

2016

A Comparative Study of Two Instructional Models in Developmental Education Writing Programs

Barbara Ann Roseborough
Walden University

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>

 Part of the [Education Commons](#)

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact ScholarWorks@waldenu.edu.

Walden University

College of Education

This is to certify that the doctoral dissertation by

Barbara Roseborough

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee

Dr. Leslie VanGelder, Committee Chairperson, Education Faculty

Dr. Denise Weems, Committee Member, Education Faculty

Dr. Gary Lacy, University Reviewer, Education Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2016

Abstract

A Comparative Study of two Instructional Models in Developmental Education Writing

Programs

by

Barbara P. Roseborough

MA, Atlanta University, 1977

BS, LeMoyne-Owen College, 1975

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education

Walden University

August 2016

Abstract

Low college readiness among high school graduates is a national problem. A significant percentage of graduates are referred to courses designed to remediate deficiencies in the basic skills of reading, writing, and mathematics. Initiatives designed to improve the student experience in remedial and developmental programs have focused on the use of technology. Although technology has been used in the teaching of writing, research has not shown that this method is an improvement when compared to the lecture-based approach to teaching writing. The purpose of this nonexperimental quantitative study was to examine the impact of a technology-based writing program on student academic achievement, retention, and success in the advanced English class when compared to the lecture-based program. A framework for the study was Piaget's theory of cognitive development, which emphasizes learning through active exploration. A sample size of 88 degree-seeking freshmen, under the age of 20, with ACT scores that placed them in developmental writing or learning support writing courses, was used in the research. Quantitative, secondary data were analyzed using Chi-square and Cramer's V tests. The results of the Chi-square analysis were significant ($\chi^2(1) = 22.72, p < .001$), indicating that the percentage of students who succeeded in their advanced English course was different between the technology-based and the lecture-based classes. This study has implications for positive social change in the form of empirical-based data, which may inform decisions relative to the design of writing programs across the country. This information would potentially impact the college completion initiatives employed at community colleges nationwide.

A Comparative Study of two Instructional Models in Developmental Education Writing
Programs

by

Barbara P. Roseborough

MA, Atlanta University, 1977

BS, LeMoyne-Owen College, 1975

Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
Education

Walden University

August 2016

Dedication

This work is dedicated to developmental educators, both faculty and administrators, who serve as significant change agents in the lives of remedial and developmental students. These educators work to ensure that programs and institutions are student-ready, even when students are not deemed college-ready. The work of developmental educators requires passion, preparation, and persistence. I salute those educators who possess these qualities.

Acknowledgments

Journeys are meant to be shared. There are individuals who may guide, accompany, inspire and encourage the traveler. I am fortunate to have had individuals along my academic journey who have filled each role. My desire to become an educator stemmed from my passion for people, so I must first acknowledge God for placing such passion, and the opportunity to serve people, at the center of my life.

The faculty mentors, dissertation committee, staff and administrators have guided me through this process. I especially acknowledge, with sincere appreciation, my dissertation committee: Dr. Leslie VanGelder, whom I met late on this journey, but who has been instrumental in my progress; Dr. Denise Weems, who graciously accepted my request to serve on the committee; also, Dr. Gary Lacy, who, too, has been a guiding force, helping me to realize that there really is a “light at the end of the tunnel.”

I am especially grateful for my family. My mother, Mrs. Sarah Peeples, is the inspiration of my life, guiding me through every major step of my life journey. My husband, Michael, has travelled beside me throughout this doctoral process, and because of him, there were no major tasks left unattended as I focused on this project. Finally, my daughter, Ariel, shifted our relationship, and she became the encourager, motivator, and stern disciplinarian, reminding me that no worthwhile journey is left unfinished. I owe much to my loving and supportive family.

Table of Contents

List of Tables.....	v
List of Figures.....	vi
Chapter 1: Introduction to the Study.....	1
Background of the Study	2
Problem Statement.....	8
Purpose of the Study.....	9
Research Questions and Hypotheses.....	10
Conceptual Framework for the Study.....	12
Nature of the Study.....	13
Definitions	15
Assumptions.....	17
Scope and Delimitations.....	18
Limitations.....	19
Significance of the Study.....	20
Summary.....	21
Chapter 2: Literature Review.....	23
Introduction	23
Strategies for Searching of Literature.....	24
Theoretical Foundation.....	24
Developmental Education: The Historic Context.....	25

Developmental Education 17 th & 18 th Centuries.....	26
Open Admissions and Remedial Education 19 th Century.....	26
Developmental Education 20 th Century.....	28
The Structure of Higher Education and Remediation.....	30
Current Issues.....	31
Creating Access and Maintaining Success.....	35
Strategies for developing effective programs.....	36
Restructuring the curriculum.....	38
Assessment and Placement.....	39
Cognitive and Non-cognitive Skills.....	41
Streamlining developmental programs.....	44
Reviewing on-boarding processes.....	45
Competency-base learning.....	46
Individualized Instruction.....	47
Self-paced, Technology-based instruction.....	48
Other Non-traditional teaching/learning approaches.....	51
Description of the Developmental Writing Program.....	53
The Writing Course/Traditional Model.....	55
The Redesigned Program.....	56
The Emporium Model.....	60
Summary	62

Chapter 3: Research Method.....	63
Introduction.....	63
Research Design and Approach.....	63
Sampling and Setting.....	66
Description of the Learning Support Model.....	67
Description of the Traditional Writing Program.....	68
Data Collection and Analysis Procedure.....	69
Instrumentation and Operational of Construction.....	70
Reliability and Validity of the study.....	71
Ethical Procedure.....	73
Summary.....	74
Chapter 4: Results.....	75
Introduction.....	75
Pre-Analysis Data Processing.....	76
Descriptive Statistics.....	77
Research Question 1: Chi-square test.....	79
Research Question 2: Chi-square test.....	80
Research Question 3: Chi-square test.....	81
Chapter Summary	83

Chapter 5: Summary, Conclusions, and Recommendations.....	84
Introduction.....	84
Summary	84
Conclusion	86
Question 1.....	88
Question 2.....	89
Question 3.....	90
Implication for Social Change.....	92
Recommendations for Future Study.....	100
Reference.....	97
Appendix A: Data Use Agreement.....	105

List of Tables

TABLE 1. A Comparison of the Previous Cutoff Scores and Enrollment With the New Cutoff Scores and the Projected Enrollment in Learning Support.....	6
TABLE 2. Fall 2007, 2008 and 2009 First-time Freshmen who enrolled In DSPW0800, DSPR0800, and either DSPM0800, DSPM0850 or DSPM0870 were analyzed to determine their Pass Rates in These Courses and Retention to Subsequent Spring Semesters.....	57
TABLE 3. ACT Cutoff Scores for Placement in College-level English, Mathematics, or a Reading Intensive College-Level Course.....	58
TABLE 4. A Comparison of the Previous ACT Cutoff Scores and the Student Enrollment at each Level using the new ACT cutoff scores.....	58
TABLE 5. The Traditional Model vs. The Emporium Model of Instruction.....	61
TABLE 6. Means and Standard Deviations for Continuous Variables.....	77
TABLE 7. Frequencies & Percentages for Categorical Variables.....	78
TABLE 8. Chi-square Analysis for Class Type vs Success in Developmental Course.....	80
TABLE 9. Chi-square Analysis for Class Type vs Retention.....	81
TABLE 10. Chi-square Analysis for Class Type vs. Success in Advanced Course.....	82

List of Figures

FIGURE 1. High School Graduates in Tennessee Meeting College-level
Readiness Benchmarks.....5

Chapter 1:

Introduction to the Study

A major issue in higher education today is the underpreparedness of high school graduates for matriculation at postsecondary institutions (Complete College America, 2012). This issue has received attention from various sectors of society: policy makers, educators in both private and public institutions, and the general public. Postsecondary institutions responded to the dilemma of unprepared and underprepared students by instituting support systems and creating resources to assist students in developing the basic skills to support their success in college-level, credit-bearing courses (Bettinger, Boatman, & Long, 2013).

The basic skills included reading, writing, and mathematics. Some institutions also included courses in basic oral communication. These programs were developed and offered at community colleges and universities across the country, and the primary goal was to bridge the gap between the proficiency level of students graduating from high school and the proficiency level expected of students entering college. After a period of more than 20 years and numerous overhauls of the remedial and developmental programs, the issue of student unpreparedness for college continues to be a significant problem (Long & Boatman, 2013). Policymakers debated, whether developmental education programs should be offered, how they should be offered, and which institutions should be responsible for remedial and developmental programs. Four-year colleges and universities have, in many cases, responded to the pressure to remove remedial programs from their curricula, relegating the task of remediation to community colleges (Long & Boatman, 2013).

The increasing population of students requiring remediation in the community college has also become an issue. Highlighting this increase in enrollment of remedial and

developmental students in public 2-year colleges, Dalek, Dixon, and Talbert (2012) quoted statistics that show an increase from a 43% enrollment in remedial courses to a 60% enrollment during a period of 10 years. Other concerns have focused on the lack of evidence to support the effectiveness of remedial and developmental programs (Collins, 2010). Bailey, Jeong, and Cho (2008) reported that only three to four out of 10 students who place in remedial courses actually complete the sequence. The college completion agenda must focus on accelerating the pace at which students move out of development education programs (McPhail, 2011).

