey, 2009). Students who successfully completed their developmental education sequence were more likely to complete a postsecondary degree (Bailey, 2009). While all of these initiatives and projects focused on increasing persistence and successful completion of developmental education, the road was paved with twists and turns that have resulted in a combination of success and failures (Gonzalez, 2011).

Achieving the dream. The Achieving the Dream initiative was founded by the Lumina Foundation (2014), an "independent, private foundation committed to increasing the proportion of Americans who have high-quality, college-level learning" (para. 1). Achieving the Dream (2014) is charged with providing evidence-based, student-centered solutions aimed at helping institutions close the loop within developmental education at community colleges.

However, not everyone believes Achieving the Dream has been successful. Gonzalez (2011) stated, "seven years into an ambitious project to help more community college students stay enrolled and graduate…colleges have changed their practices significantly [but] student outcomes have remained relatively unchanged" (para. 1). The

Achieving the Dream initiative Gonzalez (2011) referred to provided institutions with the skills and knowledge to make evidence-based decisions that would allow them to continuously improve existing programs or create new programs based on strong, quantitative evidence. Through the first five years of the initiative, it became obvious changes in completion rates would not be immediate; however, Achieving the Dream (2014) was not created to provide an immediate reversal but rather give institutions the tools necessary to make innovative changes to how they approach developmental education and teach them how to use data-driven evidence to make decisions about programs.

Strong American schools. In line with the goals of Achieving the Dream, the Strong Americans Schools campaign, backed by the Bill and Melinda Gates foundation, has been a leader in providing data-driven research in the developmental education field (Murphy, 2007). This nonpartisan campaign was aimed at bringing "public awareness and action…designed to give a voice to every American who demands strong leadership to improve our schools" (Murphy, 2007, para. 4).

The Strong American Schools organization focused on creating policies that instigated change for educating and preparing students. In its report, "Diploma to Nowhere," Strong American Schools (2008) examined implications of not finding a solution for developmental education to students now and in the future. This report clearly outlined the need to understand gaps between K-12 education and college, as well as the importance of both taking an active role in change (Strong American Schools, 2008).

During the 2008 Presidential Campaign, Strong American Schools launched "Ed in 08," which brought "together for the first time leaders of all major political parties who [were] willing to address education as an American challenge rather than a narrow political issue" (Murphy, 2007, para 4). Supporters, including two of the most prolific philanthropists, Bill Gates and Eli Broad, believed that while both of their foundations were making progress, those strides were stepping stones with a need for broader change at the national level (Herzenhorn, 2007). According to Klein (2009), the campaign "helped turn the need for education reform from a low-priority campaign issue into one of the Obama administration's top policy priorities" (para. 1).

These organizations were not the only entities to throw their hats into the developmental education ring. The Bill and Melinda Gates foundation pledged millions of dollars in grants toward helping schools improve developmental education. Bill Gates (as cited in Gonzalez, 2010) said, "Our research indicates that improving remediation is the single most important thing community colleges can do to increase the number of students who graduate" (para. 4). Believing that change has to occur within this segment, Melinda Gates emphasized that doing what colleges have always done is not getting the job done (Gonzalez, 2010).

Delta cost project. While not intended to provide solutions in the classroom, the Delta Cost Project (2012), an independent non-profit organization committed to understanding trends in college spending, explores why educational costs are increasing and what best practices can be found to provide the greatest return on investment for students. While not solely focused on developmental education, this project addressed the implications of costs associated with failing developmental education initiatives

("Trends in College," 2012). In coordination with The Delta Cost Project, Wellman and Soares (2011) found institutions that made "greater investments in student coaching, intensive advising, and improve[ed] the effectiveness of developmental education could yield better student retention and learning outcomes" (p. 9).

Developmental education funding and costs. While many schools have taken advantage of the resources available, whether it be joining the Achieving the Dream initiative or pursuing privately funded grants, political initiatives have also played a role in driving change. The National Conference of State Legislators (NCSL, 2014) has seen a shift toward performance-based funding (PBF) and said, "Many states are reconsidering the enrollment-based funding model and instead are allocating money to colleges based on the number of student who complete courses and degrees" (para. 1). Currently, 12 states have performance funding in place with another four states transitioning to the model (NCSL, 2014). Nineteen states are conducting formal discussions regarding PBF and possibly transitioning to this model, meaning "there have been formal hearings held at the legislature or meetings conducted by governing boards on the topic" (NCSL, 2014, para. 2).

Some PBF models have shown success, leading other states to examine best practices for their institutions (NCSL, 2014). Miao (2012) discussed successes in six states currently using a PBF model, and said, "States must go beyond simply raising enrollment; they must also ensure that students complete their degrees with the skills to be successful in an evolving economy" (p. 11). With many organizations as well as President Obama in favor of PBF, institutions are analyzing current approaches to retention and completion to determine where improvements may be needed (Harnisch,

2011). Even with more states moving toward PBF, some institutions and key stakeholders remain skeptical of its success. Harnisch (2011) stated, while PBF "can lead to a greater awareness of performance of college campuses, [he cautions] it offers few 'shades of grey' in a multifaceted, complex environment" (p. 8) and went on to say "because it may stress efficiency over quality, some believe academic quality may suffer" (p. 8). In terms of PBF effects on developmental education programs, Vandal (2010) pointed out that only 17% of students needing at least one developmental education course complete a bachelor's degree. With these low returns, it is hard to see how educators are meeting the needs of students when the Bureau of Labor Statistics estimates the majority of occupations poised for growth will require postsecondary education (Roper, 2009). If state funding is tied to completion rates, retention among developmental education students must increase (Vandal, 2010).

The cost of developmental education must be considered not only for institutions and communities but also for students. Many students rely on a combination of federal grants, student loans, and scholarships to pay for college (Vandal, 2010). As Bailey (2009) asserted, the extra developmental education course requirements extend the length of time students must spend in postsecondary education, keeping them out of the workforce longer. Placement within developmental education courses carries both financial and psychological costs to the student, as they "spend time, money, and, in many cases, financial aid eligibility while not earning credits toward a degree" (Bailey, 2009, p. 21).

While all schools determined costs differently, most considered what they "must pay faculty to teach remedial courses; provide the classroom space; and supply a variety

of support services, including counseling, [and] administrative support," (The Alliance, 2006, p. 2) and often schools find that with "limited space and resources, [they] must reduce the numbers of non-remedial courses offered" (The Alliance, 2006, p. 2). Gallard, Albritton, and Morgan (2010) posited monetary costs to schools implementing new programs must be considered as well, as these efforts could be costly, and further noted these "expenditures for achieving advancements for developmental education students are recouped in financial benefits to institutions and ultimately to society at large" (p. 10). In fact, students who fail to complete the developmental education sequence, and therefore college as a whole, often enter a low-achievement lifestyle with poor outcomes (Roper, 2009).

However, McCabe and Day (1998) believed "the greatest misconception about developmental education is that it is costly" (p. 30). In fact, by retaining these students through their developmental education sequence and through graduation, they "provide financial benefits [by] becom[ing] an integral part of society, generating a positive return to society and decreasing social expenditures" (Gallard et al., 2010, p. 11).

At the time of this writing, the reality is, "States are faced with the difficult challenge of increasing college completion rates at a time of historic budget shortfalls" ("The Progress of Education Reform," 2010, para. 4). Some institution systems, such as the City University of New York, moved all developmental education courses to the community college level (Merisotis & Phipps, 2000). According to Romano and Djajalaksana (2010), such a move places an unnecessary burden on community colleges to meet the needs of all developmental education students. In fact, doing so "cost[s] the state over $4,000 more for every full-time equivalent student per year than a four-year

institution" (Romana & Djajalaksana, 2010, p. 3). Webber and Ehrenberg (2010) found given the current funding issues for higher education in most states, colleges are finding that in order to increase funds in necessary areas, such as student services and other supplementary support areas, they must decrease funding in other areas. They also found reallocating funds to address developmental education results in increased graduation rates; leading to the assumption that increases in support services could provide a viable solution for developmental education (Webber & Ehrenberg, 2010).

Proposed solutions from K-16. As institutions across the nation revise and/or create developmental education programs, one thing is clear: it is in the best interest of states, institutions, and students to examine the successful solutions available for aiding developmental education students (Bailey, 2009). Tinto (2012) suggested that institutions are doing a better job of creating developmental education sequences that build upon each other and make sense to the student. Habley et al. (2012) further examined who is responsible for the state of the developmental education rate:

> The finger-pointing is a waste of time and energy. The clear message is that both higher education institutions and K-12 schools need to partner together to devise creative solutions to decrease the number of incoming college students who need remedial coursework. (p. 259)

In line with the idea of K-12 and postsecondary institutions working together, policy makers have been vigorously working toward a set of Common Core State Standards (CCSS) aimed at aligning K-12 curriculum with higher education curriculum (King, 2011). Under this initiative, higher education institutions must "consider how to use the assessments developed to measure high school students' mastery of those content

domains in college admissions and placement" ("Frequently," 2014, p. 2). The CCSS are meant to ensure all students are prepared for higher education, and it is "a state-led effort that establishe[s] a single set of clear educational standards for kindergarten through 12th grade in English language arts and mathematics that states voluntarily adopt" ("Frequently," 2014, para. 2).

However, given the state of No Child Left Behind, some worry that creating more standards will take even more control away from states to make educational decisions and cause more problems for students unable to meet these markers (Strauss, 2010). Given the newness of the CCSS and that not all states have yet adopted the standards, its success is not clearly evident, so higher education institutions must continue to find solutions for those students attending schools where CCSS have not yet been implemented (King, 2011).

One thing that is clear is the importance of making data-driven decisions by collecting and analyzing data on developmental education efforts so institutions can discern which efforts are working. In order to close the gap, the Achieving the Dream (2014) initiative listed the following guidelines: "Guiding evidence-based institutional improvement, influencing public policy, generating knowledge, [and] engaging the public" (para. 2). These measures help create student-centered models in community colleges across the nation, as well as instituting a "culture of evidence in which data and inquiry drive broad-based institutional efforts" (Achieving the Dream, 2014, para. 1). Through the Delta Cost Project, educators at all levels are urged to collect more data about underprepared students in order to sufficiently be able to examine programs (Strong American Schools, 2008).

Institution leaders have taken notice, with some of the most prominent leaders in developmental education showing great success with data-driven cultures. One such program, Integrated Basic Education and Skills Training (I-BEST), is from the Washington State Board for Community and Technical College and is a nationally recognized model program (Bailey, 2009). Discussed more fully later in this chapter, this program integrates "instruction in basic skills with instruction in college-level professional-technical skills" (Bailey, 2009, p. 6), and data have showed students enrolled in I-BEST progress to credit-bearing courses at a higher rate and persist in college. The success of this program in its own state has led institutions across the nation to adopt its framework (Strawn, 2011).

Habley et al. (2012) suggested the most common methods of placement may need revision. Most notably, they said, "high school grade point average (GPA) is more effective than ACT scores in accurately identifying successful students when success is defined as completing first year college with a 2.0 (C) or higher GPA" (p. 247) and they further stated that using one test, such as COMPASS or ACCUPLACER, should not be the only determinate in making placement decisions (Habley et al., 2012). Belfield and Crosta (2012), in a Community College Research Center study, found that the ACCUPLACER and COMPASS's "severe error rate for English [placement] is 27 to 33 percent" (p. 1) and maintained that using high school GPA may be a better indicator for readiness of college-level coursework. However, institutions are hesitant to replace placement exams with this method of placement (Habley et al., 2012).

To garner the best results in retention and engagement among developmental education students, a combination of developmental education courses and external

student services provide the best results (Gerlaugh, Thompson, Boylan, & Davis, 2007). In particular, tutoring services and academic advising targeted specifically toward developmental education students yield good results (Gerlaugh et al., 2007). Furthermore, many schools have developed learning communities to help motivate students and provide more "coherent and engaging experiences than traditional courses" (Bailey & Alfonso, 2005, p. 17). Integrating student services into developmental education courses holds promise for bolstering these programs and leading to better retention rates (Bailey, 2009).

Another viable, promising solution appear to be forms of acceleration through developmental education sequences. One institution implemented a FastStart program in which students can complete two, three, or four levels of remedial courses in the one-term program. Through intense examination, Bragg, Baker, and Puryear (2010) found there was an increase in persistence with students in the FastStart program; however, they also found that these increases were seen in students close to the cut-off scores, suggesting acceleration programs are a viable option for students near college-ready placement. Other forms of acceleration, such as placement of students in college-level courses with supplemental meetings, have also given promising results for students testing into the highest-level developmental education courses (Jenkins, Speroni, Belfield, Jaggers, & Edgecombe, 2010). Such programs highlight possible solutions and illustrate that more than one solution may exist to meet the needs of developmental education students.

Cognitive Theories About Perception

Tinto (2012) believed for "students who enter college academically underprepared or who have struggled academically in the past, success depends as much on their coming to see themselves as being able to succeed as it does the acquisition of basic skills" (p. 27). Bandura (as cited in Crain, 2010) defined self-efficacy as ones reflection on our abilities insomuch as we make judgments about our own strengths and weaknesses. In so doing, "our self-efficacy appraisals exert powerful effects on our levels of motivation" (Crain, 2010, p. 207). In another piece of research Bandura (1986) posited we appraise our self-efficacy through achieving repeated success, witnessing others doing well, being verbally persuaded that we are capable of a task, and interpreting physiological cues positively. These modes of developing self-efficacy begin in childhood and continue through adulthood (Bandura, 1986).

John Locke, likely one of the earliest philosophers to examine cognitive self, believed "people are largely shaped by their social environments, especially by their education" (as cited in Crain, 2010, p. 4). As cited in Pojman (2011), Locke believed that children are born with a blank slate that would be imprinted by their environment and through experience and reflection; perceptions of ideas and self would be developed. Also cited in Pojman (2011), Hume believed that our perceptions "are copied from a similar impression [and] that causes and effects are discoverable, not by reason but by experience" (p. 356). Tinto (2012) claimed that students who have faced academic obstacles in the past often struggle to find themselves as competent of success in the present, which ties into the early theorists' beliefs that environmental experiences impact self-efficacy and perception.

While Locke and Hume believed innate ideas were non-existent and the "foundation of all our ideas [are located] in sensory experience" (Pojman, 2011, p. 171), Rousseau (as cited in Crain, 2010) believed children were not born with a "blank slate," but rather have "their own modes of feeling and thinking [because] they grow according to nature's plan" (p. 10). Rousseau (2011) also stated, "childhood has its own ways of seeing, thinking, and feeling" (p. 54). Drawing from Rousseau, Montessori (as cited in Santrock, 2013), who worked largely with the developmentally delayed population, also believed children needed to be guided by their nature. While Montessori (as cited in Crain, 2010) did not have a prescribed educational plan for secondary and higher education, she did believe "the adolescent has a deep, personal need to improve society, but the young person also is plagued by the self-doubts that characterize this state [and] perhaps the…best means of gaining confidence…is through real, meaningful work" (p. 86). These early works led to popular cognitive theories that delved deeper into how people learn and shape their perceptions.

Jean Piaget is well-known for his cognitive-developmental theory. Shortly after Piaget began studying children, he realized standardized testing hindered the ability to understand the true potential of children and created a more open review of study (Crain, 2010). Within education, he stressed the importance of working with a child at his or her level, thereby increasing a child's self-confidence, and in turn, his or her self-efficacy (Santrock, 2013).

Through observation and study, Piaget believed that children did not consume information from adults or environmental factors, but rather they interacted with their environment to gain knowledge and learning (Crain, 2010). Bandura (as cited in Crain,

2010), on the other hand, did not believe that children are intrinsic learners, saying instead, "children's minds are structured by the environment, by the models and the social training practices the environment provides" (p. 209).

According to Piaget, children, adolescents, and adults develop through four stages—Sensory Motor, Pre-operational, Concrete Operational, and Formal Operational (Santrock, 2013). The Formal Operational stage, which begins to emerge between ages 11 and 15, is the beginning of ideal characteristics, or rather, people begin to develop an idea of the "qualities they desire in themselves and in others" (Santrock, 2013, p. 109). As young individuals continue to develop through this stage, they develop perceptions of themselves and others based on these ideal characteristics (Crain, 2010).

Tinto (2012) believed students continue to develop perception upon entering postsecondary institutions, and while they bring with them perceptions develop through past experiences, institutions can provide support systems designed to help students redevelop perceptions and increase their sense of self-efficacy. He specifically stated, "social cognitive theory argues that individuals' interpretation of their performance alters their sense of self-efficacy and, in turn, their future performance" (Tinto, 2012, p. 27). In accordance with the cognitive theories discussed, many developmental education students must begin to see themselves as capable before they will be successful (Tinto, 2012).

Student perceptions. Research clearly shows student perception and self-efficacy plays a role in the retention and completion of developmental education courses (Bandura, 1993; Bailey, 2009; Choi, 2005; Tinto, 2012). Choi (2005) pointed out both self-concept and self-efficacy plays an important role in grades and that students with higher self-perception generally do better academically. Bailey and Cho (2010) reported

that many developmental education students "are referred to multiple levels [of developmental education and] in some cases such students would have to successfully navigate five semesters of pre-college instruction before being prepared for their first college-level course" (p. 1). According to Choi (2005), "achievement behavior is constantly influenced by self-constructs as well as by classroom environment" (p. 204), so creating an environment that requires students to progress through a long series of developmental courses could decrease self-perception in students (Bailey & Cho, 2010).

Most community colleges use placement exams to determine developmental status for students (Habley et al., 2012). While the inaccuracy of these exams has already been discussed in this chapter, student perception of such exams has not. Students placed in developmental education courses are often surprised to find themselves falling below the mark (Bailey, 2009), and sometimes feel as though the placement exam was not a good indicator of their skillset or ability to perform in an academic setting (Habley et al., 2012). Such perceptions leave students with a bitter taste in their mouths as they begin their developmental education sequence, making it less likely they will complete the courses (Bailey, 2009).

Understanding perception and self-efficacy is important to improving developmental education retention rates (Tinto, 2012). Students enter college classrooms with expectations from learned experiences, and these experiences can shape how well a student retains information (Tinto, 2012). Research has shown that underprepared students often have lower self-efficacy than prepared students (Bailey, 2009). Bandura (1977) said, "the strength of people's convictions in their own effectiveness is likely to affect whether they will even try to cope with given situations" (p. 193). For

developmental education students with a lower set of convictions, the ability to cope with pressures of these courses can lead to dropping out of school (Bandura, 1977).

In reviewing results from Grimes and David's survey of 500 community college students, Wilmer (2008) found that "underprepared students rated their academic ability, intellectual self-confidence, and emotional health lower" (para. 16) than their counterparts. These students also held expectations that they would be unsuccessful in at least one course (Wilmer, 2008). According to Nodine, Jaeger, Venezia, and Bracco (2012), underprepared students admitted to not being ready for college but also stated "the student success and developmental education courses intended to bring them up to speed were not offered in a way that helped them succeed" (p. 2). Students also reported that having support systems in place would be helpful as long as the guidance was easy to find with clear guidelines and paths (Nodine et al., 2012).

While institutions are working to create support services that help developmental education students, many of those students have said they must know the right questions to ask to find the information they need and would like institutions to be more proactive in assessing their needs (Nodine et al., 2012). Boylan, Bliss, and Bonham (1997) consistently found that more comprehensive programs yield better retention rates, as student perception and self-efficacy are increased through support services and a network of caring. Such information has continued to be reviewed as institutions search for solutions.

Retention and Student Engagement

In 2010, Education Secretary Arne Duncan (as cited in Adamy, 2010) said, "We've flat-lined where other countries have passes us by" (para. 6). Despite a breadth

of knowledge gained about developmental education retention rates over the past several decades, successful changes have been slow to take hold and retention rates have changed very little (Habley et al., 2012).

Tinto (2012) highlighted the current lack of retention for developmental education courses, stating, "only 31% of students referred to math remediation and 44% referred to reading remediation completed the full sequence…within three years" (p. 44); furthermore, only 50% within those groups successfully completed the next college-level course. Rather than comparing institutions to each other, Habley et al. (2012), believed:

> Campus-based retention efforts must focus on programs that support learning, motivation, and career development. Those programs are assessment/course placement, academic advising, learning support, and first-year transition—programs that have stood the test of time and continue to have a significant impact on student success. Finally, we believe it is time to jettison the notion that student success in college is confined to a single institution of first enrollment. (p. 18)

Throughout the research, continuous themes emerge highlighting the importance of providing active learning environments, strong student services, and student engagement opportunities. In fact, schools with higher-than-average graduation rates all present academic challenges, incorporate collaborative learning environments, encourage strong faculty-student interactions, provide strong advisement and counseling services, and emphasize student relationships with student and administration (Habley et al., 2012).

Tinto (2012) believed the reasons students leave their educational path are not connected to the reasons students succeed, and "too often, institutions invest in a laundry list of actions, once disconnected from another" (p. 5) and these actions more often than

not are placed on the periphery of students educational experiences. Doing so often leads to "neglect[ing] the classroom, the one place on campus, perhaps the only place, where the great majority of students meet the faculty and one another and engage in formal learning activities" (Tinto, 2012, p. 5). In reviewing literature regarding current developmental education models, many fell in line with Tinto's conditions—expectations, support, assessment and feedback, and involvement—for increasing retention. These models, while often given different names, generally fell into four main categories: Avoidance Models, Acceleration Models, Learning Models, and Student Supports (Rutschow & Schneider, 2011).

Avoidance models. According to Rutschow and Schneider (2011), avoidance models help prepare students prior to entering postsecondary institutions. These models present students with college entrance exams in their 11th and 12th-grade years, giving them an opportunity to strengthen areas of weakness prior to entering college (Rutschow & Schneider, 2011). One such program is the Seamless Alignment and Integrated Learning Support (SAILS) program, which begins developing skills in high school by giving the ACT test to 11th grade high school students (SAILS Overview, 2014). Students falling below a score of 19 in mathematics take a bridge course in their 12th year, "preparing them for a college-level math course, which will give them a jump-start on their college career" (SAILS Overview, 2014, para. 2).

Zeidenberg (2008) expressed community college frustrations toward K-12 systems in inadequately preparing students for college-level work; however, as previously mentioned, Hably et al. (2012) stated that community colleges were wrong to lay the blame solely at the feet of the K-12 systems. They believed "the lack of

alignment of the constituent parts of the educational system require a critical examination of how education is delivered" (Habley et al., 2012, p. 343) and such review spawned the development of holistic entities, including P-20 and K-16 initiatives (Habley et al., 2012).

An example of collaboration between K-12 and community colleges that follows an avoidance model is the Early College High School initiative, which allows students to take college and high school courses simultaneously. The American Institutes for Research (AIR, 2009) concluded that this initiative significantly increases graduation and retention rates in high school, which carry over to college. This initiative targets students more likely to be underrepresented in traditional postsecondary environments, offering them a chance to enroll in college-level courses and better prepare them for the rigors of higher education (AIR, 2009). In studying the initiative, AIR (2009) found that participating students are more likely to graduate from high school, enroll in college, and earn a degree when compared to their counterparts. Programs and initiatives that focus on bridging the gaps between K-12 and postsecondary institutions show promising results in lowering developmental education needs and increasing retention in both high school and college (Habley et al., 2012).

Acceleration models. Nodine, Dadgar, Venezia, and Bracco (2013) defined developmental education acceleration as "a strategy used by community colleges to reduce the amount of time students spend in remediation and allow them to enroll more quickly—or immediately—in courses leading to certificates or degrees" (p. 1). There are several sub-models that fit under the Acceleration Model umbrella, including fast-track options to Accelerated Learning Paths (ALP) (Rutschow & Schneider, 2011). While not a fast-track program, the ALP program allows students to enroll in college-level courses

while also participating in complimentary courses that help students work on weaknesses (Bailey & Cho, 2010).

While there are many forms of acceleration, Nodine et al. (2013) pointed out "some acceleration models help more students catch up quickly in basic academic skills and begin earning credits toward credential sooner, while others help students catch up while they earn credits" (p. 1). Rutschow and Schneider (2011) discussed accelerated courses as including modularized and mainstreamed courses and highlighted that "research on each program type has shown higher pass rates in developmental and subsequent college-level courses, as well as higher rates of student persistence" (p. 4). Acceleration programs seem to show promises of success and retention; however, more research is necessary, and schools should be careful when choosing to implement these models (Rutschow & Schneider, 2011). Institutions should consider challenges and plan to start small, gaining support of key members in the college community (Nodine et al., 2013).

Collins (2009) addressed acceleration models and programs stating they "require adding flexibility to policies that currently encourage traditional semester-based enrollment reporting for funding and financial aid purposes and traditional semester-based calendaring" (p. 13). To move forward with acceleration programs, institutions should work with state policy makers to allow for these flexibilities (Collins, 2009).

Contextualized learning models. These types of models allow students to build the necessary basic skills while also engaging in field-of-interest programs (Rutschow & Schneider, 2011). A range of possibilities exist under this model from learning communities to career pathway models (Rutschow & Schneider, 2011). Promising

evidence exist around contextualized learning models, showing increased completion outcomes for developmental education students (Rutschow & Schneider, 2011). According to Bailey and Cho (2010), learning communities "serve academically low-performing students who have been referred to developmental courses upon arriving at an institution as first-time students" (p. 6). Such communities promote "student involvement, learning, and retention [and] constitute a kind of co-registration or block scheduling [with] students register[ing] for two or more courses, forming a sort of study team" (Tinto, 2012, p. 71). Given the importance of student engagement in increasing retention (Tinto, 2012), learning communities set out to accomplish this feat by creating "stronger relationships among students and between students and faculty" (Visher, Wathington, Richburg-Hayes, & Schneider, 2008, p. iii). These communities increase motivation and engagement, which in turn increase retention and success in developmental education courses (Visher et al., 2008).

Another form of contextualized learning models include career pathway bridges. According to Strawn (2011), while pathway bridges can come in many forms, they typically have the following in common:

- Combine basic skills and career-technical content, including general workforce readiness skills, pre-college academic and English language skills, and specific occupational knowledge and skills, supported by comprehensive student services.
- Contextualize basic skills and English language content to the knowledge and skills needed in specific occupations.

- Use new or modified curricula with identified learning targets for both the academic and occupational content, articulated to the next level in the college and career pathway.
- Change how classes are delivered, using such strategies as dual enrollment in linked basic skills and occupational courses; integrated, team-taught basic skills and occupational courses; and, enrolling students in cohorts (also known as learning communities or managed enrollment).
- Support student success through comprehensive student services, often including a point of contact who helps students navigate through college advising and financial aid services, connects students to other public benefits, and works with students to problem solve as challenges arise that could derail progress.
- Connect to local employer and community needs by engaging key partners in design and implementation of bridges, such as employers, unions, workforce development boards, community-based organizations and foundations. (p. 2)

These pathway bridges are somewhat new to developmental education and generally apply to career and technical education programs (Strawn, 2011).

As previously discussed in this chapter, one of the most well-known career pathways is the Integrated Basic Education Skills Training (I-BEST) program from Washington State, which "offers basic English instruction, including discipline-specific vocabulary training and lessons on employer and employee communications" (Rutschow & Schneider, 2011, p. 5). This method has been successful in increasing retention with more students completing degrees and entering the workforce (Habley et al., 2012). In

fact, Tinto (2012) stated, “students who enrolled in I-BEST were more likely to progress into credit-bearing courses, persist in college, accumulate credits that count toward a credential, and make learning gains on basic skills tests” (p. 43). While promising, career pathway bridge programs, such as I-BEST, target groups of students that have a firm career choice in mind, as basic skills and career pathway courses are integrated in these programs (Bailey & Cho, 2010). Strawn (2011) stated students in I-BEST programs “are 56% more likely than regular adult basic education and ESL students to earn college credit, 26% more likely to earn a certificate or degree, and 19% more likely to achieve learning gains on basic skills tests” (p. 2). As Tinto (2012) pointed out, because I-BEST integrates developmental material into relevant coursework, students can understand how these skills are applicable in the context of their goals. Such applied knowledge is what makes I-BEST a promising solution and the reason why other schools are beginning to adopt the program’s framework (Tinto, 2012).

Student supports. Many community colleges address developmental education by increasing the number and scope of support systems in place (Rutschow & Schneider, 2011). Tinto (2012) believed:

> Students need a roadmap that guides them through the institution and the field in which they want to earn their degree [and] nothing is more important to student retention than academic support, especially during the critical first year of college. (p. 25)

During this time, students are more susceptible to programs and interventions by the institution, and these measures can go a long way in retaining students (Tinto, 2012). While Tinto’s focus was on the student population as a whole, Bailey (2009) stated,

"institutions can aid the academic adjustment of poorly prepared students by providing extensive instruction in academic skills, advising, counseling, and comprehensive support services" (p. 20).