The purpose of this study was to compare the effectiveness of two instructional models used in developmental writing programs. Findings in the study may be used to improve developmental writing programs in community colleges across the country. This chapter provides a background to the study, a statement of purpose, a list of the research questions that guided the study, as well as a description of the nature of the study.

Background of the Study

The Tennessee Board of Regents (TBR) higher education system is composed of six universities, 13 community colleges, and 27 technology centers (Boatman & Long, 2010). The community colleges are primarily responsible for providing remediation for students whose college entrance scores indicate a lack of readiness for college. For more than 25 years, these institutions have strived to bridge the gap between what students know and are able to do when they graduate from high school and what they should know and be able to do as they enter college. Community colleges in this system have an open access policy, accepting students from varied academic backgrounds (TBR, 2016). As a result, many students lack the writing skills essential to survive in college-level classes.

A key aspect of the mission of Tennessee community colleges, as open access institutions, is to offer remedial education for students who are deemed unprepared for college. Remedial courses are designed to provide the fundamental academic skills and study habits required for success in college level courses. Community colleges have the highest percentage of students enrolled in basic skills courses across U.S. postsecondary institutions. Data presented in *Achieving the Dream* (Morest & Jenkins, 2007) estimate that nearly 50% of the first time community college students test as unprepared for college-level courses and programs, and these students are advised to take at least one remedial course. Students who do not immediately enroll in college after finishing high school often lack the basic skills for success in college-level courses; thus, a high percentage of students in this category also place in remedial/developmental courses (Bettinger et al., 2013). In the state of Tennessee, an increasing number of students continue to place in remedial and developmental courses, a factor that places these students at risk of dropping out of school before earning a college credential.

The developmental education programs at public higher education institutions across the state of Tennessee include basic skills in three disciplines: reading, writing, and mathematics. Initially, these courses were designed with two basic levels: remedial and developmental. In the state of Tennessee, all degree-seeking students under the age of 21, who are pursuing admission to a State Board of Regents institution, must submit the results of the ACT or SAT assessment taken within the last 3 years (TBR, A-100 guidelines, 2016). Degree-seeking students who are 21 years old or older are required to submit the results of the Compass Test, if they do not have recent scores from the ACT or SAT assessment. The ACT and SAT tests are designed to be predictors of college readiness, and these tests cover the core courses students take in high school: English, mathematics, reading, and science. The Compass test is designed primarily as a

placement test, and it covers English and mathematics. Students whose ACT, SAT, or Compass scores are below the college-level cut-off are required to enroll in remedial courses in reading, writing, and mathematics prior to taking reading intensive courses, or gateway English and mathematics courses (TBR, A-100 guidelines, 2016).

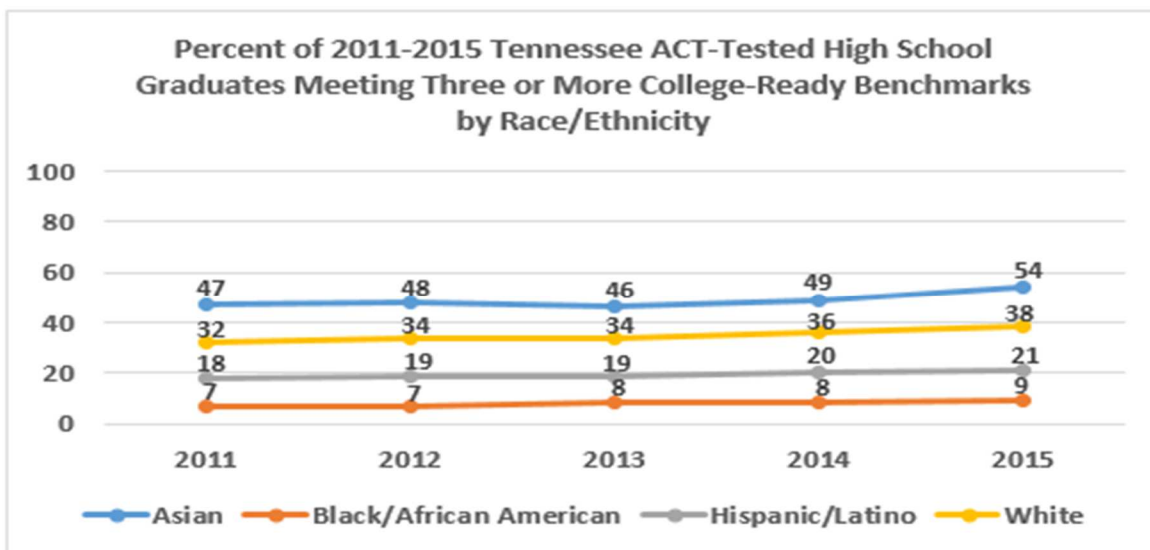
In the traditional model, which guided the initial design of developmental education programs, students who placed in remedial/developmental courses could possibly have from one to three courses to take in a single discipline prior to enrolling in a college-level, credit-bearing course. Thus, this requirement constituted a significant expansion of the time-to-degree completion for those students whose test scores indicated a need for remediation. At traditional community colleges, developmental education programs included three levels for mathematics and two levels each for reading and writing. The lower level courses were labeled remedial and the upper level courses, in which students who scored a few points below the college-level cut-off scores enrolled, were referred to as developmental courses (Bettinger et al., 2013).

The Tennessee Board of Regents and the Education Commission of the state launched a major initiative to reform the developmental education programs across the state. A major priority was to develop and implement innovative instructional and administrative efficiencies, with several areas of focus:

- Designing a replicable/scalable model for delivery in multiple setting
- Increasing the quality of learning and assessment
- Maintaining commitment to access and success
- Streamlining the amount of time to completion
- Developing a sustainable program with solid fiscal outlook and enhanced public support
- Providing a significant cost savings (U.S. Department of Education report, 2011)

The driving force for reforming the Developmental Education program was the data showing the number of students in Tennessee requiring remediation after completing high school and entering college. A Tennessee Board of Regents (TBR) study showed that the number of high school graduates requiring remediation in the state of Tennessee surpassed the national average. Studies showed that 28% of students nationwide who entered college as first-time freshmen were required to take remedial courses, and at 2-year colleges, the national average was 42%. The data reflecting the number of high school graduates entering TBR institutions showed that over 60% of the students were required to take remedial or developmental courses before enrolling in college-level courses.

The number of entering freshmen meeting college-ready benchmarks is more critical for minority students of color, as illustrated in figure 1 below:



Source: ACT, 2015.

Figure 1: *High School Graduates in Tennessee meeting college-level readiness benchmarks*

A major revision in the developmental education program at one of the community colleges in the Tennessee Board of Regents system focuses on streamlining the remediation process and reducing the time to completion of the remedial/developmental program. This

program uses a diagnostic/prescriptive, competency-based approach. Students work only within the areas of their deficiencies as identified by the diagnostic assessment, and must demonstrate mastery of the competencies before advancing to the next unit within the modularized course. Technology-based instruction replaces the traditional lecture-based instruction, and emporium labs, with the capacity to accommodate up to 60 students, are an alternative to the traditional classrooms.

New cutoff scores were established as the program was revised, and the following chart compares the previous placements and the initial projected placements of students at various levels:

Table 1

A comparison of the previous cutoff scores and enrollment with the new cutoff scores and projected enrollment in Learning Support

Entering Fall Term First-time Freshmen Count of ACT Placement Scores					
ACT Exam	Cutoff Range	New Cutoff Range	Course	Previous Placement	Proposed Placement
English	01 - 14	01 - 12	Basic Writing - DSPW 0700	769	374
	15 - 18	13 - 17	Developmental Writing - DSPW 0800	557	858
	19 - 36	18 - 36	College Level English	502	596
Math	01 - 14	01 - 12	Basic Math - DSPM 0700	467	51
	15 - 16	13 - 16	Elementary Algebra - DSPM 0800	867	1283
	17 - 18	17 - 18	Intermediate Algebra - DSPM 0850	263	263
	19 - 36	19 - 36	College Level Math	230	230
Reading	01 - 11	01 - 12	Basic Reading I - DSPR 0700/ACAD1100 (special sections)	448	571
	12 - 18	13 - 18	Developmental Reading - DSPR 0800	941	818
	19 - 36	19 - 36	No reading course required.	439	439

The purpose of this nonexperimental quantitative study was to examine the effectiveness of a redesigned remedial/developmental writing program on student academic achievement, retention, and progression rates at a Mid-South community college, when compared to the traditional, lecture-based program. The study investigated the effects that a redesigned basic-skills program that incorporates technology has on the achievement and retention rates as students are promoted to college-level English courses. The study provided an analysis of the data on the retention rates of basic-skills students in two groups - traditional, lecture-based and emporium, technology-based - as they progressed through their course of study in writing during a period of four semesters. The college is on the semester system and two semesters equal one standard academic year. The institution also offers 4 week and 10 week summer sessions, during which students may enroll and accumulate up to 12 hours of class time. Comparative data on course retention, program completion, progression to the first college-level English course, and successful completion of the gateway English course were analyzed to determine if the redesigned, technology-based writing program is significantly more effective than the traditional lecture-based writing program used in the former remedial/developmental program.