Rutschow and Schneider (2011) denoted a series of support services community colleges implement to help developmental education students, including tutoring, supplemental instruction, intensive advising, and student success courses. However, they also found current research and evidence showed mixed results (Rutschow & Schneider, 2011). Despite these results, early intervention for developmental education students through a variety of academic support options offered simultaneously, or as a package, improved persistence and performance (Bailey & Alfonso, 2005).

Other considerations. Tinto (2012) believed students must be "academically and socially engaged with other people on campus, especially with faculty and student peers" (p. 64). Such involvement impacts how connected students feel to an institution and plays a large role in increasing retention (Tinto, 2012). According to Habley et al. (2012), enhancing student engagement and persistence starts with key institutional leaders promoting student-centered cultures and advocating for student success.

Traditional methods of developmental education with increased academic support have not shown favorable support (Bailey, 2009). Placing limitations of developmental education students' choices also seems to show more negative results, with some institutions requiring students to complete their entire developmental education course sequence before enrolling in college-level courses (Price & Roberts, 2009). Such hindrances increase the time it takes to complete college, and Price and Roberts (2009) contended giving "the freedom to simultaneously take college-level courses allows

developmental education students to make real progress toward a postsecondary degree or credential" (p. 4). Edgecombe (2011) explained students are lost at each level of a developmental education sequence, and "according to this principle, the multiple levels of developmental courses are 'harmful' to students because they dramatically decrease students' likelihood of completing transfer-level courses" (p. 1)

While the developmental education community has yet to determine whether online learning environments pose a great hindrance to developmental education, Zachry and Schneider (2010) believed online supplemental programs, such as ALEKS and MyWritingLab, present new methods of providing developmental education instruction. These programs not only provide enhanced learning opportunities in the classroom but also present the possibility to accelerate courses through adaptive learning (ALEKS, 2014). In fact, ALEKS (2014), math instruction software, "uses artificial intelligence (AI) to map the details of each student's knowledge [and] uses this knowledge to make learning more efficient and effective" (para. 3). However, the use of such tools to target developmental education is relatively new and requires more thorough research and practice to determine its success (Zachry & Schneider, 2010).

MyWritingLab (2013) stretches into adaptive learning possibilities as well by using "sophisticated algorithms to piece together the perfect bundle of content for each student" (para. 3). However, not all institutions have found these tools helpful. In fact, faculty from one university expressed concerns over the reliability and success of the program ("University College Assessment Summary," 2013). Other institutions, as highlighted by Miami Dade College (MDC, 2012), found using this software as additional support increased pass rates in developmental education courses. As more

institutions begin to use and examine the effectiveness of these programs, more solid information can replace the preliminary evaluations of using such tools in the classroom (MDC, 2012).

Summary

Chapter Two included a review of developmental education literature regarding the following: the state of developmental education, cognitive theories and student perception, retention, and student engagement. Roadblocks to retention and success rates among developmental education were also explored by examining programs showing promise and discussing the issues that developmental education students face. While one of the most important factors is a student's own perception of self-efficacy, other factors can influence a student's perception, such as level of developmental education needed, costs associated with remediation, time spent in remediation, and instructional and student support services offered. Also examined in this chapter were student engagement practices and methods of approaching developmental education.

Chapter Three presents research methods used to examine a developmental education program at a Midwest community college to determine retention changes after implementation.

Chapter Three: Methodology

In this chapter, the research method design is discussed. This was a mixed-methods design using quantitative and qualitative data to determine the effectiveness of a developmental education program at a Midwest community college. A description of the instrument development, the reliability and validity of the instrument, and the way in which the data were collected and analyzed is discussed.

According to Hartman, Moskal, and Dziuban (2005), using "qualitative and quantitative research yield a more valid assessment" (p. 65) and provides "authentic characterization [of] attitudes, beliefs, and behaviors" (p. 65). Using this approach also addresses "the schism between quantitative and qualitative research" (Johnson & Onwuegbuzie, 2004, p. 15).

Problem and Purpose Overview

The purpose of this study was to determine whether a significant difference exists in completion and success rates in developmental education courses since a community college in the Midwest implemented a developmental education program designed to support students who are most at-risk to fail. The study used data from two years prior to program implementation and two years following its implementation. The study also took into consideration the effect of gender and age on completion and success rates and also examined outcomes in the first college-level course. In addition, perceptions about the program were discovered through interviews with developmental education faculty and staff.

Research questions. The following questions examined elements of the Connection Program and guided the research in this study:

1. What difference, if any, exists in the course completion rate of developmental education students who have participated in the Connection Program, as compared to students who did not?

$H1_{O:}$ There is no difference in completion rates for developmental education courses when compared to completion rates prior to the implementation of the Connection Program.

2. What difference, if any, exists in course success rate, as measured by obtaining a grade "C" or higher, of developmental education students who have participated in the Connection Program, as compared to students who did not?

$H2_{O:}$ There is no difference in success rates in developmental education courses when compared to success rates prior to the implementation of the Connection Program.

3. What difference, if any, exists in course completion and success rates of developmental education students who have participated in the Connections Program, as compared to students who did not when based upon gender or age?

$H3_{O:}$ There is no difference between developmental education students based upon gender or age.

4. What difference, if any, exists in success rates in first college-level course of developmental education students who participated in the Connection Program, as compared to students who did not?

$H4_{O:}$ There is no difference in success rates in the first college-level course when compared to rates prior to the implementation of the Connection Program.

5. What are the perceptions of developmental education students concerning the Connection Program?

6. What are the perceptions of faculty and staff in regard to students in the Connection Program?

Research Design

A mixed-methods approach was the most appropriate method for this study because it examined the Connection Program from a quantitative and qualitative perspective, and according to Creswell (2008), the "overall strength of the study is greater than either qualitative or quantitative research" (p. 4). Creswell and Plano Clark (2010) further asserted, "One type of evidence may not complete the story" (p. 33). By using both quantitative and qualitative methods, it was possible to build greater connections between the information, providing the best overall picture, and allow for further examination (Tashakkori & Teddlie, 2010). Tashakkori and Teddlie (2010) further stated that a mixed-methods approach can be used to develop a more thorough body of work by examining research questions through more than one method.

This study followed Creswell's (2008) embedded research design in which the "embedded strategy of mixed methods can be identified by its use of one data collection phase, during which both…data are collected simultaneously" (p. 214). This approach, "has a primary method that guides the project and a secondary database that provides a supporting role in the procedures" (Creswell, 2008, p. 214). According to Creswell (2012), the embedded design is "particularly useful when a researcher needs to embed a qualitative component within a quantitative design," (p. 67) as was the case with this study. While largely quantitative, this study relied on qualitative interviews to determine

perceptions of the Connection Program. The intended qualitative data portion included interviews with students and a focus group held with faculty and staff; however, out of more than 100 students contacted over the course of several weeks, only two replied and only one agreed to the interview. Of the eight faculty and staff contacted, only six agreed to participate, but scheduling conflicts hindered a focus group. In an effort to maintain the credibility and validity of the study, interviews were held with faculty and staff associated with the program. As noted with the embedded design, the qualitative data gathered were used to determine "experiences with the intervention" (Creswell, 2013, p. 93).

Even though data for this study were obtained simultaneously (Creswell, 2013), the quantitative data sets were pulled from different time periods. Quantitative data were collected at two data collection points: two years preceding the implementation of the Connection Program and two years following implementation. The qualitative data were collected using a sample of current faculty and staff.

Population and Sample

The Midwestern community college in this study was the third largest in its state with 15,179 students reported through the Integrated Postsecondary Education Data System (IPEDS, 2011). Of the students who began their studies in fall of 2010, 59% returned in fall 2011. Of this population, 58.1% were female (IPEDS, 2011). Failure to retain the remaining 41% could be caused by a variety of factors, including a visiting student status, drop out, or transfer to a four-year university. Students seeking admission must complete an online application as well as a Free Application for Federal Student Aid (FAFSA), regardless of financial aid needs. They must also complete an online

orientation and, in the absence of a recent ACT score, take a placement exam, which determines whether students test into the college-level general education courses that include English, math, and reading.

Prior to the implementation of the Connection Program, the institution offered standard developmental education courses in English and math with no sequence of courses required. Students were allowed to take developmental English and math toward the end of their educational career or when they chose. After the implementation of the Connection Program, students testing into more than one developmental education course were required to follow a scripted course sequence that required they take developmental courses within their first year and that all developmental education courses were taken in a 'seated' classroom environment opposed to an 'online' environment. Students were also encouraged but not required to take a college success course and a math study strategies course in conjunction with developmental courses, as well as limiting their course load to 12 credit hours per semester or less. Reading as a formal developmental education courses was also added.

The population included students who did not meet placement score criteria for college-level courses in English, math, and/or reading. These students were required by the college to take at least two developmental education courses in English, math, or reading. For the purpose of this study, information from the college was acquired for students who, prior to the implementation of the Connection Program, would have met the criteria to participate if the program had existed. This group was compared to students who participated in the program.

Students identified prior to the Connection Program were enrolled in the semesters between fall 2009 and spring 2011. These students, while placed into at least two developmental education courses, received no type of intervention and could take the required developmental education courses in any sequence and in any learning environment available. The students had access to support student services, including the writing center and tutoring center, but no specific classes were recommended to help them succeed in college.

Students identified and recruited to participate in this study who participated in the Connection Program were enrolled between fall 2011 and spring 2013. These students were required to follow a specific course sequence, ensuring developmental education courses were taken early in their college careers. They also were limited to 12 credit hours per semester. All developmental education courses were required to be taken in a seated classroom environment and the students were encouraged to take a college-readiness course that covers basic financial responsibilities, study habits, and time management skills necessary for successfully navigating college.

Completion rates, success rates, gender, and age for all students meeting the guidelines of the Connection Program were used in this study; therefore, the entire population was used rather than a sample. Completion rates were defined as completion of the developmental education courses regardless of success. Success rates were defined as attaining a grade "C" or better in the required developmental education courses. To understand the population, gender and age were examined, which further determined whether the Connection Program had varying effects based on gender and traditional versus non-traditional status.

For the qualitative portion of the study, the researcher planned to interview a random sample of eight to 12 students currently engaged in the Connection Program regarding their perception of the Connection Program. However, few students responded and of the over 100 students contacted, only one agreed to participate. While further information could have been useful from the group before the Connection Program, as a two-year institution, obtaining a sample from this population posed a limitation. Many qualifying students who attended the institution prior to the Connection Program were no longer in attendance and could not feasibly be reached.

Six to eight members of the institution, which included faculty, staff, and administration involved in the Connection Program, were asked to participate in a focus group regarding their perceptions of student participation in the program. These individuals had experience prior to and following implementation, offering a comparison of student participation before and after the program was implemented. However, instead of a focus group, individual interviews were conducted due to scheduling conflicts.

Instrumentation

As previously stated, this study used a mixed-methods approach, primarily Creswell's (2013) embedded research design. Quantitative information was examined followed by qualitative information. Quantitative data focused on completion and success rates before and after the Connection Program and also examined differences in gender and age. The qualitative data focused on developing evidence to strengthen the breadth of the study.

Quantitative research design. In order to answer the quantitative questions from this study, data from two groups of students, those enrolled prior to the Connection

Program and those enrolled following the implementation of the Connection Program, were retrieved from the institution's database. The institution's database software, which maintained all student records for the college, was used to obtain grades from each group of students; this information provided course completion and success rates and was compared to determine if increases were seen following the program's implementation. Data were disaggregated by student completion in the course, grades obtained, male-to-female ratio, and traditional versus non-traditional students to determine any effect these factors had on completion and success rates.

Qualitative research design. In order to better understand the information obtained in this study, interviews and a focus group were planned (Creswell, 2013). Working with the research department at the institution, a list of over 100 students was provided to the researcher over the span of several weeks. Contact was attempted multiple times, and all Connection students enrolled in summer courses were contacted additionally. One student agreed to the interview. The purpose of conducting these interviews was to allow for more "open-ended questions," which "can be used with greater confidence" (Fraenkel et al., 2012, p. 13). According to Fraenkel et al. (2012), interviews are also, "the most effective survey method for enlisting cooperation of the respondents" (p. 398). Students were to be interviewed in person and provided with pseudonyms for the purpose of anonymity. Since students elected not to participate, that portion of the qualitative study was removed. The intended interview questions for students can be found in Appendix A.

Krueger and Casey (2009) stated, "the goal of a focus group is to collect data that is of interest to the researcher [and] the focus group presents a more natural environment

than that of an individual interview because participants are influencing and influenced by others" (p. 7). Based on Krueger and Casey's (2014) recommendation, a focus group was planned with six to eight developmental education administrators and full-time developmental education faculty teaching English, math, and reading. While six faculty and staff members agreed to participate, faculty schedules did not align and a consensus of time to conduct the focus group could not be reached. Individual interviews with each of the six participants were conducted, using the focus group questions, which were open-ended, beginning with more generalized questions and becoming more specific toward the end (Krueger & Casey, 2014). Focus group questions are contained in Appendix B.

Data Collection

A mixed-methods approach requires data collection through both quantitative and qualitative means. To collect the necessary data information, permission to gain Institutional Research Board (IRB) approval was obtained. Formal approval can be found in Appendix C and Appendix D.

When performing this approach, such "methods should be mixed in a way that has complementary strengths and non-overlapping weaknesses" (Tashakkori & Teddlie, 2010, p. 299). Given the nature of this study, obtaining data simultaneously posed no hardship or loss of strength from either side. The qualitative aspect of the study acted as a support to the quantitative information obtained and provided further insight into the perception of the Connection Program. The following paragraphs discuss quantitative data collection followed by qualitative data collection.

Quantitative data. Allen, Titsworth, and Hunt (2009) defined the primary objective of quantitative research as "creat[ing], expand[ing] and refin[ing] theory through systematic observation of hypothesized connections among variables" (p. 4). Working with the institution's research department, quantitative data regarding completion and success rates, as well as gender and age, were obtained between two data points: fall 2009 to spring 2011 and fall 2011 to spring 2013.

According to Muller (n.d.), reliability "refers to the consistency of a measure [and] validity refers to the extent to which…a test measures what it purports to measure" (slide 6). The quantitative data collected for this study included the same information from each data point, ensuring reliability and validity when comparing changes within the data groups (Bluman, 2011).