Research studies have focused on methodologies that support improved retention rates in developmental mathematics (Bonham & Boylan, 2012), but there is a significant gap in the literature on effective methods of teaching remedial writing. This study may benefit writing programs in institutions throughout the country by providing empirical data on the effectiveness of specific teaching methodologies used in a technology-based, emporium lab setting. Chapter 2 will supply a more focused discussion on the effectiveness of developmental education programs with specific emphasis on the writing programs.

Problem Statement

Less than 50 percent of college students actually complete degrees or earn credentials that equip them for the job market within 6 years of their college enrollment (Miller, Valle, Engle, & Cooper, 2014). The explanations that address this low percentage are numerous and varied. Many high school graduates are deemed unprepared for college as measured by standardized test indicators (Miller et. al, 2014).

Bettinger et al. (2013) reported that approximately 40 percent of students entering community colleges enroll in one or more basic skills courses offered through remedial education programs. Complete College of America (CCA) (2012), a nonprofit organization whose primary mission is to increase the number of citizens in this country with career certificates or college degrees, describes remediation programs as the “Bridge to Nowhere” (p. 2). Citing a headcount of students enrolling in remedial courses, CCA (2012) approximates that 1.7 million students each year travel the “broken remedial bridge” (p. 2). This statistic represents about 50 percent of the students entering 2-year colleges and about 20 percent of the students entering 4-year colleges and universities.

According to the Complete College of America (2012) report, taking remedial courses increases the time to degree completion. CCA further reports that only 62 percent of community college students complete the remedial courses in which they are placed, and of that number, only 22.3 percent complete the associated college-level courses in 2 years, making their goal of degree completion far-reaching. Often, there are other interferences that lead to a dropout, stop-out, or official withdrawal from college during the protracted period of remediating deficiencies and building basic academic skills. Borocho et al. (2010) made the case for additional research and documentation of effective practices in basic skills education. These authors asserted that

the literature, which aims to synthesize different research studies and summarize the effective practices for developmental education, is dated.

This quantitative research study focused on a comparative analysis of two models of instructional design in developmental education writing programs: the traditional, lecture-based model, and the emporium, technology-based model. Specifically, I analyzed secondary data that served as a basis for comparing the effectiveness of these models in moving students through the developmental courses to the successful completion of the freshman composition gateway courses. Other research studies have been conducted on the advantages of the emporium model of instruction, particularly in mathematics (Twiggs, 2013), but there is a gap in the literature on using this instructional method to teach writing in developmental education programs.

Purpose of the Study

The purpose of this nonexperimental quantitative study was to compare the student success rate in developmental writing courses delivered using the emporium model, when compared to the traditional method of instruction. Criteria used to evaluate the effectiveness of the emporium model included the completion of the remedial/developmental course in comparison with completion in the traditional program. Additionally, I analyzed the secondary data which reflect the students' progression to the first gateway English course to determine how successful the students who complete the developmental courses, in both formats, are in the first college-level English course. The independent variables were the teaching methodologies: lecture-based and technology-based instruction. The dependent variables include completion of the writing course, progression to the first college-level writing course, and success in the first college-level English class. Students are required to earn a grade of C or higher to exit the

development studies program; thus, for the purpose of this study, success is defined as earning a grade of C or higher in the gateway course, English 1010.

Research Questions and Hypotheses

The following research questions guided this study:

RQ1- Quantitative - How does the completion rate of students enrolled in the traditional model of basic writing compare with the completion rate of students in the emporium model?

Null Hypothesis (H_0 1): There is no statistically significant difference ($p=.05$) between the completion rate of students enrolled in the traditional model and students enrolled in the emporium model of developmental writing.

Alternative Hypothesis (H_1 1): There is a statistically significant difference ($p=.05$) between the completion rate of students enrolled in the traditional model and students enrolled in the emporium model of developmental writing.

RQ2 – How does the retention rate of students who participated in the traditional model of basic writing compare with the retention rate of students in the emporium model?

Null Hypothesis (H_0 2): There is no statistically significant difference ($p=.05$) between the retention rate of students who participated in the traditional model of basic writing and the students enrolled in the emporium model of developmental writing.

Alternative Hypothesis (H_1 2): There is a statistically significant difference ($p=.05$) between the retention rate of students who participated in the traditional model of basic writing and the students enrolled in the emporium model of developmental writing.

RQ3 - Quantitative –How does the success rate of students who participated in the traditional model and advanced to the college level writing classes compare with the students who participated in the emporium model and advanced to the college-level English class?

Null Hypothesis (H₀3): There is no statistically significant difference between the success rate of students who participated in the traditional model and advanced to the college level writing classes when compared to the students who participated in the emporium model and advanced to the college-level English class.

Alternative Hypothesis (H₁3): There is a statistically significant difference between the success rate of students who participated in the traditional model and advanced to the college level writing classes when compared to the students who participated in the emporium model and advanced to the college-level English class.

This study employed a nonexperimental quantitative research design. Quantitative, secondary data were analyzed using Chi-square and Cramer's *V* tests, comparing the success and retention rate of students in both groups. The data reflected students enrolled in either the lecture-based course or the emporium model classroom. Students enrolled in the traditional writing courses, Developmental Writing 0700 and 0800, composed group I, while those students enrolled in the redesigned Learning Support writing courses, English (ENGL 0810 and 0820), were labeled group II. These two instructional methods are further discussed in Chapter 3.

Question 1 addressed how students in the traditional model progress in their writing sequence as compared to students in the redesigned model. The question focused on the number of students in each group who completed the writing courses.

Question 2 addressed how the retention rate of the students in the traditional model compared with the students in the redesigned model.

Question 3 addressed the number of students in both groups who advanced to and enrolled in the gateway college-level English course. The question further explored the success

each group experienced, with success defined as earning a grade of C or higher in English I (ENGL 1010).

Conceptual Framework

The conceptual framework for this study is Achieving the Dream, a national initiative designed to improve student success in community colleges (Morest & Jenkins, 2007, p. 1). The four principles on which this initiative is based are committed leadership, the use of evidence/data, broad engagement, and institutional improvement. Improvement is measured by several key variables, from completion rates in developmental courses to graduation rates among community college students. The crux of Achieving the Dream is shifting institutions from a “culture of anecdote” to a “culture of evidence,” (Bailey & Alfonso, 2005, p. 6). The major strategies highlighted in this initiative are: prevention, assessment and placement, evaluation of program innovation, and performance measurements (Collins, 2009). Institutions are encouraged to use relevant data and research to measure student success and program effectiveness. This study focuses on completion rates in developmental education writing programs, and particular teaching methodologies that enhance completion rates.

Piaget’s theory of cognitive development was also used as a framework for this study, with emphasis on its findings for education (Ginsburg & Opper, 1969). Piaget’s theory underscores his belief that individuals learn through doing and actively exploring (1969). The implications of this theory point to the weaknesses in the traditional, lecture-based education. The traditional method uses the lesson plan, which guides all students through a similar lesson by means of a lecture or other verbal explanations. This approach forces all students to study the same lessons, usually taken from a singular textbook (Ginsburg & Opper, 1969). Students have

a fixed position in the classroom with little or no interaction with each other, and they are forced to study the material the teacher determines they should study.

By forcing all students to study the same material, the traditional method of instruction gives no regard to the fact that there are differences in the pace at which different students learn, as well as differences in the foundations upon which they build new knowledge bases (Ginsburg & Opper, 1969). Another assumption that Piaget's theory discounts is that students learn through the verbal explanations of the teacher or through the written exposition in books. According to Piaget, students should be actively engaged in the learning process, in order to maximize their experience. Piaget's theory also suggests that students should have some control over their own learning. A major part of learning depends, to some extent, on self-regulatory processes. Piaget's theory of active learning is compared with the traditional mode of instructional delivery, an approach, which is also used in this study. A more detailed discussion of Piaget's theory is provided in Chapter 2.

Nature of the Study

This research project was a nonexperimental quantitative study. Quantitative methods are invaluable in determining program effectiveness (Babbie, 2007). Quantitative research provides a basis for reviewing student performance and for establishing a comparison of the effectiveness of two instructional models: the traditional lecture and the emporium lab approach to teaching developmental writing classes. It also supports data analysis focused on students who complete developmental writing classes and advance to the first gateway, college-level English course. Summarily, the quantitative method facilitates research studies, providing a means to aggregate, compare, and summarize data (Babbie, 2007, p. 25).

Sources of Information or Data

Several sources of information were used in drawing comparisons between the two groups and in determining the effectiveness of each instructional model.