Qualitative data. Creswell (2008) stated qualitative data is intended to "focus on learning the meaning that the participants hold about a problem or issue, not the meaning that the researchers bring to the research or writers express in the literature" (p. 175). To gain a better understanding of perceptions associated with the Connection Program, interviews were anticipated with eight to 12 students currently engaged in the program. After several attempts to contact students, the decision was made to exclude student interviews due to lack of participation.

To further examine perception of the Connection Program, a focus group was planned with developmental education faculty in three areas, as well as the director of the tutoring center and key members of the program. However, scheduling conflicts required the researcher to conduct individual interviews with faculty and staff. These interviews were audio recorded and transcribed because this process "protects against bias and

provide[s] a permanent record of what was and was not said" (Gill, Stewart, Treasure, & Chadwick, 2008, p. 293). For the purpose of this study, six to eight members were chosen to participate in a focus group regarding their perceptions of the Connection Program and student involvement. Each member of the group signed the Letter of Consent found in Appendix E.

The primary goal for the qualitative portion was to determine perceptions of the Connection Program and identify areas for improvement. This information, while qualitative, provided additional support for the quantitative aspect of the study. A limitation of being unable to gain student participation was present and impacted the study; however, this limitation also provided information about the perceptions and mindset of developmental education students.

Golafshani (2003) stated, "to ensure reliability in qualitative research, examination of trustworthiness is crucial" (p. 5). He further posited that while some do not believe validity is applicable, providing some measurement of validity must be in place in qualitative research (Golafshani, 2003). To ensure reliability and validity of the qualitative instruments, a field test of the interview and focus group questions was conducted prior to execution to determine the reliability and validity of the questions. This field test was conducted with a panel of students and staff associated with the Connection Program who were not involved in the study and determined if the questions adequately addressed the intended research questions and addressed the objectives of the study. By conducting these field tests, "trustworthiness, rigor and quality" (Golafshani, 2003, p. 8) of the measurements could be obtained to minimize bias and increase validity and reliability. Based on results of field tests, questions were revised as necessary to

ensure the interviews and focus group adequately addressed the qualitative research questions (Golafshani, 2003).

Researcher bias. Fraenkel et al. (2012) stated that bias "occurs when the design of a study systematically favors certain outcomes" (p. G-1). Potential research bias was possible in this study for the following reasons. As an employee at the institution, the researcher was familiar with the program and had relationships with some of the faculty members who participated. While an adjunct instructor for the general education English department, the researcher did not teach developmental education at the time and had not interacted with students in those courses. It was possible, however, that the researcher taught students who were part of the Connection Program. One way this bias was addressed was by working with the research department to randomly select students currently enrolled in the Connection Program. Most likely, these students were currently engaged in their developmental education course; thereby inhibiting the researcher from having a student/teacher relationship with the student prior to the interview.

In an effort to address researcher bias in the focus group, advice was sought from an administrator in the institution's Academic Affairs department to determine who should participate. While it was likely the researcher would know the members of the group, being prepared with questions in advance and acting as a facilitator rather than a participant ensured bias was minimized.

Data Analysis

Using the mixed-methods approach, the "researcher can gain broader perspectives as a result of using different methods as opposed to using the predominant method alone" (Creswell, 2008, p. 214). Extracted data were disaggregated according to completion in

courses; grades obtained in developmental education courses and the first college-level course in English, reading or mathematics; male-to-female ratio; and traditional versus non-traditional students. Once data were collected, the appropriate tests were conducted and the results were organized based on completion and success prior to and following the Connection Program implementation.

The qualitative data were obtained through interviews and were disseminated accordingly. The following section discusses data analysis for quantitative data followed by qualitative data.

Quantitative data analysis. Once data have been extracted, a "process of simplifying data in order to make it comprehensible" (Fraenkel et al., 2012, p. G-2) began. Given the scope of the study and the groups involved, two quantitative tests were used to analyze the data and determine if the null hypotheses would be rejected. A *z*-test was used to examine whether significant increases were seen after Connection Program implementation in completion and success rates. The effect of gender and age on success in the Connection Program was acquired using an Analysis of Variance (ANOVA) test, which provides more accurate results than a *z*-test when comparing more than two groups of data (Fraenkel, Wallen, & Hyun, 2014). The following provides a more detailed explanation of these tests and why they were chosen.

***Z-test for difference in means*.** Given the size of the population was above 30 and the purpose of the study was to determine a difference in completion and success rates, a *z*-test was conducted (Bluman, 2011). This test determined if increases in completion and success rates occurred in developmental education courses and the first college-level course in English, reading, or mathematics after the implementation of the

Connection Program. Fraenkel et al. (2012) stated, "a big advantage of z scores is that they allow raw scores on different tests to be compared" (p. 201). Upon determining the means for the completion and success rates before and after the Connection Program, *z*-tests for each data set were conducted to determine if an increase occurred. A *z*-test, with a significance level of 0.05, provided answers to the first two research questions in this study.

Analysis of variance (ANOVA). According to McBurney and White (2012), an ANOVA "is a powerful statistical method for analyzing experimental data [because it is] adaptable to a great variety of…designs" (p. 402). Research question three addressed both completion and success rates in regard to gender and age. An ANOVA, with a significance level of 0.05, was used to analyze "variation both within and between each of the groups…yielding what is known as an *F* value" (Fraenkel et al., 2012, p. 236). This value was compared in a statistical table that determined significance in regard to completion and success rates based on gender and age.

Once the population size is known, the degrees of freedom can be determined; "the larger the obtained *F* value" (Fraenkel et al., 2012, p. 236) in relation to the degrees of freedom, "the greater the likelihood that statistical significance exists" (Fraenkel et al., 2012, p. 236). With so many conditions, running an ANOVA tested "the significance of a difference among several conditions in an experiment" (McBurney & White, 2012, p. 403).

Qualitative data analysis. Interpreting qualitative data is often a subjective endeavor, and has been equated to "peeling back the layers of an onion" (Creswell, 2008, p. 184). This study collected qualitative data through the use of interviews with

developmental education faculty and administrators at the college. The obtained information was synthesized and examined to determine differences in perceptions of the Connection Program. All collected information from individual interviews was transcribed and examined to determine if common themes exist. The information was coded to protect anonymity for participants.

While looking for overall common themes between both groups, an examination of the information was done to determine if differences in perception exist amongst the group. According to Saldana (2012), "a code…is most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data" (p. 3). While a coding system was created, Creswell's (2013) steps for qualitative data analysis were followed, which included organizing and preparing the information, reading the data to determine meaning, analyzing the data through categorizing material before arriving at meaning by developing a coding system that highlights similarities, generating descriptions, developing a qualitative narrative that describes the findings, and interpreting the meaning of the data based on themes and lessons learned.

Once completed, the researcher had "develop[ed] descriptions and themes from the data [and] present[ed] these descriptions and themes that convey multiple perspectives from participants and detailed descriptions of the…individuals" (Creswell, 2008, p. 193).

Summary

This chapter discussed, in detail, the problem and purpose of the study, including six research questions which guide the study. With a mixed-methods approach, this

study followed Creswell's embedded research design, gathering data simultaneously and allowing quantitative and qualitative information to be obtained. In addition, this chapter identified the population and sample and thoroughly discussed how the data would be analyzed through quantitative and qualitative means in order to determine the validity of the research questions and the success of the Connection Program.

Chapter Four: Analysis of Data

Throughout the history of higher education, administrators have tried to create developmental education programs; however, little progression has been seen. Bailey and Cho (2010) said, "Addressing the needs of developmental students is perhaps the most difficult and most important problem facing community colleges" (p. 1). Many students who do enroll in developmental education courses often leave before the course completes or shortly thereafter (Bailey & Cho, 2010). In an effort to address this growing need and increase college degree attainment in the United States, organizations, such as the Lumina Foundation and the Bill and Melinda Gates Foundation, have offered millions in grants to allow institutions to develop, implement, and share programs aimed at increasing success and completion for developmental education students, particularly in the community college sector (Bailey, 2009). Assessing the success of developmental education programs is vital to determining best practices schools can adopt to move forward in this area (Bailey, 2009).

In Chapter Four, the quantitative and qualitative data for developmental education program implemented in 2011 at one Midwest community college are examined. The outcomes from the mixed-method approach are presented in this chapter, which focused on completion and success rates in developmental education courses, success rates in first-level college courses, and perceptions of the program derived from interviews with faculty and staff involved prior to and following program implementation.

Problem and Purpose Overview

According to Bailey (2009), several developmental education programs have been implemented across the United States in an effort to better address the needs of

developmental education students and help them reach success. As stated in Chapter One, nearly 40% of entering college students require remediation ("Remedial and Developmental," n.d.), but less than half of the students complete the sequence (Foderaro, 2011). Institutions have implemented programs that target classroom best practices as well as additional support mechanisms, such as intrusive advising and learning communities, but the national statistics of success remain relatively unchanged (Bailey, 2009; Tinto, 2012). While some programs are showing progress, such as the I-BEST program from Washington State Board for Community and Technical College, a one-size fits all approach has not been adopted (Bailey, 2009).

Research showed that addressing the developmental education issue requires a holistic approach that encompasses classroom instruction and auxiliary support systems that raise student expectations for themselves, provides feedback to the institution and student, and give students opportunities to improve themselves outside the classroom (Choi, 2005; Karp & Hughes, 2008; Tinto, 2012). The program examined in this study was implemented to address these factors by increasing support and instruction.

This study had two main goals: assess quantitative data regarding completion and success rates prior to and following the implementation of the Connection Program, and to gather qualitative data regarding student and faculty and staff perceptions of the program. As discussed in Chapter Three, developmental education students were unable or unwilling to participate in the study, changing the qualitative data to include perceptions of six faculty and staff integrated in developmental education prior to and following implementation.

Summary of Implementation and Data Collection

Quantitative data were collected using the institution's database management system. Information was provided by the institution's Research and Strategic Planning office and included data from developmental English, math, and reading. Student data were disaggregated by completion and success rates, first-level college course success rates, gender, and age. The target population was students who met the qualifications of the Connection Program from two data points: two years prior to the implementation and two years following the implementation of the program.

Qualitative data were obtained through six interviews conducted with faculty and staff involved in the Connection Program. While the original intent was to interview current developmental education students, several attempts at contact proved unsuccessful; therefore, the qualitative section of this study was changed to address this issue.

Demographic Analysis

For the quantitative research, participants were drawn from the developmental education population and included all students who qualified for the Connection Program two years prior and two years following its implementation. Qualifying students included those who tested into at least two developmental education courses. For these groups, data from the entire qualifying student population were gathered and analyzed.

For the qualitative portion of the study, a sample was taken from the faculty and staff population who were connected with the Connection Program. The sample of six members included faculty from English, math, and reading, as well as supporting administrative staff. While the original intent of this study was to conduct a focus group

with this sample, scheduling conflicts between the individuals and non-participation by Connection students in the interview process forced the researcher to reformat the qualitative portion of the study and conduct individual interviews with faculty and staff.

Reliability and Validity

To ensure reliability and validity in quantitative measurements, Bluman (2011) suggested using the same information from each data point to ensure reliability in quantitative analysis. Following that standard, quantitative information obtained for this study included the same information for each comparative group. Furthermore, chosen instruments must delineate a level of consistency (Muller, n.d.). Each *z*-test and ANOVA used in this study was conducted a total of three times to ensure accurate results and account for any possible human error involved in executing the test.

In conducting qualitative research, achieving a level of confidence in the reliability and validity of the research is vital (Golafshani, 2003). When conducting interviews, justifying reliability and validity is often accomplished through running field tests with a similar group set to determine strengths and weaknesses and to see where variances may be present (Golafshani, 2003). A group of six participants familiar with the Connection Program were chosen to participate in the field test. The researcher conducted mock interviews and analyzed the information obtained to ensure the interview questions were objective in nature to avoid any bias by the researcher. Participants in the mock interviews noted disparities and/or confusion with the questions, as well as provided feedback on the nature of the questions and the questions' validity to the program.

Data Analysis

The purpose of this study was to examine a newly implemented developmental education program at a Midwest community college given the pseudonym the Connection Program. This study represented a mixed-method design meant to provide a broader analysis of the Connection Program (Creswell, 2013). While this study relied heavily on quantitative results, interviews conducted with faculty and staff involved with the Connection Program provided qualitative information which allowed the researcher to gain a better understanding of the relationship between quantitative data and faculty and student perception (Creswell, 2013). Results gained from quantitative and qualitative information are presented in this chapter.

Quantitative data analysis. Before data analysis could be performed, raw data were obtained from the institution's Research and Strategic Planning office, using the college's data management system. All data were generated by a third party and information obtained included no identifiers as to names of students associated with the Connection Program and all course information was coded as 0's and 1's. The quantitative data were kept in a password-protected cloud service, and discarded after the required time limit expired. These steps were taken in accordance with the Institutional Review Board (IRB) process and compliance procedures and ensured information was not shared with unauthorized individuals (Fraenkel et al., 2014).

According to Bluman (2011), *z*-scores are often used when comparing information that may have enough differences that direct comparisons are impossible but "a comparison of a relative standard similar to both can be made" (p. 142). Since enrollment numbers in English, math, and reading vary by semester and discipline, using

a *z*-score allowed the research to compare two similar data sets. With the level of significance, or alpha (α), = .05, the results in Table 1 lists the developmental education subjects analyzed. Through this examination, math was the only subject that failed to show a statistically significant difference.

When all courses were compiled, the *p*-value of .0013 was less than $\alpha = .05$, thus the H_0 was rejected and the alternative hypothesis was considered. The results from a holistic standpoint indicated more students qualifying for the Connection Program completed their developmental education courses after the program's implementation than students before implementation.

Table 1

Developmental English, Math, and Reading Completion Rate z-Test Results

Connection Program Implementation				
Discipline	Mean Before	Mean After	*z*	**p*
English	.85	.74	2.88	.0040
Math	.79	.75	1.00	.3176
Reading	.22	.59	-8.87	<.05
All Courses	.63	.67	-3.21	.0013

Note: $*p < .05$, $z_{crit} = -1.9$ and 1.9

A *z*-test was also used to examine success rates, defined as receiving a grade "C" or above, in developmental education classes. Table 2 displays results for English, math, reading, and all developmental courses compiled as a whole. The analysis of success rates showed significant statistical differences in math and reading (before implementation and after implementation) while English showed no statistical difference. In looking at the developmental education courses as a whole, a significant increase in the number of developmental education students who successfully completed their

developmental education courses existed. The *p*-value of 2.84×10^{-8} fell well below the $\alpha = .05$, thus the H_0 was rejected and the alternative hypothesis was supported (Bluman, 2011).