1. Secondary data, from the institutional data base Banner system, reflected the number of students who completed developmental writing during their first enrollment in each of the instructional models.
2. Data retrieved from the Banner system also reflected student retention in the writing program.
3. The institutional research office provided the ID numbers of students who completed the writing program and advanced to the college-level English 1010 course.
4. The grades students earned in the English 1010 courses provided a basis for determining the number of students who successfully completed the gateway English course.
5. A sample size used in this study was 88 students.

The independent variables were the teaching methodologies: lecture-based and technology-based instruction. The dependent variables include completion of the writing course, progression to the first college-level writing course, and success in the first college-level English class.

Definition of Terms

American College Testing (ACT): The ACT is a standardized test, which measures high school achievement and predicts college-readiness. The assessment yields a composite score, as well as sub-scores in English, mathematics, natural sciences, and social studies, with an emphasis on the assessment of reading skills. The institution that is the subject of this research requires all degree-seeking students under the age of 21 to submit scores on the ACT taken within the last 3 years (Boatman, & Long, 2010).

Basic Writing – DSPW 0700: Taught in the traditional format, this is a remedial writing course, in which students are placed who earned a score below 13 on the English segment of the ACT assessment. The equivalent COMPASS or ASSET test score range is 23-36 (Boatman & Long, 2010).

COMPASS: Published by ACT, this is a computer adaptive instrument that adjusts the difficulty of follow-up questions based on the student's response to the previous question (Boylan, 2009).

Competency based learning: a feature of the Learning Support program, competency based learning requires students to demonstrate mastery of course content at each level before moving on to the next level/competency (Twiggs, 2013).

Developmental Studies Program: This program was designed to bridge the gap between the skills that under prepared students have as they enter college and the skills required to perform adequately within college-level courses (Boatman & Long, 2010).

Developmental Writing – DSPW 0800: Taught in the traditional format, this is a developmental writing course, in which students are placed who earn scores between 13-17 on

the English section of the ACT assessment. The equivalent COMPASS or ASSET test score range is 37-42 (Boatman & Long, 2010).

Emporium Lab Setting: This teaching/learning environment replaces the traditional classroom with a computer assisted, learning resource center. Students receive individualized, on-demand assistance, as they work at their own pace, with interactive computer instructional software (Twiggs, 2013).

Individualized Instruction: A method of teaching that provides suitable instruction to each student. Student-centered instruction, this method allows students to learn using different methods and at a different pace, which accommodates the student's learning style (Iravani, Samifar, & Zade, 2014).

Learning Support Program: This program provides the academic support students need to be college ready as defined by ACT benchmarks and standards. (TBR A-100 Guidelines, 2016)

Learning Support Writing: ENGL 0810: This is a modularized course that uses the emporium model and is taught in a computer lab, and which accommodates up to 60 students. This course is competency based and it is designed for students who score between 13-17 on the ACT English section. The course is designed to be open entry and exit (TBR A-100 Guidelines, 2016).

Learning Support Writing – ENGL 0820: Students who are initially placed in the ENGL 0810 course and complete one of the two required modules, move to the next course in the sequence, ENGL 0820. Both the teaching/learning setting and the pedagogical format of this course are similar to the 0810 course (TBR A-100 Guidelines, 2016).

Open Entry/Open Exit: There are two competencies in the learning support writing program: paragraph writing and essay writing. As students satisfactorily complete the competencies, they are able to exit and enter at the next course level. This feature is referred to as Open Entry/Open Exit for the purpose of this study.

Remedial/Developmental Education: This is a program that serves as a bridge to close the learning gap for students needing to build basic skills in reading, writing, and mathematics as they transition from high school to college. In some programs and the literature that describes them, the terms *remedial* and *developmental* are interchangeable. In the traditional program outlined in this study, the term remedial refers to courses that purport to remove deficiencies of skills deemed as the pre-high school level, while developmental courses are focused on remediation of skills deemed as the high school level. Various assessment instruments are used to place students in one of three levels: remedial, developmental, or college-level courses (Bettinger et al., 2013).

Retention: Retention, in this study, is defined as the continuous enrollment at the institution. For the purpose of this study, retention refers specifically to the writing program.

Successful Completion: Successful completion, in this study, is defined as earning a grade of C or better in Learning Support, Developmental Studies, or the gateway course.

Assumptions

Babbie (2007) outlined the rule for subject selection, making the point that there should be comparability between the two groups. The first group experienced a teaching/learning environment that is traditional: students meet at a designated time in a classroom with a teacher station and student desks, and the primary instructional delivery method is the lecture. The second group experienced a nontraditional model, where there are computers and a teacher

station, and the instructional delivery method is technology-based. The assumption in this study was that the students in both groups would be initially enrolled in the traditional or the redesigned developmental writing and learning support classes. It was further assumed that the students in the redesigned sections would not have been previously exposed to the instructional methodology used. Third, the assumption was that students in both groups would expend a similar amount of time outside of the scheduled class time completing assigned work for this course. Moreover, it was assumed that students in both groups would be similar in terms of their academic motivation, educational aspirations and their cognitive writing abilities. The study was used to measure and compare the success of each model.

Scope and Delimitation

The independent variable in this study was the instructional methodology. The first group experienced the traditional method, a lecture-based class, and the second group experienced the redesigned, emporium model of instruction. The two groups were compared on a dependent variable that is success in the writing program as measured by three factors: the completion of the writing course, persistence and progression to the college-level course, and success in the college-level gateway English course. Success in the college-level English course is defined as a grade of C or higher. This study was delimited to one selected community college in Tennessee, which participated in the statewide redesign of its developmental education program.

The scope of this study was limited to examining the influence of a redesigned writing program – Learning Support Writing – that incorporates competency-based learning and modularized instruction, has on the retention, progression, and success of writing students. This

study is confined to analyzing quantitative data of basic-skills writing students at a public community college in Tennessee.

Limitations

A limitation of this study is that the findings may not be generalizable or applicable to institutions that do not have similar programs. The subjects in this research were students enrolled in a specific community college in Tennessee. The criteria used to refer or place students in remedial courses differ from institution to institution. Some institutions, for example, do not have a mandatory placement program; students decide whether they will enroll in remedial/developmental courses. In other cases, states provide considerable latitude in the selection of placement exams and criteria. Thus, the results of this study are limited to institutions with similar developmental education programs and placement criteria.

The use of grades as a measure of success in the study is also a limitation. Grades may be considered more subjective to a higher degree of variation than a standardized test. Although the program design includes some standardization, the indicators of success are the grades students earn in the remedial and developmental courses and their retention in the program.

Another limitation of the study is related to the research methods and data collection. This study did not use an experimental design. The research study used archival data, which limited my ability to manipulate variables. Thus, findings of this study pose potential threats to the reliability and validity of the study.

Researcher bias was minimal in that the data was archived, and I was unaware of this study during the time the data were generated. Moreover, I had no direct contact with the students whose records are used in the study.

Significance of the Study

Over several decades, emphasis has been placed on providing underrepresented populations access to higher education. Efforts to increase access have included provisions for both financial and academic support for students requiring such assistance (McCabe & Day, 1998). During the late 1970's, remedial and developmental education programs were implemented on college campuses around the country to address the needs of students with academic deficiencies (McCabe & Day, 1998). Attention is now focused on increasing the success rates of students who are placed in remedial programs (Tschechtelin, 2011). Current literature highlights statistics that reflect the number of students who enroll in the remedial courses in which they are placed and the percentage that actually complete the remedial courses and move to college level courses. Additionally, data reflect the low percentage of students who subsequently complete a credential or who successfully transfer from a community college to a 4-year institution. Complete College of America (2012) reports that only 62% of community college students enrolled in remedial courses actually complete these courses, and of that number, only 22.3% of the students earn a credential. Numerous pedagogical approaches have been used in remedial and developmental programs. Most recently there has been a shift from the traditional, lecture-based courses to the emporium model (Twigg, 2009). Research comparing the effectiveness of these models would provide a basis for improving teaching and learning at the developmental level, which would subsequently serve to advance students toward completion of their academic goals. This study compared the success rate in the traditional model with the emporium model used in a developmental writing program.

Summary

There is a need to address the major issues surrounding developmental education programs, specifically the criticism relative to the effectiveness of these programs. More critical than the rising number of high school graduates requiring remediation upon entering college is what actually happens to these students when they enroll in developmental education programs. These programs are deemed, by some sectors of society, as ineffective in remediating the academic weaknesses of developmental students (Brothen & Wambach, 2012). The realignment of the scope of developmental education is an urgent goal for institutions of higher education (Dalek et al., 2012). This study analyzed the effectiveness of Learning Support writing program delivered through the emporium model, using data that compare the success of students in learning support with those students in the traditional lecture-based writing course. The Learning Support model aligns with Piaget's theory, in that it individualizes instruction and allows students to move at their own pace. Additionally, it focuses on competency-based learning, and allows the student to make decisions regarding the learning process.

The results of this study helped to determine whether Learning Support writing is having positive effects on the success of students in developmental education programs. This study may serve as a guide for other community college writing programs in designing a modularized, competency-based writing course, using an emporium lab setting.

The first chapter focused on the rationale for studying the retention of students in basic writing skills programs. The second chapter includes a review of the literature on the retention of developmental education students, particularly those students in the community college. The research is conducted on competency-based learning, computer-assisted instruction, and modular based courses. Chapter 3 includes a description of the quantitative approach for this study and

the procedure that is used to gather and analyze the data. Chapter 4 provides the results of the data analysis. Chapter 5 consists of a summary, which includes the results of what was found in the study, conclusions from the data collection and analysis, correlation of the literature review, and recommendation for further research.

Chapter 2: Literature Review

Introduction

The purpose of this study was to determine the effectiveness of two instructional models used in developmental education writing programs: the traditional lecture-based model and the emporium, technology-based model. This chapter includes the results of a review of the literature to provide background for the study of retention, progression, and student success at community colleges, with particular focus on developmental education programs. The review highlights a historical perspective of developmental education programs, to provide an understanding of how such programs entered the higher education landscape, and traces the history through a review of seminal literature. The review also highlights current issues facing developmental education programs, particularly those programs housed on community college campuses. The literature review provides the fundamental framework for understanding how the Learning Support Writing program, a basic skills writing program at a community college in Tennessee, impacts student academic achievement, retention, and progression rates. Based on the literature review for this study, it was hypothesized that students in an individualized, technology-based writing class would experience greater success than students in the traditional, lecture-based classes. This hypothesis was tested and the results are used as a basis for determining the effectiveness of the Learning Support Writing program.

I begin this chapter by describing the strategies used for searching the literature, followed by a discussion of Piaget's theory of intellectual development, the theoretical framework used in the research. The chapter provides a more focused discussion of the strategies used in structuring effective developmental education programs, as well as a discussion of the major criticisms, which have led to a call for a reform of developmental education programs.

Strategies for Searching of Literature

The literature search included an extensive examination of peer reviewed full-text articles from Educational Resource Information Center (ERIC), Academic Search Premier/Complete, The Chronicle of Higher Education, Education: Education Research Complete, and ProQuest Dissertation and Theses. Appropriate keywords for each database were used to identify references on developmental education programs. Further literature search was conducted using the website for Complete College America. Key words included *remediation, developmental education, education reformation, emporium model, supplemental instruction, individualized instruction, competency-based, and technology-based education*. An additional literature search was conducted through the Google scholar website, and with similar key words.

Theoretical Foundation

Piaget's theory (Gingburg & Opper, 1996) of intellectual development provides a framework for this study. Engaging in the study of epistemology from both a philosophical and a scientific approach, Piaget focused on several pertinent questions:

- Is knowledge achievable?
- What is the source of knowledge?
- Is knowledge acquired through reasoning or through direct experience?
- What relationships exist between the person and his environment?
- What differences are there between appearance and reality? (Gingburg & Opper, 1969)

Addressing the subject of an individual's acquisition of knowledge, Piaget thought in terms of embryology, concluding that during the developmental stages, mental structures take on qualitatively different forms, and at the same time, there is some continuity evolving from previous structures (Gingburg & Opper, 1969). This conclusion has implications for education,

and specifically, it provides guidance in the research involving teaching and learning and successful models of pedagogy. Understanding the concept of individual differences in mental structures, educators are able to design curricula and steer teaching methodologies to the individual learning styles of their students. Piaget's findings in this regard also have implication for this study, specifically as it provides a foundation for the comparison of the two instructional models under inquiry. The redesign model uses an individualized instructional approach, which allows students to focus on different skills, complete assignments geared toward their individual needs, and to move at their own pace of comprehension.

Developmental Education: Historic Context

The literature in this section extends beyond the traditional 7-year span to provide a historical perspective on the birth and development of remedial programs across the country. To chart pathways to improvement in developmental education in the future, it is critical that educators know and build on the past (Collins, 2002). Boylan and White (1987) traced the existence of developmental education to the initial presence of colleges and universities in the American higher education system. To provide an understanding of how developmental programs came into existence, Casazza and Silverman (1996) examined the initial mission of colleges such as Harvard and Yale during the 17th century. According to the authors, these institutions were geared toward the elite members of society, and they were primarily established to train clergymen and to preserve the European norms. Cohen, Brawer, and Kisker (2103) posited that the public viewed education as a vehicle of upward mobility and an opportunity for its graduates to contribute to the community's wealth. Only a tenth of the enrollment of the most elite institutions was preserved for students from families such as artisans and seamen (Casazza & Silverman, 1996). Although an attempt was made to diversify the student population, there

was no effort made to modify the curriculum to serve the individual needs of the student body. As institutions broadened their mission, the curricula were modified to include education and training in the areas of public service leadership, science and technology, and the arts. The mission of other colleges, such as Brown University, also expanded, and the most democratic mission of that time surfaced at Brown University. The president of the college described its mission as the “center of intelligence for all classes,” (Casazza & Silverman, 1996, p. 7), and a university extension division was established with classes taught by the university faculty.

A study of the history of developmental programs is significant in understanding the widespread reach and purpose that these programs have served. Although it is currently believed that these programs should exist at 2-year institutions with open door admissions, historically such programs existed within the curricula of major colleges and universities with selective admissions criteria.

Developmental Education – 17 & 18th Centuries

Among the earliest developments in remedial and developmental education was the establishment of tutoring programs. Harvard College required Latin as the foreign language of study for its incoming students, and tutoring programs were instituted to support the learning experience. Boylan and White (1987) posited that these tutoring programs were the first examples of remedial and developmental education programs in North America. Private tutoring was the primary method of preparing students for higher education in the absence of a formal and standard high school education. The tutors were the ones who decided when students were adequately prepared for college, since there was also an absence of standardized admissions criteria (Casazza & Silverman, 1996). The common belief was that once students were accepted into college, they would learn at the same pace with the same basic pedagogical methodology.

Arendale (2002) reported that the era of developmental education from the mid 1600's to 1820 focused on tutoring programs designed for privileged white males. During the next 40 years, from 1820-1860, the targeted audience remained the same – privileged white males – but there was a name change from simply referring to the service as tutoring, to naming it precollegiate preparatory academy and tutoring (Arendale, 2002).

Open Admissions and Remedial Education – 19th Century

Initiated at the University of Wisconsin, the college preparatory department, which functioned similar to the current developmental education programs, was implemented in institutions across the country (Boylan & White, 1987). Prompted by the need to increase revenues and cover operational costs, institutions began to open admission to students who were not deemed prepared for college (Casazza & Silverman, 1996). In many cases, students came to college without basic literacy skills, since there was a lack of secondary schools. This dilemma necessitated the development of preparatory departments, designed to assist students in acquiring basic skills. These programs were viewed as secondary schools within colleges, and students who enrolled in the preparatory program matriculated for 6 years before completing a college program (Casazza & Silverman, 1996). Institutions that did not have preparatory departments generally offered pre-college level courses and/or tutoring for students lacking adequate preparation for college. Some institutions also had a different enrollment status, such as a conditional admission, and students who enrolled conditionally were required to take extra or special classes (Casazza & Silverman, 1969).

Developmental Education – 20th Century

McCabe and Day (1998) provided a historical account of the developmental education movement during the post-World War II era. Americans, according to McCabe and Day, shared a consensus view on democratic values and they participated in various ways to support servicemen who had made sacrifices to protect the country. One demonstration of this support was the creation of the G.I. Bill, which provided an unprecedented opportunity for veterans to attend college (McCabe & Day, 1998). After the passage of the G.I. bill, colleges and universities implemented a practice of admitting veterans, even when in some cases, they did not meet the admissions criteria. McCabe and Day (1998) suggested that the attitude of success the veterans possessed was instrumental in their sustaining an academic performance, which matched the nonveteran students who met the admissions standards. The veterans were non-traditional college students with families, jobs, and other responsibilities. With the additional funding, colleges provided services such as tutoring, guidance centers, reading, and study skills programs.

Following the G.I. Bill, which provided educational opportunities for veterans, there was a major emphasis in the U.S. on access to postsecondary education. One example cited by McCabe and Day (1998) was the civil rights movement, which “pried the doors to higher education more fully open” (p. 3).

A more diverse population of students entered college during the early years of the 20th century. Higher education institutions’ practice of opening their doors to students from various backgrounds and socio-economic classes (Casazza & Silverman, 1996) was evidence of a more democratic nation. The Morrill Act of 1862 secured funding for colleges that developed curricula in agriculture and mechanic arts. The Morrill Act of 1890 focused on funding colleges

that broadened their mission, and this Act prohibited the distribution of funds to colleges that practiced discrimination in their admissions policy and in their routine operations (Collins, 2002). Major changes in the higher education landscape were evident, both in the broadened missions and revised curricula in colleges, and in the diversity of the student body, in terms of ethnicity, gender, and class. Open access policies and the availability of financial resources, such as loans and grants, contributed to increased enrollments and diversity of the student enrollment.