Table 2

Developmental English, Math, and Reading Success Rate z-Test Results

Connection Program Implementation				
Discipline	Before	After	*z*	**p*
English	.67	.65	.80	.4247
Math	.49	.61	-2.51	.0121
Reading	.22	.48	-6.22	4.85×10^{-10}
All Courses	.46	.53	-5.55	2.84×10^{-8}

Note: $*p < .05$, $z_{crit} = -1.9$ and 1.9

Differences in completion rates based upon gender were examined using an analysis of variance (ANOVA) to conduct an *F* test (Fraenkel et al., 2014). According to Bluman (2011), an *F* test allows for "the comparison of two variances or standard deviations" (p. 509). This strategy can provide evidence to determine if a significant difference exists (Bluman, 2011). For gender-based completion rates in this study, the critical value was calculated at 3.78 using $\alpha = < 0.05$, which sets the limit of significance (Bluman, 2011).

There was a significant difference found between the groups with $F = 20.98$, $p = 1.62 \times 10^{-13}$. This score is significantly above the critical value of 3.78. A post-hoc Tukey test was conducted to determine "where the significant differences in the means lie" (Bluman, 2011, p. 640). The Tukey test, which made pairwise comparisons, showed significant differences between pre-Connection and post-Connection males ($p = 1.32 \times 10^{-08}$), and pre-Connection and post-Connection females ($p = .0194$). Based on these results, the H_0 was rejected and the alternative hypothesis was supported.

The ANOVA for gender-based success rates with $\alpha = 0.05$ yielded significant differences $F = 47.73$, $p = 1.99 \times 10^{-30}$, which is significantly above the critical value of 3.78. The need for post-hoc analysis was indicated. However, the Tukey post-hoc analysis revealed no differences between pre- and post-Connection females or pre- and post-Connection males.

For age-based completion rates with $\alpha = < 0.05$, an ANOVA revealed significant differences, $F = 28.88$, $p = 1.63 \times 10^{-18}$. This score is significantly above the critical value of 3.78. A post-hoc Tukey test showed a significant difference between pre- and post-Connection students under 25 ($p = .0171$, $\alpha = 0.05$). Because a significant difference existed among students under 25 within the group, the H_0 was rejected and the alternative hypothesis was considered.

Age-based success rates were examined using an ANOVA and significant differences were seen $F = 7.56$, $p = 4.82 \times 10^{-05}$. A post-hoc Tukey test showed no significant differences between pre-Connection students under 25 and post-Connection students under 25 or pre-Connection students over 25 and post-Connection students over 25. Because completion and success rates based upon gender and age were included in the same research question and differences were found among gender-based completion rates and age-based completion rates, the H_0 was rejected and the alternative hypothesis was supported.

To further understand the Connection Program's impact, success rates—defined as receiving a grade "C" or above—in the first college-level class were also examined. Table 3 displays results from *z*-tests executed for college-level English and math courses, as well as any of the first college-level course taken by a student qualifying for the

Connection Program before and after its implementation. All three discipline areas—English, math, and any—showed a statistically significant difference, with each increasing the number of developmental education students in the Connection Program successfully completing their first college-level course. The strongest gains were seen in math, which showed a difference at significance level of < .01; however, the other two ranges fell within the set α = < .05, thus the H_0 was rejected and the alternative hypothesis was supported.

Table 3

College-Level Course Success Rate z-Test Results

	Connection Program Implementation			
Discipline	Mean Before	Mean After	*z*	**p*
English	.23	.27	-2.40	.0163
Math	.11	.16	-3.27	.0011
Any College-level Course	.70	.75	-2.35	.0187

Note: **p* < .05, z_{crit} = -1.9 and 1.9

Qualitative data analysis. According to Golafshani (2003), "qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings" (p. 600). Those executing qualitative research "seek…illumination, understanding, and extrapolation to similar situations" (Golafshani, 2003, p. 600). Creswell (2013) suggested researchers use qualitative data to explore phenomena and should ask a wide-open question to fully explore the study. In this study, six faculty and staff associated with the Connection Program were interviewed. They were each asked 10 questions that explored their perception of the program, as well as their thoughts on how students perceived the program based on their own interactions with students.

To begin qualitative analysis, an initial coding phase was implemented by reviewing data taken from interviews (Saldana, 2012). As information was decoded to determine meaning, the information was placed within a category to help provide an overall meaning of the information derived from the interviews (Saldana, 2012). In an effort to determine faculty and staff perception, as well as student perception, the following categories were created:

- Developmental Education General (DEG)
- Connection Program Perception (CPP)
- Connection Program Guidelines (CPG)

As interview transcripts were analyzed, the responses were categorized into the above categories and were used to guide the second phase of analysis to determine emerging themes present throughout the interviews. Saldana (2012) said, "coding is heuristic…and exploratory problem-solving technique without specific formulas to follow" (p. 8). The categories were developed to help answer the following research questions:

- What are the perceptions of developmental education students concerning the Connection Program?
- What are the perceptions of faculty and staff in regard to students in the Connection Program?

Interview Question #1 (DEG). *How do you feel about the number of students who require developmental education courses?* Of the six members interviewed, the opinions were split evenly. Two members believed the number of developmental education students was too high and did not accurately reflect the number that actually needed to take developmental education courses. In fact, Interviewee #3 stated, "I don't

think we have an accurate assessment tool for figuring who are the students who truly need it most." Interviewee # 5 said, "I think that not as many actually require it as are in it." These two participants felt some entering students need a refresher course to help them remember the fundamentals instead of a 16-week course. Interviewees #3 and #5 referenced a "boot camp" the institution is currently piloting that provides a one-week refresher in English composition, showing the number the majority of students who take the refresher course are able to re-test and enter college-level courses.

Two other participants were dismayed by the number of students required to take developmental education but believed them to be an accurate representation (Interviewee #1 and Interviewee #2). Both Interviewee #1 and #2 felt developmental education courses were originally created to address the needs of non-traditional students seeking to return to college or enter college at a later stage in life. Interviewee #4 stated, "Developmental education courses were created mainly for students who return to school who haven't had this stuff before." The interviewees believed the influx of students entering from high school unprepared is upsetting. Interviewee #6 believed the reason was in part due to the increase in the number of students seeking higher education. According to this participant, not all high school students decide to go to college until after they graduate, and said, "if they weren't planning on going in high school, then they'll likely need developmental education…through no fault of their own—they're meeting the requirements of high school—but they're not taking the necessary classes to get into college."

Interviewees #1 and #2 believed the numbers of developmental education students were accurate. Interviewee #2 said, "I think nationally only about one-third of incoming

freshman are ready for college-level work…so I figure at least half of our students—maybe two-thirds because we're a community college—should be in the program because they're unprepared." Interviewee #1 responded, "They should come in better prepared. I think there's lots of reasons why that happens. At least we have them, so we can get them where they need to be."

Interview question #2 (DEG). *Do you feel the institution's method of placement adequately identifies students who need remediation?* Five out of six participants believed the institution's current method of placement, a common college placement test created by ACT referred to as the COMPASS, is significantly flawed and fails to place many students accurately. Interviewees #1–#5 believed it potentially places college-level students in developmental education courses and underprepared students into college-level courses. In reference to a college-level course, Interviewee #1 responded, "somehow they managed on the COMPASS to do well and get in the class. There are definitely misplacements." Another responded, "many are tired and simply start clicking answers. It isn't always an accurate assessment" (Interviewee #2). Respondents all commented on the one-shot test with Interviewee #4 stating, "The problem with it is that we use a high-stakes testing model. Whether it even measures what it says it measures is a whole other story." Interviewee #6, however, believed the test is adequate.

Three of the participants suggested alternative ways of placing students. Interviewee #4 suggested the use of affective testing because "affective characteristics are very important and should be taken into play." In fact, the participant discussed the earlier days of the institution when these characteristics were taken into account because there was a greater ability to meet with students and assess chances of success.

Interviewee #5 believed students currently are caught off guard and would do better if they were allowed to prepare for the test: “they come in, think they’re gonna sign up for classes, and all of a sudden they have to take this test…they don’t even know how to take it.” Interviewee #6, who believed the test is adequate, also believed there is a better method of placement but the institution does not have the resources to fund this type of placement. This participant discussed upcoming legislation that will compensate schools to allow junior-level high school students to take the ACT, which will give “all juniors…the ability to…find out where they place at no charge.”

Interview question #3 (CPP). *The Connections program began in fall 2011. Think about the developmental education courses prior to the Connection Program. What were the strengths and weaknesses of developmental education courses prior to the Connection Program?* Five of six participants said that reading was not a required developmental education class prior to the Connection Program. Interviewees #2–#6 felt this was a weakness because “students who would test into the lowest level of reading would also be taking psychology 110. It was horrible. They had no chance to succeed because they couldn’t read” (Interviewee #4). Interviewees commented on a more rigorous curriculum in math prior to the implementation of the Connection Program, as well as changes that were already being made to increase success and completion. Interviewee #3 stated, “We went through the courses and overhauled [by updating course objectives and teaching methods] in 2008….In 2009, we started our assessment, so when Connection comes along in 2011,” we were already making a lot of changes that had an impact. One interviewee stated no changes were made in classes taught by them outside

of changes made every semester to improve the classroom (Interviewee #5). This participant did not feel the program has affected how the class is taught (Interviewee #5).

Interview question #4 (CPP). *Thinking about the Connections program, what were your initial reactions to the program?* For this question, the group was evenly divided. Three participants thought it was a good idea and showed excitement, while three participants were nervous or concerned about the upcoming changes. Interviewee #1 responded, "I felt like students got more support." While another participant said, "I was thrilled that there was some type of requirement, particularly in reading" (Interviewee #2). Interviewee #5 "thought it was a good idea to have advisers more specifically targeted to the developmental students to help them navigate the process because I think it's a confusing process." These three participants all responded with hope that the new program would provide additional support to developmental education students.

The other three participants all recalled their initial reactions as being concerned and/or anxious about the Connection Program. Interviewee #3 was concerned about the number of restrictions the program would place on developmental education students, saying, "So what happens is, we ask are they not succeeding because they're developmental or because we've thrown up a lot of obstacles?" Another participant was "worried that some of the things we changed would not be helpful to students" (Interviewee #4). This participant was also concerned about the amount of material being removed from some courses when the Connection Program was implemented, stating, "I really thought they needed to learn everything they didn't learn in high school" (Interviewee #4). The final interviewee responded, "my initial reaction was concern

because we were already going in one direction and we had to shift" (Interviewee #6). This participant was also concerned with the lack of time given to develop and implement the program and felt more time was needed to develop a stronger, more cohesive program (Interviewee #6).

Interview question #5 (CPP). *Prior to the Connections program, students were allowed to take developmental courses during any semester, either seated or online. In your experience, how do you feel this impacted developmental education students?* All six participants agreed the openness in which students were allowed to choose timing and environment hindered success. Interviewee #1 responded, "I think the fact that they could take their classes at any time and take anything else along with it was very bad for them because they'd choose classes they shouldn't be taking." Interviewee #2 focused on requiring students to take seated courses, and said, "I'm 100% behind the idea that they should not be able to take online classes. They need the interaction [with] students and the instructor." Interviewee #4 stated:

> They need those skills [writing, reading, and math]. One of the things people don't realize if they didn't have to take or teach developmental education is that people do poorly at it because it's hard. It's the hardest classes they'll ever take.

This participant went on to explain these classes are difficult because the student is lacking the necessary skills to be successful, which is why he or she is in the course (Interviewee #4). Other participants discussed how students would put off the developmental education courses until the end of their academic career, at which point they have usually performed poorly in other classes because they lacked the college-level skills needed to succeed in college-level courses (Interviewee #3). Interviewee #5

suggested students "could benefit from simultaneous enrolled, like the ALP [Accelerated Learning Path] kind of classes." Interviewee #6 believed students who want to succeed usually will succeed, but the majority of developmental students need some kind of structure. This participant responded, "I think the freedom was nice to be able to tell people they could do whatever they want, but it curtailed many students in the speed in which they could be successful. It slowed them down" (Interviewee #6).

Interview question #6 (CPG). *In the Connections program, students are limited to a number of courses, are not allowed to take online courses, and must complete their developmental education sequence within a certain timeframe. In your experience, how do you feel this has impacted developmental education students?* While most of the participants felt limiting the number of courses and not allowing students to take online classes was the right path to take for Connection Program students, four out of five also stated there were downsides to the decision. Interviewee #1 felt the changes were good for students, but did not feel students "really understand how important it is to get those classes under their belts before moving on." Another participant believed Connection Program students are still allowed to take too many 100-level classes, and restrictions should be increased (Interviewee #2). This participant focused on the trend to accelerate students through developmental education rather than adding more restrictions (Interviewee #2). When asked if Interviewee #2 thought there was a way to achieve both, the response was, "If we tandem teach [or teach a class together]." Interviewee #3 stated time as a factor for students and whether they succeed, with a focus on students who may need refresher courses rather than full 16-week courses. Other participants believed the sequence and structure provides the additional support these students need but has the

potential to make students doubt their abilities and whether they are "college material" (Interviewee #4).

Interview question #7 (CPG). *The Connections program provides several additional recommendations other than the required actions, including a life skills course, a math strategies course, and limited credit hours per semester. In your experience, do Connections students follow these recommendations and do you see a difference between students that do and students who do not?* All six participants agreed the additional recommendations do provide additional support that could be beneficial to the student. Many of the participants taught the college success course and found students who take the course develop a better sense of community and feel the class did benefit them. However, five of six participants expressed concerns about how many students follow the recommended guidelines and the fact that these guidelines are not enforceable.

Through the interviews, it appeared not all faculty and staff are aware the guidelines are not enforceable. One participant said, "Some of them can get around the guidelines somehow" (Interviewee #1). Another said, "A lot of them are slipping between the tracks" (Interviewee #2). Interviewees #4 and #6 expressed frustration that the institution's data management system is not equipped to make certain courses mandatory in the Connection Program. Interviewee #6 stated, "There's a lot of people that we would like for them to take it, but they don't. We can't enforce it." Interviewee #4 said, "it [the institution's data management system] won't be able to require students to take the class, so it'll never happen."