This period in the history of higher education may be described as the era of access. More opportunities were afforded to more individuals in society to advance their education, pursue careers, and improve their lifestyles. The community college has traditionally, since the first inception of community colleges in 1800's, opened its doors to a diverse population of students. This institution not only serves the educational needs of honor students graduating from high school and seeking an inexpensive alternative to the 4-year colleges and universities, but also to remedial students seeking a second chance in life through education. Professionals seeking more specialized skills for career changes often turn to the community college to retool their skills and expand their career credentials. Single mothers choose the community college as an opportunity to build employable skills and credentials. The open door policy is an invitation extended to all individuals interested in pursuing a secondary education (Wilson, 2004).

As issues later developed relative to student retention, persistence, and graduation, the focus was moved from not just access, but success. For instance, one initiative, which targets closing the achievement gaps in the performance of minority vs. nonminority student

populations, termed its movement “Access to Success” (Lederman, 2009), a term descriptive of the current goals in higher education.

The Structure of Higher Education and Remediation

According to Casazza and Silverman (1996), other changes in education included more standardization of high school curricula and new criteria for admission to college, and included a college entrance examination. The college curricula were divided into the liberal arts division and a second division, which included new science, agriculture, and engineering students (Casazza & Silverman, 1996). Within the university, there were two divisions: upper division and lower division. Junior colleges were created within universities for students who were considered low achievers; this level was considered the completion point in their education (Richardson, Fisk, & Okun, 1983). Also, community colleges emerged and served as an alternative to the university for students who were denied admissions, or for those students with different goals and aspirations, to include continuing education for self-improvement, training for specific vocations, or preparation for transferring to the university. The community colleges were unique in the establishment of their open door admissions policy that further supported the essence of a democratic nation (Richardson et al., 1983).

Responding to what was termed as a “literacy crisis,” the most prestigious schools, such as Harvard, Yale, Princeton, and Columbia instituted a college entrance test, which included a written composition (Casazza & Silverman, 1996, p. 20). During the early 20th century more than half of the students admitted to these institutions failed to meet the entrance requirements. As a result, developmental courses, that included reading and study skills, were added to the curriculum (Casazza & Silverman, 1996). By the sixties and seventies, there were several approaches used to address academic deficiencies of students enrolled in colleges across the

nation. These approaches included special courses, intensified sections of the regular course, tutoring, clinical works, and a reduced course load (Casazza & Silverman, 1996). Casazza and Silverman traced the developments in higher education institutions, which focused on the purpose of higher education, the intended audience, and the appropriate curriculum. The conclusion these institutions reached pointed to the need for remedial courses and academic support programs to ensure the success of the students they served.

Developmental education programs continue to be viewed as the second opportunity for students who had completed their secondary education, but were deemed unprepared for post-secondary education at colleges and universities with selective admissions criteria. Although community colleges, which house these programs, have open door admissions policies, the institutions require students to take a placement test with established cutoff scores to determine whether they will start at the college, developmental, or remedial level. For those students whose placement test scores fall below the college level cutoff score, the open door leads to remedial studies, and not the college level matriculation students anticipate. It is imperative that these institutions continue to explore ways of improving developmental education programs, to ensure that the open door of the community college leads students to the achievement of career credentials and successful transfer to baccalaureate studies.

Current Issues

Remedial programs in higher education have numerous problems, including major criticism regarding its effectiveness, particularly within the community college systems (Bailey, Jaggars, & Scott-Clayton, 2013). Currently viewed by some sectors of society as ineffective and inefficient (Bailey, 2009), remedial programs were initially designed to be the vehicle by which unprepared students would have access to higher education.

These programs are now referred to as barriers to educational opportunities (Bonham & Boylan, 2012). Levin and Calcagno (2007) asserted that there is little definitive evidence of the impact of remedial programs on the successful completion of college level courses, grade point averages, and the persistence rate to graduation. Bailey et al., (2013), responding to criticisms of their assessment of developmental education programs, made the point that students who are placed in remedial and developmental courses often need an array of both academic and non-academic support. These researchers argued that a more effective assessment and placement system would more accurately identify the students' areas of weakness, both academic and non-academic, and provide students the support they need.

A second criticism of remedial education focuses on the burden to taxpayers to fund remedial programs. It is estimated that the cost of remediation for the increasing number of students entering college unprepared is \$1 billion per year; thus, opponents of the program argue that any possible benefits of the program are outweighed by high costs associated with providing remediation to underprepared students (Martorell & McFarlin, 2010). Bailey et al., (2008) contended that the psychological and financial burden, along with the cost of missed and delayed opportunities that students experience were more significant. The extended time to degree completion results in a delay in employment for students who graduate and move into the job market.

Other criticism of the program highlights the difficulties students experience in completing the recommended developmental courses. This dilemma is more pronounced in developmental programs that have multiple levels of remediation. Data show that only 3 to 4 out of every 10 students referred to remediation complete the entire sequence to which they are referred (Bailey et al., 2008). Studies indicate that students placed in multiple levels of

developmental courses often drop out before enrolling in the first course (Bailey et al., 2008). Institutions are encouraged to guide and counsel students before their enrollment in the first developmental course. To further address the issue of drop out, not fail out, Bailey et al. (2008) recommended that institutions revamp the curriculum, combining the multiple levels into fewer sequential courses.

The statistics reflecting student retention and student success are more alarming for students whose diagnostic assessments show greater deficiencies in the basic skills of reading, writing, and mathematics, which means that these students would be placed in multiple levels of remedial courses. Only one fifth or fewer students who are placed three or more levels below college level actually complete the required sequence of developmental courses (Bailey et al., 2008). Even though these programs exist at 4-year colleges and universities, the research shows that more risks are involved with students enrolled in remedial programs at the community college level. Roueche and Roueche (1999) suggested that the additional risk to retention and success for remedial students enrolled in the community college may be attributed to the “open door” policy at this 2-year institution. According to the authors, students meet the general admissions requirements of community colleges, and they receive a key to walk through the open doors of these higher education institutions. The problem, as described by Roueche and Roueche (1999), is the key does not work to allow students into the doors of specific programs, such as Liberal Arts, until they have mastered the basic skills in reading, writing, and mathematics. In summary, when students fail to score within the college-level range, their key simply unlocks the door to remedial education (Roueche & Roueche, 1999). These programs have been criticized for the expenditure of time, finances, as well as failed efforts to remediate the deficiencies of a diverse student population. Complete College America (2012) estimates

that 1.7 million students enroll in remedial courses each year, and this number represents about 50 percent of the enrollment in community colleges and about 20 percent of student enrollment in the 4-year colleges and universities. Enrollment in these programs extends the student's time to degree completion.

In the research conducted on the effectiveness of developmental education programs, Martorell and McFarlin (2010) concluded that there is little indication of the benefits of remedial/developmental education programs. This longitudinal study included students whose college placement test scores were slightly above or below the cutoff score for placement into college courses. Students who scored slightly below the cutoff were referred to remedial courses and students who scored slightly above the cutoff were eligible to enroll in college level courses. The study showed that students followed their placement and enrolled in the appropriate courses. The effectiveness of the programs was determined by how successful students were in accumulating academic credits, reaching academic milestones, attaining degrees, and successfully entering the job market. Additionally, the study included successful movement into the job market as a key indicator of the effectiveness of developmental studies. Martorell and McFarlin (2010) initially explored a number of factors which may contribute to the lack of program effectiveness: homogenous grouping where underprepared students are placed together in remedial classes; stigmatization associated with placement in remedial classes; and the accumulation of course credits, which do not count toward graduation, thus extending the time to degree completion. The findings, however, did not support the hypothesis that homogenous grouping and stigmatization contribute to the lack of positive outcomes in remedial/developmental education programs.

Researchers in this study restricted the participants to students whose placement test scores fell slightly above or slightly below the college-level cutoff scores. The purpose of selecting and limiting the participant groups was to ensure the students at both levels were similar in terms of their academic proficiency, achieving scores that were separated by a few points. Students whose test scores were much lower than the college level cutoff score were placed in remedial courses, and these students did not have a comparable cohort of students at the college level; thus, they were not included in the study. Given this limitation of the study, the conclusions in the study may be more applicable to the appropriateness of the placement test, specifically the cutoff scores, rather than a definitive assessment of the effectiveness of remedial/developmental programs.

Creating Access and Maintaining Student Success

Community colleges face the dilemma of increasing student success, while maintaining a mission that extends educational opportunities to all students, despite the fact that a significant number of high school graduates are entering the institution underprepared for the rigor of college work (Tschechtelin, 2011). With its open door admissions policy, community colleges serve a more diverse population than its higher education counterparts. Historically, the mission of the community college has been to provide access to higher education to diverse populations of students; however, accrediting agencies, legislators, and the general public have demanded accountability and a shift from simply providing access, to ensuring success, and success is measured in terms of persistence and completion rates (Tschechtelin, 2011).

Developmental Education programs continue to be the avenue for creating access to the population of students graduating from high school who are unprepared for college. However, in view of the major criticism of these programs, educators have made a number of

recommendations for improvement. A concern has been in the area of policy-making and system consistency in program design and implementation, and two opposing views have surfaced in the literature. One position on this issue is that institutions should have the autonomy to design remedial and developmental programs that meet the specific needs of their students. The opposing view highlights the issues created when there is no system-wide policy regarding entry-level standards for moving students directly into college level programs (Jaggars & Hodara, 2013). Ideally, a balance should be established which allows some policies to be developed at the institutional level. This step is critical, since there is not a definitive, proven approach to the best way to implement developmental education programs. Of equal importance is the need for a consistent message to high school systems, which must prepare students for college admissions. Policies that determine at what academic levels students will begin in their college matriculation require consistency.

Strategies for designing effective developmental education programs

To address the high attrition rate among students enrolled in developmental courses, Bailey et al. (2008) suggested that fundamental changes should be made to these programs. According to the authors, institutions should provide guidance and counseling for students before the initial assessment. In the community college setting, advising entails assistance to student in selecting majors, making schedules, as well as assistance in accessing other college resources (Rutschow & Schneider, 2011). These strategies may prove valuable in strengthening the first year experience for freshman students (Bailey et al., 2008).

Other strategies implemented to improve the overall quality of developmental education programs have focused on pedagogy. Bailey et al. (2008) suggested that contextualized developmental courses, which connect remedial instruction to the students' career interests, may

be developed in an effort to support retention of students in developmental courses. This approach allows students to use academic skills in career settings. A similar strategy may include academic programs, which allow and encourage students to take occupational courses before requiring them to enroll in remedial instruction (Bailey et al., 2008).

A review of the program sequence and the multi-level structure of developmental education courses may also address the issue of students dropping out before completing the entire program. Bailey recommended that multi-level courses be combined into one intensive course, and, in cases where there are two or more courses, students should be able to exit one level and enter the next at various intervals within the semester (Bailey et al., 2008). The more remedial courses students are required to take, Bailey and Alfonso (2005) asserted, the less likely they are to complete all degree requirements. The authors cited findings from a study that compared students who completed 10 credits and initially took remedial courses, and those students who completed 10 credits, but did not enroll in remedial classes. The results showed that 45% of the students who took remedial classes had earned an associate or a bachelor's degree by the time they were 30 years old. Tracing the students who did not enroll in remedial courses, the data indicated that 60% of the students in this category had earned a bachelor's degree by the time that they reached age 30. Bailey and Alfonso (2005) explained the difficulty in determining the effectiveness of developmental education programs, using this type of comparison. Even though students who enroll in developmental education courses complete at a much slower rate, these authors made the point that these are weaker students from the start. Thus, the program may have merit, but the students it serves struggle to gain pace with their counterparts who begin their college enrollment in all college-level classes (Bailey & Alfonso, 2005).

Many of these recommended program strategies are evident in the emporium model, the subject on this research study. The emporium model is an instructional redesign that eliminates the multiple course tiers featured in the traditional model, and replaces it with a self-paced, open entry/open exit, modularized course. The course is designed to allow the accelerated students to move through each of modules and possibly complete the program in one semester. Equally important, the redesigned program allows the student who requires additional time, beyond the semester, to continue the course without the academic and financial penalty associated with earning failing grades. The goals of the redesigned, emporium model are:

- To customize the learning environment for each student, based on background, learning style, academic/career aspirations
- To create a learning environment that is diagnostic/prescriptive, and which allows the student and faculty to focus on just the skills specific students are missing
- To streamline the curriculum by removing overlap
- To develop diagnostic assessments that evaluate specific skills linked to content modules
- To allow students to start anywhere in the course sequence based on their learning needs and progress through the learning modules at their own pace, spending the amount time needed
- To permit students to earn variable credit based on the number of modules they successfully complete (Twig, 2009)

Restructuring the curriculum

Levin and Calcago (2007) explored a number of approaches that have impacted the success of individual remedial courses and study skills. These approaches and practices were grouped into three categories: restructuring the curriculum at the remedial or college level; providing new institutional structures; and employing particular teaching strategies and

technologies in the remedial courses. To foster the student's ability to transfer knowledge and skills, it was recommended that basic skills be taught in conjunction with content course materials.

New institutional structures may include learning communities and learning assistance centers. These centers include such services as career counseling, peer and faculty tutoring, group tutoring, computer-based instruction, study skills courses, and additional diagnostic testing (Levin & Calcago, 2007). These strategies provide the wrap-around support students who are referred to developmental courses often need.

According to Bailey (Rethinking the role, 2009), broad base reform agenda for developmental education should also include a comprehensive approach to assessment, and research that specifically tracks remedial students through their first years at the community college. The author further advocated the need to reduce the distinction between developmental and college-level students and to improve the teaching methodologies for both groups; he concludes that developmental programs should be streamlined to improve the pace at which remedial students progress to college level courses (Rethinking the role and function, 2009). Rutschow and Schneider (2011) advocate interventions that decrease the student's time in developmental education courses by course or program redesign. This strategy is consistent with the redesigned developmental education program, which is the subject of this research.

Assessment and Placement

Roueche and Roueche (1999) outlined a number of factors that influence the success of developmental education programs. Institutions use varying practices regarding the placement of students in these programs. Some institutions assess the student's need for remediation, but allow the student to decide whether or not s/he will enroll in the course, when the placement

results indicate the need for remediation. Other institutions make these courses a prerequisite to certain college-level courses, which means the student is required to remove any deficiencies by enrolling in the developmental courses, prior to seeking enrollment in a college course. Quoting data from the National Center for Education Statistics, Roueche and Roueche (1999) indicated that 75% of reporting institutions reveal that enrollment in remedial and developmental courses is a requirement for students who test into these courses. Voluntary enrollment in developmental courses when the assessment indicates a need for remediation is unjustified (Roueche & Roueche, 1999).

Roueche's view of voluntary enrollment is challenged in some of the current literature. A recent publication by the Center for Community College Student Engagement (*Expectation meets Reality*, 2016) highlights strategies that address the disconnect between high school graduation requirements and college readiness skills. The report focuses on three areas for improvement: assessment, placement, and developmental education reform. Efforts to improve developmental education include reducing the number of levels of remediation, removing the mandate, in some states, for remediation, developing co-requisite models, and implementing technology based instruction, particular in remedial mathematics courses (CCCSE *Expectation meets Reality*, 2016).

The Center for Community College Student Engagement (2016) reports that approximately 65% to 70% of students placed in developmental courses believe that their placement is correct. The issue, as reported in CCCSE, is that students are often unsuccessful when placed in developmental education programs, even in cases where these students are in agreement with their placement in the program. Thus, the findings in this study would not support Roueche's conclusion that placement in developmental education programs should be

mandated, when test scores indicate the need for remediation. The report does, however, lend support to the focus in this research study. Reform of developmental education programs should include a reduction in the number of remedial courses required, thus, streamlining the program (CCCSE, 2016). The redesigned, technology-based program, which is the subject of this research study, uses a model that reduces the number of courses in the program and that allows students to move at self-pace. Assessment and placement continues to be a feature of the redesigned program, and the measurement for placement is standardized testing. The CCCSE report (2016) strongly advocates the use of multiple methods of measurement, including the use of high school GPA's.

Hodara, Jaggars, and Karp (2012) argued that there are several major issues relative to the assessment and placement policies and procedures used in many remedial/developmental programs. Many students are unaware of the purpose and consequences of college placement exams. Institutions often describe the assessment/placement procedure as non-punitive, focusing on its placement purpose, but failing to indicate that the consequence could mean an extension of time to degree completion, often by several semesters (Hodara et al., 2012). A second issue is the misalignment between test content and the curriculum students have studied. This issue, according to the authors, affects the validity of the placement test results. A third concern is the inability of placement tests to assess non-cognitive factors, which are key to predicting student success in college.

Cognitive and Non-Cognitive Skills

In further efforts to improve developmental education programs, Cross (1976) provided five recommendations for structuring effective programs. First the programs should blend skills training and instruction with other college experiences students encounter. Second, the program

developers should give attention to the social and emotional development of the student, as well as to academic achievement. Third, the criteria for selecting faculty and staff should include an assessment of their interest and commitment to working with remedial students, as well as their background and experience in this area. The final recommendations described the two key qualities of effective developmental education programs: flexibility and open-mindedness. Cross (1976) recommended that a spirit of exploration into student learning and success skills be key factors in the design of successful developmental programs. Erikson (1968) also supports this theory. Emphasizing his view that the pathway from youth to adulthood is characterized by the development of individual identity, Erikson stresses the need to involve students in both reflective and introspective activities. Institutions must create opportunities for students to discover, explore, and clarify their interest skills and aptitudes (Erikson, 1968).

Although the recommendations for improving developmental education programs have merit and may prove profitable, there is no discussion of the additional program costs involved in vetting faculty specifically for developmental programs and extending the focus of the developmental studies beyond the acquisition of academic skills. Decentralized developmental programs are usually housed within the English and Mathematics departments, and institutions experience cost savings when faculty teach across the departments, providing instruction in both college-level and developmental studies courses. Additional savings occur when institutions hire adjunct faculty to teach developmental courses, since in many cases the credentials to teach in this area require only a bachelor's degree.