Interview question #8 (CPP). *How do you feel the Connections program has impacted retention and completion rates in developmental education courses?* Participants generally did not have clear answers to this question. Two believed the rates would be increased if the guidelines were enforced and followed. Interviewee #1 stated, "Retention rates are probably based on following the guidelines." This participant believed students who follow guidelines are more likely to succeed; those who do not are most likely to repeat classes and/or drop out of college (Interviewee #1). Another participant discussed the lack of follow through on dedicated advisors for Connection Program students, as well as intrusive advising that was not carried out (Interviewee #4). However, this participant also agreed with Interviewee #2, who stated, "I look at all my classes and it's the grit [or personality traits]. It's all the other life issues." Interviewee #6 responded, "You've heard the phrase 'developmental students lead developmental lives.' They have too many things going on. It's usually not the academics that's stopping them from coming back….sometimes it's just life."

Interviewee #3 did not believe the program has increased rates, saying, "I don't think you can say 'it's because of this.' I think you can say we've made a lot of changes." Another stated, "I think it has definitely improved both. Maybe not by much, but there's been a definite improvement."

Interview question #9 (CPP). *In your experience, how do you feel students perceive the program?* Four of six participants believed students are unaware they are in a program. One of six stated, "I still think they think developmental education is just a way for us to make more money" (Interviewee #4). Another of the six participants listed

three student perspectives encountered during interactions with developmental education students:

> I think you have the student who is offended…that they're in there and they're angry….And then you have a set that are grateful for the help. They know they struggle and they want the extra support….And some of them…feel… "I am stupid. This is where I belong." Anytime you label them and put them in a group, you're going to have all of those kinds of things. (Interviewee #5)

Of the four who believed students are unaware they are in a program, they believed a lack of communication is at fault, and many students are left with negative perceptions. Interviewee #1 responded, "I think they feel like they're just being picked on in some way, and they don't understand it." Another said, "We're trying to make them successful," but they do not see it as a program (Interviewee #2). Interviewee #3 believed students perceive the program as a "stupid" label, saying, "As an advisor, I have a hard time saying to my student, 'you can't take an online class because someone has deemed you unacceptable in an online class,' which is the perception the student has when told he or she is not allowed to take an online class." Ultimately, all participants expressed a level of confusion from students and many instructors.

Interview question #10 (CPP). *What are the strengths and weaknesses of the program?* Most participants stated the strengths as being associated with the intentions of the program. Interviewee #3 said, "I think the overall purpose is a strength, which is to improve retention and completion." Interviewee #5 responded, "I think a strength is that it's designed and tried to target the problems and struggles that students who end up in that program have to deal with, so I think it has good intentions." Another stated, "the

strengths were what we required, what we wanted, the structure…the online restriction" (Interviewee #6). Others suggested strengths included getting "them [students] better prepared" and the program has led the institution to be "a lot more focused. Everything in every one of our classes has a specific goal" (Interviewee #1, Interviewee #2, and Interviewee #4).

However, participants shared weaknesses of the Connection Program as well. While some weaknesses focused on students' negative perceptions of the program, which they felt were largely due to lack of communication and support, the majority of participants listed lack of enforcement of proposed program guidelines as a major weakness that altered the intention of the program (Interviewees #1–#6).

To complete the analysis, responses were analyzed to identify and examine emerging themes and connect the categories (Creswell, 2013).

Emerging theme: flawed placement. Five of the six participants in the interview process noted the institution's placement process as being flawed. Most stated the placement exam used, COMPASS, had the potential to place non-developmental students in developmental education courses or developmental students in college-level courses. Two of the participants felt misplacement negatively contributed to the number of students requiring developmental education, giving a false sense of the number of entering developmental education students.

Participants also expressed a lack of communication on the institution's part to inform students of the importance of this test. The participants also believed students lack understanding and often take the test quickly, not knowing that they can be placed in developmental education classes based on their performance on this one-shot test.

Suggestions emerged from the interviews, which included using alternative measures to placement, including writing exams, refresher courses, and/or affective characteristic testing, but many also stated a lack of funding resources as a barrier to implementing alternative solutions.

***Emerging theme: positive intentions*.** While not all participants agreed about the Connection Program outcome, all participants agreed the vision of the program exhibits well-meaning intentions and care for the students. Throughout the interview process, several participants noted positive guidelines, additional support mechanisms, and a general sense of flexibility and adaptability within the institution to find ways to approach developmental education.

One participant (Interviewee #4) discussed an annual event in which the institution has dedicated funds, which celebrates the successes of developmental education and highlights the innovative practices occurring in the classroom. Most participants felt the restrictions placed on students were positive aspects of the program, and the additional structure would help otherwise unstructured students perform better. While there were a couple of participants who believed the limitations imposed on students negatively impacted their self-confidence, all participants agreed the program's intent is to help students succeed in developmental and college-level courses.

Emerging theme: flawed execution. All participants in the interview process discussed strengths of the program as being related to the intentions; however, participants noted weaknesses, such as poor execution of the program. Several participants noted the institution's inability to enforce guidelines or require certain courses, making guidelines and requirements merely suggestions students should follow.

With the exception of two participants, most felt the stricter guidelines would increase the program's success substantially if they could be enforced.

Other participants noted flawed execution of the program in other ways. For instance, they discussed projects that were occurring before the program was implemented that had an impact on developmental education outcomes in their departments and wondered if the Connection Program could take credit for those positive results. Additionally, they focused on a lack of communication with the student and lack of support services promised during the program's implementation phase. Participants again noted a lack of funding in seeing additional developmental education support services to fruition.

Emerging theme: student ambiguity. When asked about student perception, participants indicated there was a lack of knowledge about the program from a student perspective. Participants commented most students are unaware of the program, and many presented a negative connotation associated with developmental education from the students' perspectives. Some stated students believe they are being picked on or that the institution is devising ways to make additional dollars from their pockets. Furthermore, participants noted a negative effect on self-confidence and self-efficacy in stating many students encounter feelings of inadequacy and believe themselves to be "stupid" or not "college material."

Participants expressed throughout the interview process a lack of communication with students leads to misunderstandings of the purpose of the program, which they all felt is intended to help raise chances of success in all courses. Most participants noted the additional support staff originally dedicated to the program as being a way to

communicate more effectively, but again, this support staff has been stretched into other areas as the institution struggles with decreased funding.

Summary

Significant differences were found in course completion rates and course success rates when comparing data prior to and following implementation of the Connection Program. Differences were also seen when examining data based on gender and age and in the first-level college course. While some courses showed no significant differences, when taken as a whole, the analyzed data provided results that rejected the H_0 and considered the alternative hypothesis for each quantitative research question.

A total of six members from faculty and staff were interviewed. Major themes that emerged through these interviews included flawed placement, positive intentions, flawed execution, and student ambiguity. Participants felt the Connection Program was created with good intentions toward developmental education students; however, the execution and communication hindered the program's potential success.

In Chapter Five, the effects of these results are discussed. Conclusions about the study are discussed in relation to prevalent research presented in Chapter Two to express how the findings of this study compare to developmental education research and best practices. Implications for practice and recommendations for future research provide suggestions on what types of activities and further research should be done, how these activities and further research could be carried out, and what should be examined in future studies of the Connection Program.

Chapter Five: Findings

This mixed-methods study was developed to examine one developmental education program implemented at a Midwest community college to determine its effectiveness on increasing success and completion rates for developmental education students. While the percentage of students in need of developmental education has not changed significantly since the first developmental education program was put in place, the accessibility and number of students attending higher education has increased substantially (Merisotis & Phipps, 2000; Parker et al., 2010). Large organizations, such as the Lumina Foundation (2014), Achieving the Dream (2014), and the Bill and Melinda Gates Foundation (Bailey, 2009), have donated millions of dollars to help institutions develop programs that will increase retention, success, and completion rates for developmental education students. The Obama administration continues to provide funding toward grant initiatives that regularly list remediation as a focus for seeking funds ("Education," 2014).

In Chapter Five, the findings of the quantitative and qualitative data collected to analyze a developmental education program implemented in 2011 are presented. This program was developed to address the most relevant issues—completion, retention, and success—for students testing into two or more developmental education courses. The Connection Program added additional support systems, which were aimed at helping build student confidence and ability and is in line with Tinto's (2012) theories that educational support systems can provide students with an anchor by which to raise self-esteem. In addition, institutional support structures have also been shown to raise self-efficacy, or enable one to believe in his or her future performance (Bandura, 1986; Choi,

2005; Tinto, 2012). The Connection Program also established guidelines and regulations in an effort to make students more successful (Tinto, 2012). Throughout this chapter, results presented in Chapter Four will be discussed. In the Findings section, results from data collected will be summarized. Following the findings portion of Chapter Five, conclusions based on these findings will be discussed in regard to the research questions presented in Chapter One. Implications for practice will provide practical suggestions raised in the research presented. Finally, recommendations for future study will be made based on gaps identified through the literary research and the findings of this study.

Findings

Using a mixed-methods approach, both quantitative and qualitative data were collected to determine whether changes were seen after a developmental education program was implemented in both statistical measurement and qualitative means (Creswell, 2010). In the following subsections, the quantitative and qualitative findings are both discussed.

Quantitative findings. Over the past five years, there has been a strong push for institutions to produce data-driven results in developmental education (Achieving the Dream, 2014; Bailey, 2009; Lumina Foundation, 2014). As schools begin making changes and implementing new programs, many are funded by large grant foundations that require data-driven decisions and accountability (Achieving the Dream, 2014; Bailey & Cho, 2010). Therefore, most programs are structured around the ability to provide measurements for retention, completion, and success (Tinto, 2012). The quantitative section of this study examined completion and success rates for developmental education students who qualified for the Connection Program. Completion was defined as

completing the course, while success was defined as achieving a grade "C" or better. Differences in these rates based upon gender and age were also examined, and to ensure a more accurate reflection of the program was analyzed, completion and success rates in qualifying students' first-level college courses were also examined. In each instance, the H_o was rejected for the developmental education courses as a whole; however, the findings did present interesting results, such as the gap between traditional and non-traditional students, which remains a relevant issue regardless of the Connection Program.

All statistical tests were run with a level of significance set at .05. Each area was examined by discipline, meaning rates were noted for English, math, and reading individually, and was also examined as a whole with all courses scores compiled in the test analysis. While the research questions were designed to analyze the whole picture, looking at discipline-specific statistics provided a more accurate assessment of the program (Creswell, 2013).

In comparing completion rates for developmental education at the discipline level prior to and following the Connection Program, significant differences were seen in English and reading; however, math did not show a significant difference. When all courses were examined holistically, a significant difference (p = .0013) was seen; therefore, the H_o was rejected and the alternative hypothesis was supported, indicating an increase in completion rates for developmental education was seen after the Connection Program was implemented.

A *z*-test was also used to examine success rates to determine if significant increases were seen following the Connection Program implementation (Bluman, 2011),

which was defined as attaining a grade "C" or higher. In this instance, the highest gains incurred were in reading, while no significant difference occurred in English courses. When all courses were examined holistically, a significant difference in success rates following the Connection Program's implementation was realized, showing an increase in success rates.

To examine gender-based differences in the Connection Program, an ANOVA test was used to conduct an *F* test (Fraenkel et al., 2014). The critical value was set to determine if differences existed and a post-hoc test was conducted when necessary (Bluman, 2011). For gender-based completion rates, values were above the critical value for courses as a whole. Further testing showed differences between pre- and post-Connection males and pre- and post-Connection females. While the intention of this study was to examine statistical differences based on gender prior to and following the Connection Program, differences were also seen across the genders (females to males), which presents an area in need of further research to understand why these differences exist and is therefore relevant to the overall examination of the results.

An ANOVA was also used to examine age-based completion rates (Bluman, 2011). All courses were examined and results fell above the critical value. A post-hoc examination was conducted (Bluman, 2011), which concluded differences existed between pre- and post-Connection students under 25. While focused on significant differences between similar age groups, results of the test also indicated differences between students under 25 and students over 25. This indication is another area in which future research may further examine this phenomenon to understand why differences

between non-traditional (over 25-years-old) and traditional (under 25-years-old) exists regardless of the Connection Program.

Gender- and age-based success rates, defined as attaining a grade "C" or better, were also examined using an ANOVA with a post-hoc Tukey test when appropriate (Bluman, 2011). Gender-based success rates showed significant differences when all developmental courses were compiled. While the post-hoc analysis did reveal differences across the groups, there were no significant differences seen between similar groups (male-to-male, female-to-female, under 25, and over 25), indicating the Connection Program has had little impact on students based on gender or age factors. Differences found across gender groups should be examined in future studies and is discussed further in recommendations for future research.

In an effort to determine the extent of any differences seen since the implementation of the Connection Program in success rates for qualifying Connection Program students in their first-level college course, a *z*-test was used in English, math, and any college-level course. All three areas presented a significant difference post-Connection, with math seeing the highest gains. These results indicate the Connection Program has had a positive effect on the students who move beyond the developmental education classroom.

Qualitative findings. Tinto (2012) believed student engagement in the classroom and student support systems are paramount to helping developmental education students succeed. Qualitative interview questions were developed with the four areas of focus highlighted by Tinto (2012) in mind: expectations, support, assessment and feedback, and involvement. When the Connection Program was implemented in 2011, support systems,

the area Tinto (2012) suggested as most beneficial to developmental education success, were included with the intent of providing Connection students with the support needed to be successful.

Interviews held with six developmental education faculty and staff at the Midwest community college in this study provided answers to questions focused on examining qualitative perceptions of the program. The original intent was to interview students regarding their perceptions of the program; however, due to lack of participation, that group was removed from the study. In accordance with Yin (2010), categories were established based on answers provided by faculty and staff. Questions were divided into three categories:

- Developmental Education General (DEG)
- Connection Program Perception (CPP)
- Connection Program Guidelines (CPG)

These categories aligned with the qualitative research questions discussed in the following section. From these three categories, four additional themes emerged: flawed placement, positive intentions, flawed execution, and student ambiguity.

The majority of interviewees questioned the placement process and believed some students are inadequately placed. According to Bailey (2009), many students are placed in developmental education classes when they thought they were prepared for college-level work. Oftentimes, being placed in these classes can lower a student's self-efficacy and perception in his or her ability to be successful in college (Bandura, 1986; Choi 2005; Tinto, 2012).

While interviewees were not in agreement as to the benefit and success of the Connection Program, all participants believed the program came with good intentions. While not all were on board with the methods (limitations on classes, restricting developmental education classes to a seated environment, and imposing more stringent guidelines on how students move through the system) all agreed the intent behind the program was not to hinder the student or make the student feel worse. Most believed the program was created to help the student gain the necessary skills and support needed to be successful in college-level courses.

Throughout the interview process, flawed execution was an emerging theme. While there were stark opinions in some areas, such as success of the program, all interviewees discussed, questioned, or criticized a lack of guideline execution, which included class limitations and online environments, with the implementation and subsequent performance of the program. These criticisms revolved around course guidelines, such as not enrolling in online courses, and support services, such as tutoring and advising. Given Tinto's (2012) importance on student support services, this emerging theme appears to carry great importance.

While students were not interviewed, valuable information regarding student perception and engagement were gleaned from faculty and staff interviews. Many participants believed successful students who used the resources available were going to be successful regardless of the program. However, for the majority of students, being in developmental education classes and having limitations imposed upon them were believed to possess lower self-confidence. Additionally, interviewees felt many students were unaware of the program and saw developmental education requirements as

additional obstacles standing in their way to degree completion. A lack of communication regarding the program and expectations was noted as having negative effects on students' perception of the program and their own abilities to succeed in college. Additionally, the lack of communication regarding the importance of the COMPASS test was also noted.

Conclusions

The intent of this study was to determine whether a developmental education program at a Midwest community college impacted retention, completion, and success rates for developmental education students. More than 40% of entering college students require at least one developmental education course, with implications that such placements affect students' perceptions of their ability to master college-level work and also increases the amount of debt they may accumulate to gain remediation ("Remedial and Developmental," n.d.; Tinto, 2012; Vandal, 2010). Across the country, initiatives and best practices are sought to increase college-readiness and help students move through developmental education in the most successful way possible (Bailey, 2009; Karp & Hughes, 2008; Lumina Foundation, 2014). This section examines the research questions presented in Chapter One and draws conclusions based on the results of analyzed quantitative and qualitative data.

Research question #1: *What difference, if any, exists in course completion rate of developmental education students who have participated in the Connection Program, as compared to students who did not?* A z-test was used to determine differences within English, math, and reading, as well as all developmental education courses as a whole. Data from qualifying students prior to implementation and following implementation

were compared. When looking at the discipline level, the results indicated that completion rates in math were not affected by the Connection Program, meaning there was little to no impact on the number of math students completing the developmental math courses after the Connection Program implementation. However, significant changes were seen in both English and reading.

Because reading was not a required developmental education course prior to the Connection Program implementation, the greatest gains were seen in reading. Prior to the Connection Program, students testing into developmental reading were merely encouraged to take the reading course, so it is hard to determine if the Connection Program is the sole reason reading has seen more completers. Obviously, more students were required to take reading after implementation; therefore, it would make sense that completion rates would increase. Reading has been a developmental area since the inception of the first developmental education program (Merisotis & Phipps, 2000), so it was surprising to find this course was not a requirement prior to the Connection Program. Unlike increases seen in reading completion rates, significant decreases were seen in English completion rates after Connection Program implementation. The reason for this decrease remains uncertain; however, there are researchers who believe forcing a class sequence on students can have a negative impact on a student's willingness to complete the sequence (Price & Roberts, 2009).

This research question was developed to gain an understanding of whether the Connection Program increased completion rates for qualifying developmental education students. When all Connection Program course data were analyzed, an increase in completion rates was statistically significant. However, given the insignificance in math

and the decrease in English, it could be assumed that the addition of reading as a required course in developmental education bolstered the test results enough to show a significant increase in completion rates.

Research question #2. *What difference, if any, exists in course success rates, as measured by obtaining a grade "C" or higher, of developmental education students who have participated in the Connection Program, as compared to students who did not?* Less than 50% of students who enter developmental education classes complete a college degree (Bailey, 2009). In some cases, students fail to persist because they are unsuccessful in their developmental courses and quit trying (Tinto, 2012). While developmental students who are successful do not necessarily continue on their higher education path, being successful is a better indicator of students who may complete their degree (Bailey & Cho, 2010).

While statistical tests did not show a significant different in the English scores after the Connection Program implementation, both math and reading data were determined to be significantly different in regards to the number of students successfully passing these developmental education courses. As previously noted, reading was not a required course prior to the program; it was not surprising to see such a sharp increase in this area. The fact that English saw no significant gains was surprising and telling. Of the three disciplines, English success rates appeared to remain steady with no significant differences noted regardless of program implementation with averages above 50%. When looking at the results for all courses, the Connection Program is successful insomuch as more students overall are successful in the program. It appears changes made in the math classes, namely incorporating ALEKS, a math-based software program

allowing students to gain immediate feedback during course work and homework, and offering a math strategies class, has resulted in more positive success rates for this course.

Research question #3. *What difference, if any, exists in course completion and success rates of developmental education students who have participated in the Connections Program, as compared to students who did not when based upon gender or age?* While many students who test into developmental education are non-traditional students who have been out of school for a number of years, more and more traditional students are in need of developmental education (Bailey, 2009; Tinto, 2012). In fact, "older students referred to any sequence of reading remediation and to the one-course sequence of math remediation were found to have lower odds of progressing than younger students" (Bailey, Jeong, & Cho, 2010, p. 5). Understanding the differences between these two areas is important when examining the success of a developmental education program. Furthermore, according to Bailey et al. (2010), "men…had lower odds of passing to a higher level in a developmental sequence than did women," (p. 5) and "the gender effect…[was] found to be strong throughout the entire set of sequences for both math and reading" (p. 5).

An ANOVA was used to examine differences for both age and gender (Bluman, 2011). For age-based completion rates, the post-hoc analysis identified differences between traditional and non-traditional students with non-traditional students faring worse in both pre- and post-connection program analysis when compared to traditional counterparts. After implementation, pre- and post-connection program traditional students completed at approximately the same rate, while completion rates for non-traditional students fell slightly. Age-based success rates indicated traditional and non-

traditional students were on similar footing prior to the program's implementation. However, traditional students increased success rates following implementation, while non-traditional students dipped slightly.

Completion rate results for gender showed significant differences, so a post-hoc Tukey test for all developmental education courses was completed to determine where those differences existed (Bluman, 2011). Based on those results, females and males showed similar rates prior to the Connection Program; however, completion rates for males decreased following the implementation. When examining success rates based on gender, the results were similar in regard to females outperforming males, but males appeared to increase their success following implementation. Female success rates remained the same prior to and following implementation. Males remained below females; however, the ANOVA and post-hoc analysis indicated males did see an increase in success rates after the Connection Program was implemented.

Researchers in this field have noted differences between traditional and non-traditional students and male and female students (Bailey et al., 2010). Results of this study indicated differences between the abovementioned groups became more pronounced after the program was implemented, so it appears the program has had more detrimental effects for the at-risk population within these categories. Examining whether those groups take advantage of the available support systems could help determine causes for these disparities.

Research question #4. *What difference, if any, exists in success rates in first college-level course of developmental education students who participated in the Connection Program, as compared to students who did not?* An indication of a

developmental education program's success is how students perform in their first-level college course (Achieving the Dream, 2014; Bailey et al., 2010; Tinto, 2012). In fact, Bailey et al. (2010) stated, "the goal of developmental education is to prepare students for college-level courses" (p. 3). A *z*-test was used to analyze success rates in this important step for Connection Program students (Bluman, 2011).

Significant differences existed in English, math, and any college-level course taken after the developmental education sequence was completed. To note, reading courses at this institution are not available at the college-level; however, these skills are applicable and necessary in college-level coursework. English, math, and any first-level college success rates increased in the number of Connection Program students who successfully passed the college-level course, indicating the Connection Program sequence was beneficial to qualifying students in preparing them for college-level coursework. The assumption is the changes made through the Connection Program have had a positive effect on the outcomes of developmental education students because they are more successful in the first-level college course. Given the strong gains in reading, it could be assumed gaining basic reading skills carries over into college-level coursework and has made a positive impact on the students' abilities to work at that level (Habley et al., 2012; Tinto, 2012).

Research question #5. *What are the perceptions of developmental education students concerning the Connection Program?* Two of the greatest barriers to retention, completion, and success in developmental education are perception and self-efficacy (Choi, 2005; Karp & Hughes, 2008; Tinto, 2012;). To answer this research question, the intent was to interview eight to 12 students currently participating in this program;

however, after failed attempts to gain participation, the study had to be revised and student interviews were excluded from the qualitative data. While gaining these interviews would have provided invaluable data toward understanding the effects of the Connection Program, being unable to procure student participants may be more telling about the perception, self-esteem, and self-efficacy of Connection Program students.

Tinto (2012) discussed at length the perceptions of developmental education students. He highlighted the importance of providing intrusive support systems to this group of students in order to raise self-efficacy, or the belief in their own capabilities (Tinto, 2012). In line with Tinto, Choi (2005) also believed student perception and self-efficacy play a vital role in his or her ability to be successful against the academic rigors faced in developmental education and college. Those studying in the field of developmental education often draw from Bandura's extensive cognitive theory regarding student perception and success (Bonham & Boylen, 2011; Choi, 2005; Karp & Hughes, 2008; Tinto, 2012). As previously stated, students often enter post-secondary education unaware they are unprepared for college-level courses (Bailey, 2009; Bailey & Cho, 2010; Tinto, 2012).

Researchers have found providing strong support systems, prepared instructors, and strong learning communities can help increase student perception and trust (Bailey, 2009; Bonham & Boylen, 2011; Rutschow & Schneider, 2011; Tinto, 2012). Given the attempts to reach out to Connection Program students and the lack of response, conclusions can be drawn that align with the research proposed in Chapter Two, indicating this group of students may feel less connected and carry a lower self-esteem regarding their inclusion in the Connection Program (Tinto, 2012).

Research question #6. *What are the perceptions of faculty and staff in regard to students in the Connection Program?* While the original intent was to conduct a focus group with six to eight faculty members, scheduling conflicts rendered an amenable time impossible. Therefore, individual interviews were conducted with six members of faculty and staff associated with the Connection Program.

Four major themes emerged during these interviews: flawed placement, positive intentions, flawed execution, and student ambiguity. While all agreed the program was developed with the notion to improve retention, completion, and success rates for developmental education students, the interviewees had various opinions on how well the program targeted those areas. For developmental English, in particular, the consensus was ideas and theories were already being put into place to help students succeed in these classes and to ensure only students truly needing these courses were placed thusly.

A push began to norm pass/fail grading of developmental English courses in 2009, two years prior to the Connection Program implementation. Also, a one-week course was being developed to provide students testing into developmental English with a refresher. Many students completing this short course were able to test into the next level developmental English course or into the college-level English course, allowing students to be more accurately placed. These changes to developmental English prior to the Connection Program could explain why English courses saw fewer changes in quantitative analysis pre- and post-connection program.

In line with the idea that the Connection Program had good intentions, this program was developed to provide developmental education students with more support systems, including additional course offerings targeted at helping students become

familiar with college, gain additional self-study skills, and provide a network by which students could feel more connected. More intrusive advising was also listed as an expectation of the program. However, all interviewees suggested and/or stated these implementations were not enforced, and while students who followed the guidelines tended to be more successful, without enforcement, many developmental education students chose not to take advantage of the extra support systems provided. Tinto (2012) placed student support as one of the most important indicators of success. Falling short of this line could correlate to decreased completion and success rates seen in some of the most vulnerable groups, including males and non-traditional students.

Further, most participants pointed to flaws in placement of these students and suggested the high-stakes testing system currently used contains too much room for error. This idea falls in line with current research that suggests high school GPA may be a better indicator for placement than commonly used tests ("Frequently," 2014; Habley et al., 2012; Strong American Schools, 2008). As previously stated in this study, error rates for the most commonly used measurement in some disciplines averages near 33% (Belfield & Crosta, 2012).

Also indicated was a lack of communication to faculty and students regarding the program. In fact, many believed students rarely knew they were in the Connection Program, and some faculty are completely unaware of the program's guidelines. This lack of communication can lead to silo teaching. In other words, there were indications that nothing changed in the classroom because the program had little to no effect on how courses are taught. While this is likely true, understanding the program and the students

involved in the program could help instructors provide stronger support systems to these students.

In terms of student perception, participants suggested students are generally not happy with placement and few understand why they have been placed thusly. While there are students, mostly non-traditional, who do believe they have been adequately placed, many are left with a negative impression, which affects student perception and self-efficacy. As Foderaro (2011) said, many students were unaware they were not prepared to take on college-level courses and are upset with the system for either not preparing them or for adding additional obstacles to complete a college degree. The responses from participants regarding student perception provides one more indicator as to why students were less willing to participate in a study that highlights their placement.

Implications for Practice

Common goals to increase degree attainment in the United States and the focus of creating performance-based funding systems have spurned institutions to re-examine developmental education programs (Achieving the Dream, 2014; Bailey, 2009; Harnisch, 2011; Miao, 2012; National Conference of State Legislators, 2014; Vandal, 2010). Understanding the success of developmental education programs in an effort to develop best practices that can be implemented across higher institutions is paramount to increasing retention, completion, and success rates in areas of remediation (Bailey, 2009). Support systems, clear communication, and an accelerated pathway to meet students' end goals propose the best chance of helping students succeed (Tinto, 2012). When examining the developmental education program at one Midwest community college, it is apparent these factors, student support systems and clear communication, were taken into

consideration during its development; however, the execution has stifled the true breadth of the program, leading to lackluster results.

When examining the program holistically, increases in completion and success rates are seen; however, findings suggested decreases in English completion rates, male completion rates, and non-traditional success rates. No significant changes were seen in English success rates or age-based success rates or in math completion rates. Further increases could be seen with better execution in areas of support, advising, and communication, all of which are elements suggested within the conceptual framework and proposed by leading researchers in the field (Bailey, 2009; Tinto, 2012). Additionally, research clearly links perception and self-efficacy to success in developmental education (Choi, 2005; Tinto, 2012). While the Connection Program includes vital elements to increase perception and self-efficacy through support systems, such as a college success course and math strategies course, a deviation from the original mandatory guidelines has hindered the true success of the program and left Connection Program students with little guidance and understanding of the program, including a clear understanding of why they should follow the recommended guidelines.

The importance of providing Connection Program students with a better understanding of their placement, sequence and support services available can be seen in available research (Achieving the Dream, 2014; Bailey, 2009; Habley et al., 2012; Tinto, 2012). Developmental education students are faced with academic struggles, and these struggles color their perception of whether they can succeed (Tinto, 2012). Providing clear directions students can see and hear could go a long way in helping them achieve success (Pojman, 2011). Furthermore, Tinto (2012) argued students come into higher

education with a preconceived idea of how well they can perform based on the experiences they had prior to entering. Institutions providing strong programs, which help evolve students' perceptions, can change the mindset of not being capable of achieving success (Tinto, 2012). Such programs will have clear expectations for students with proper support mechanisms required.

Findings from this study indicated a clear increase in completion and success rates when developmental classes as a whole are examined; however, in looking at results according to discipline, the findings are less indicative of success. Reading completion and success rates increased significantly following the implementation of the Connection Program, which could be because reading was not a required course prior to the Connection Program. English and math, however, garnered less stellar gains and, in some cases, exposed decreases since the Connection Program implementation. In gender and age, the two groups, males and non-traditional students, already purported to fall behind counterparts (Bailey et al., 2010) continue to fall behind counterparts, and in some cases, males and non-traditional students decreased in completion and success rates after program implementation.

Qualitative data in this study supported the notion that more emphasis should be placed on better communication across the channels to reach students, faculty, and staff working with Connection Program students (Tinto, 2012). Along with better communication, finding ways to require the original mandatory requirements should be sought in an effort to ensure students are exposed to the resources implemented to support their needs. To summarize the words of one of the interviewees, if a guideline is

not enforced, then it merely becomes a recommendation, and most students will not take advantage of it (Interviewee #6).

Recommendation for Future Research

This study examined just one of many developmental education programs available at community colleges with the intent of determining its success. The mixed-methods approach provided a broad view of the program and allowed the researcher to determine if the quantitative analysis was mirrored in qualitative results (Creswell, 2013; Fraenkel et al., 2014). Through the analysis and triangulation of this data, areas of further research were implicated, and future studies should take the following into consideration when examining this program.

Institution comparison. While this study allowed for a deeper analysis into one developmental education program, future studies may glean broader information and a better indication of success if compared to institutions of similar size, which have recently implemented new or revised developmental education programs. Such studies may provide better insights into best practices used at other institutions and help the institution determine where improvement may be made. A mixed-methods approach would still yield the best results, as the qualitative analysis could indicate differences in perception from institutional faculty, staff, and students (Creswell, 2013). Interviews held with these groups at varying institutions could also provide information in which the institution could use to better support systems by comparing emerging themes from each location (Fraenkel et al., 2012).

Qualitative substance. Using a mixed-methods approach allowed the researcher to conduct a more complete examination (Creswell, 2013). The intent of this study was

to provide qualitative data from students, faculty, and staff associated with the program. While students were unwilling to participate, future studies would benefit from gathering qualitative data from students to gain a better understanding of their perception and self-efficacy within the program. Better outreach procedures should be sought through the institution's research and strategic planning department, which provided no more than students' email accounts held with the institution. Permissions to advertise through instructors and to offer incentives may help gain student participation in future studies.

Future studies could also benefit from broader numbers of faculty and administrative interviews, namely advisors working with Connection Program students. These individuals could provide more insight into developmental education students and their willingness to participate in suggested activities.

Quantitative analysis. The original intent of this study was to examine the overall completion and success rates for qualifying students prior to and following the Connection Program. Data obtained included discipline-specific data as well, leading the researcher to conduct a brief analysis at the discipline level. While this information was included in the study, the overall focus remained on data results for all courses within the study, rather than on the discipline itself.

Discrepancies were evident when examining completion and success rates in developmental course work based on gender and age and in the first-level college courses. Further examination at the discipline level should be conducted to account for strengths and weaknesses within disciplines. Conducting a more drilled-down approach could provide vital information, which could be spread across the disciplines to ensure the program is effective in all disciplines (Creswell, 2013).

Alternative options. During qualitative interviews, alternatives to developmental education not included in the Connection Program were discussed. Most prevalent was a one-week refresher course offered to students testing into developmental English. According to the participants, students taking this course re-test upon completion and make gains, with many testing into college-level English. This process suggests some students can meet college-level expectations but may need a refresher over basic skills necessary to succeed in these higher-level courses. This type of acceleration is not a new concept; Nodine et al. (2013) referenced programs which allow students to refresh their academic skills and begin working toward their degree sooner. Examining this institution's program in conjunction with the Connection Program could provide better insight into the increase of success rates in first-level college English courses.

Given the expressed success of this refresher course, replicating that idea across the developmental education disciplines may further increase completion and success rates at the institution. All participants noted a flawed placement system, which is backed by contemporary research (Habley et al., 2012; Strong American Schools, 2008; Tinto, 2012). Modifying the Connection Program to include these types of acceleration courses may prove beneficial to increase rates as well.

Additionally, qualitative results indicated a flaw in how students are placed in developmental education. Participants provided suggestions, including GPA and affective characteristics. These suggestions aligned with research regarding placement exams (Belfield & Crosta, 2012; Bonham & Boylen, 2011; Habley et al., 2012). However, there was also an indication such methods would require additional resources. Future studies into the Connection Program may benefit from examining placement

methods currently used at other institutions accounting for resources allocated to these endeavors.

Summary

In accordance with the conceptual framework outlined in Chapter Two, this study sought to examine one developmental education program at a Midwest community college in relation to completion and success rates after its implementation. The Connection Program included efforts to increase support systems through intrusive advising, a college success course, strategies courses, tutoring opportunities, and limitations through course sequence tracks (Tinto, 2012). Major researchers of developmental education express the importance of providing students with strong support systems that target academic and social cognitive support (Habley et al., 2012; Tinto, 2012). Theories into cognitive perceptions indicate a lower self-efficacy and confidence level in developmental education students in part because of experience with academic struggles in the past (Choi, 2005; Tinto, 2012). Within the literary review, much of the research indicated a need to help developmental education students feel included in the system through options such as a college-success course and student involvement (Bailey, 2009; Bonham & Boylen, 2011; Choi, 2005; Karp & Hughes, 2008; Tinto, 2012).

Additionally, research indicated it is not enough to add support systems to traditional methods of teaching developmental education (Bailey, 2009); however, placing limitations on students can increase negative perceptions and self-efficacy (Price & Roberts, 2009). Furthermore, Edgecombe (2011) indicated developmental education students are unsure how to navigate through the sequence and need a more streamlined

path presented in an understandable manner. Bailey and Alfonso (2005) found providing students with support options early in their higher education career could help increase understanding and improve persistence.

When examining all courses, quantitative data in this study, which compared qualifying students two years prior and two years following the implementation of the Connection Program, indicated significant differences across the board. Completion and success rates in developmental education courses increased following the implementation of the Connection Program. Additionally, college-level success rates increased following implementation. However, when examining differences based on gender, males still performed worse than females and decreased in completion and success following implementation. While a gap still existed between traditional and non-traditional students, with traditional students outperforming non-traditional students, overall there was an increase in completion and success rates for both groups.

While not as broad as originally intended, qualitative data provided insights into faculty, staff, and student perceptions about the Connection Program (Golafshani, 2003). Since all participants worked in developmental education prior to the program, they were able to discuss differences in the pre- and post-connection program. Results indicated the program was created in an effort to provide stronger support systems and a pathway for Connection Program students, which would increase retention, completion, and success. Overall, participants felt students who followed the recommended guidelines and took advantage of the additional support courses and opportunities put in place had better outcomes. Participants all agreed the addition of reading as a required developmental

education course helped students gain necessary reading skills to be successful in college-level courses.

However, major flaws emerged through these data as well. In particular, a high-stakes placement was seen as a negative. Participants felt some students are not properly placed and are forced to take a traditional 16-week course to gain skills they already possess. Alternatives were suggested, including a refresher course currently in progress at the institution for English students who test into developmental English. Participants involved in the creation of the Connection Program noted areas that were developed as requirements but were not carried out as requirements during implementation. These guidelines became recommendations, and participants felt this hindered the Connection Program's success potential, meaning they believe success could be greater with the suggested requirements in place.

Taken as a whole, the researcher concluded the program has been successful when viewed holistically; however, in reviewing data presented at the discipline-level taken in conjunction with the qualitative data, the Connection Program has more potential than is currently being achieved. Providing alternatives to placement and offering refresher course opportunities in other disciplines could help ensure the right students are being targeted through the program (Habley et al., 2012). Effective communication and targeted advising could also help students connect with the program better and help raise their self-efficacy as well. In order to achieve this, communication has to be tackled at the advising and faculty levels as well, as some of those interviewed were confused about the program requirements. Anyone who regularly interfaces with Connection Program students should have the knowledge and training about the program to explain and reach

out to these students. Furthermore, the guidelines originally put in place for the program should be examined to determine if these guidelines can help the Connection Program reach its full potential.

Developmental education professionals working with the Connection Program are making strides but can do more to help ensure developmental education students are provided the academic and cognitive support needed to be successful in college-level courses. If the United States is to "have the highest college attainment rate in the world by 2020" (Vandal, 2010, p. 4), then continued examination and growth in developmental education programs must be a priority.

Appendix A

Interview Questions

1. Tell me about your experiences in the Connection Program.
2. How were you placed in the Connection Program? Scores from ACT or COMPASS test scores?
3. Tell me about your educational experiences prior to enrolling in college.
4. What was your reaction when you learned you would need to take developmental education courses?
5. How has the Connection Program benefited you? In what ways could the program have helped more?
6. How important do you feel it is to enroll in the recommended life skills course?
7. How do you feel about the limitations placed on classes you are allowed to take in this program?
8. Have you followed the other recommendations of the Connections program, such as taking a math strategies course, avoiding online classes in non-developmental courses, and registering for developmental courses you tested into?
9. How do you feel the Connection Program has impacted your ability to reach your higher education goals?
10. What services offered through the Connection Program do you feel are beneficial?

Appendix B

Focus Group Questions

1. How do you feel about the number of students who require developmental education courses?
2. Do you feel the institution's method of placement adequately identifies students who need remediation?
3. The Connection Program began in fall 2011. Think about the developmental education courses prior to the Connection Program. What were the strengths and weaknesses of developmental education courses prior to the Connection Program?
4. Thinking about the Connections program, what were your initial reactions to the program?
5. Prior to the Connections program, students were allowed to take developmental courses during any semester, either seated or online. In your experience, how do you feel this impacted developmental education students?
6. In the Connections program, students are limited to a number of courses, are not allowed to take online courses, and must complete their developmental education sequence within a certain timeframe. In your experience, how do you feel this has impacted developmental education students?
7. The Connections program provides several additional recommendations other than the required actions, including a life skills course, a math strategies course, and limited credit hours per semester. In your experience, do Connections students follow these recommendations and do you see a difference between students who do and students that do not?

8. How do you feel the Connections program has impacted retention and completion rates in developmental education courses?
9. In your experience, how do you feel students perceive the program?
10. What are the strengths and weaknesses of the program?

Appendix C

Lindenwood Institutional Review Board Approval

LINDENWOOD

LINDENWOOD UNIVERSITY ST. CHARLES, MISSOURI

DATE:	April 7, 2014
TO:	Katherine Craft, Ed.D
FROM:	Lindenwood University Institutional Review Board
STUDY TITLE:	[576953-1] The Connection Program: An Examination of A Developmental Education Program at One Midwest Community College
IRB REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	April 7, 2014
EXPIRATION DATE:	April 7, 2015
REVIEW TYPE:	Expedited Review

Thank you for your submission of New Project materials for this research project. Lindenwood University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to the IRB.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the completion/amendment form for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of April 7, 2015.

Please note that all research records must be retained for a minimum of three years.

If you have any questions, please contact Robyne Elder at (314) 566-4884 or relder@lindenwood.edu. Please include your study title and reference number in all correspondence with this office.

If you have any questions, please send them to IRB@lindenwood.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Lindenwood University Institutional Review Board's records.

Appendix D

[redacted] Institutional Review Board Approval

[redacted] **HUMAN PARTICIPANTS REVIEW APPLICATION COVER SHEET**

Project Personnel — Human Participants Training Certificate: On File / Attached

Katherine Craft — X
Principal Investigator

Division_____ Department_____

Project Involves Protected Health Information — Yes _____ No X

Co-Workers — Human Participants Training

_____ Yes_____ No_____

_____ Yes_____ No_____

Additional names and information on training are to be provided on an attached sheet

Proposed Project Dates: from 3/30/2014 to 05/03/2015
Title: The Connection Program: An Examination of a Developmental Education Program at One Community College
Funding Agency or Research Sponsor: Doctoral Program through Lindenwood University

X New Project ____Renewal or Continuation
____Change in Procedure from Previously Approved Project ____ Resubmission

RECOMMENDATION OF THE DIVISION IRB MEMBER
____Category I, Exempt, Sub-part A, Section 45.101 45 CFR 46; exempt category____
____ Category II, Expedited Approval, Sub-part A, Section 46.110; expedited category____
____Category III, Full Committee Review

_____ _____
IRB Division Representative Date

ACTION OF THE IRB

____Approved as Exempt ____Expedited Approval

RESULTS OF FULL IRB REVIEW

✓ Approved ____Deferred (see attached comments) ____Disapproved (see attached comments)

[redacted]
IRB Institutional Research Representative

5/5/2014
Date

Appendix E

Lindenwood University
School of Education
209 S. Kingshighway
St. Charles, Missouri 63301

Informed Consent for Participation in Research Activities

"The Connection Program: An Examination of a Developmental Education Program at One Community College"

Principal Investigator Katherine Craft
Telephone: [redacted] E-mail: kgc092@lindenwood.edu

Participant _____ Contact info _____

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1. You are invited to participate in a research study conducted by (Katherine Craft) under the guidance of Dr. Sherry DeVore. The purpose of this research is to determine the effect of the implementation of a developmental education program.

2. a) Your participation will involve
   - Participate in a face-to-face interview with the principal investigator.

   b) The amount of time involved in your participation will be no more than one hour.

   Approximately [6 to 8 subjects] will be involved in this research.

3. There may be certain risks or discomforts associated with this research. They include being uncomfortable in answering some of the questions.
4. There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about the Connection Program
5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.
6. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study and the information collected will remain in the possession of the investigator in a safe location.
7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Katherine Craft, [redacted] or the Supervising Faculty, Dr. Sherry DeVore, [redacted]. You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

Participant's Signature	Date	Participant's Printed Name	
Signature of Principal Investigator	Date	Investigator Printed Name	

Revised 1-21-2010

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Vita

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