Current literature supports Cross' call for improving developmental studies programs by blending both cognitive and non-cognitive skills. Institutions have utilized academic support strategies such as tutoring, supplemental instruction, and collaborative learning activities to

increase student retention and student success. Quint, Jaggars, and Byndloss (2013) reported the findings of an education initiative, “Bringing Developmental Education to Scale” designed to improve student retention and progression through the developmental program. The initiative involved the partnership of six organizations and the participation of 15 colleges. The institutions employed both academic and non-academic strategies, categorized under four headings: instructional strategies, support strategies, policy changes, and collaboration with high schools. Of the 40 strategies with clearly articulated objectives, 19 strategies were classified as support for students, and examples in this area included study skills courses, tutoring and advising. Fourteen strategies were geared toward increasing the pace at which students progress through the developmental programs. Included in this group of strategies were modularized and computerized courses and the co-requisite model, which pairs developmental and college courses. There were five key outcomes examined: total credits earned the first term, grade point average in the first term, persistence into the second term, passing the “gatekeeper” college-level English course. While the research results of this study did not show significant differences in the experimental and control groups, two of the strategies - contextualized instruction and collaborative learning – were associated with more positive outcomes (Quint et al., 2013).

Although the research does not conclusively show that student retention is directly linked to the cognitive and non-cognitive strategies employed in developmental education programs, these strategies are deemed key components of the reform of developmental education programs. Efforts to retain students and guide them through their academic programs and to career credentials must include both academic and non-academic support systems.

Streamlining Developmental Education Programs

Regarding the actual length of time students are required to spend in these programs, Roueche and Roueche (1999) reported that more institutions are succumbing to the outside pressure to reduce the amount of time students are required to spend in these courses. There are two methods by which a reduction in time is accomplished: streamlining the program, reducing the number of credits required, and placing a limit on the number of times a student may retake the remedial course.

A number of recommendations followed a 1993 study conducted by Roueche and Roueche (1999) on successful remedial programs. One recommendation stressed the need for structure within developmental programs, which targets at-risk students. Contrary to the belief that structure and strict policies negate the open-door policy, Roueche and Roueche (1999) asserted that the more rigorous academic policies and procedures foster greater student success. Colleges are encouraged to set standards and implement requirements for incoming students. These strategies were considered key elements to the success of developmental programs. The Learning Support writing program, which serves as the subject of this study utilizes a structure, which streamlines the program, potentially decreasing the amount of time students spend in the program. This is accomplished through an open entry/open exit feature, which allows students to move to the second level at the point that they complete the first level competency. In the traditional method, this would not be the case, as indicated in Roueche and Roueche (1999). The redesigned program also has policies and procedures that guide the on-boarding process, class entrance dates, and class attendance.

Reviewing On-boarding Processes

Other recommendations included communication with potential students, orientation for new students, and elimination of late registration. Roueche and Roueche (1999) underscored the importance of connecting with students in high school who have expressed an interest in enrolling in college. According to the authors, this communication should include phone calls, follow-up notes, and a mail-out of relevant materials, such as applications, college bulletins, and financial aid forms. Equally important is the attention given to new students. These students should participate in a mandatory orientation, which should serve to pair students with mentors and with peers with the same majors and interests, as well as, provide information about the college (Roueche & Roueche, 1999). The study discouraged the policy and practice of late registration, and in cases where the policy is instituted, late registration should occur before the first day of class. Another characteristic of successful remedial programs was mandatory assessment and placement. Community colleges should follow the practice of 4-year colleges and universities, which do not allow students to enroll in college-level courses for which they have not met the prerequisites. This study criticized the practice of some institutions, which allow students to take remedial courses as a co-requisite to the college-level courses. Roueche and Roueche (1999) suggested that remedial courses should be a pre-requisite for the college courses, for which they provide the basic skills foundation. Another recommendation was to reduce the course load for working students. The course load should be proportionate to the number of hours worked per week (Roueche & Roueche, 1999).

These strategies support a strong on-boarding process, particularly for community college students, who are often first generation college students from low-income

families (Policy Alert, 2011). Low-income classification has been defined as families earning less than \$25,000 per year, and it is reported that 44% of low-income students attend community colleges, compared to 15% of high income students attend community colleges (Policy Alert, 2011). Many of the on-boarding strategies Roueche and Roueche (1999) discussed are critical in helping students to develop a sense of belonging in the college setting, and these strategies assist students in learning to navigate the academic setting.

Competency-based Learning

In addressing the topic of effective developmental education programs, Burns (1973) advocated competency-based education as a key to improving student success. He described competency-based learning as the process of behavioral interaction among a number of individuals over an undefined period of time. Competency is based on the particular skills and knowledge base required in an identified field of study or work (Burns, 1973). These competencies are communicated through the use of specific, behavioral objectives for which criterion levels of performance have been established. These objectives are referred to as terminal behavioral objectives: written statements expressed from the learner's point of view describing the exact behavior and the conditions under which the behavior is performed (Burns, 1973). The desired/required behaviors are specified and organized in a system ranging from simple to complex. Tests are administered on an individual basis when the student demonstrates readiness (usually he has successfully completed a unit of study). Burns (1973) described competence-based learning as having a preoccupation with synthesis and the need to manufacture a standard product, using individualized approaches to arrive at the standard.

Individualized Instruction

Individualized instruction is another strategy that has characterized some of the developmental programs, and this method is also used in the program, which serves as the subject of this research. Individualized instruction is a major component in Keller's Personalized system of Instruction (Ryan, 1974). In this model a given course is broken down into small units or modules that contain explicit objectives, reading assignments, study questions, references, and where appropriate, technology (Ryan, 1974).

Instructional designs included an individualized approach during the earlier years of the developmental education programs, but it responded only to the needs of the better-prepared students as they pursued a more challenging curriculum. This movement toward individualizing instruction catered to the gifted students, but did not give attention to the needs of the less prepared students (Casazza & Silverman, 1996).

Current research continues to underscore the merits of individualized instruction. Defined as a philosophy rather as a method or technique, individualized instruction provides specific, tailored, and suitable instruction to each student (Resing, 2013). With individualized instruction, the student, rather than the teacher, becomes the center of instruction. While there are various approaches to individualized instruction, three variables are relevant: pace, method, and content (Iravani et al., 2014). In the traditional method of instruction, the instructor controls the pace of learning, setting timelines and deadlines for assignments, course projects, and exams. With the student-centered approach of individualized instruction, the individual student learns at the pace of his/her comprehension. Moreover, in individualized instruction, attention is given to the learning style of each student, and this approach impacts the methods used in instruction. Equally important, the individual student's academic background plays a key role in determining

the course content. This is generally achieved with a pre-test or diagnostic test, which determines what the student already understands about the course content and what he needs to learn. This approach differs from the traditional method where all students receive the same instruction and complete all of the same assignments.

Connor and Morrison (2016) focus on the effectiveness of individualized instruction and methods to successfully implement individualized student instruction (ISI). The authors point out that the extent which student success is realized in subject areas such as reading, science, social studies and math depends upon the different skills, aptitudes, and abilities students bring to the learning process.

While there are similarities in the description of individualized instruction as detailed by Casazza and Silverman (1996) and Connor and Morrison (2016), the target audiences differ. Initially, the approach to instruction was directed to the gifted student. The current literature highlights the use of individualized instruction in addressing the needs of remedial and developmental students. Using an individualized approach to instruction, faculty are able to address the academic weaknesses of heterogeneous groups.

Self-paced, Technology-based Instruction

Technology includes computer-based tutorials, audiotapes, television, and self-assessment examinations. In this model, students move through the entire course at their pace, demonstrating mastery of one unit before proceeding to the next. Similar to the Roueche and Roueche's ideas on the merit of flexible programs, Keller Personalized System of Instruction (Kulik, Jaks, & Kulik, 1978) provided a flexible framework, within which support is provided via technology. The technologies are used to implement self-paced tutorial programs, which accommodate individual differences among students. In this model, students become more

responsible for their own learning, determining the time, place, rate of learning, which is compatible with their own personal learning styles and objectives (Kulik et al., 1978). This model is especially beneficial to students who are poorly prepared for college and who have often experienced academic failures in the past. Dividing the course into small modules or units of learning helps students to feel a sense of accomplishments and may stimulate more interest in the course content. To increase both the efficiency and the success at which students move through the curriculum, frequent assessments and branching are necessary (Kulik et al., 1978).

In the model, the student is told specifically what s/he must know in order to perform well on the test. Often this approach leads to excellent performance on the test. If, however, the student does not perform well, s/he is told what his/her weaknesses are and s/he is given an opportunity to take a parallel-form of the examination, without penalty. The method encourages the student to restudy the course content, while allaying test-taking anxiety. The credit received in passing each unit test is cumulative, and the cumulative grade serves as the final grade or as a great portion of the final grade. The failure on any specific exam does not equal failure in the course, an important feature in Keller's personalized system of instruction. The basic features of this model include:

- Instructional objectives
- Frequent tests
- Student proctors
- Subject-matter mastery
- Student determined progress (Eyre, 2007)

Hiemstra and Sisco (1990) also support the concept of Individualizing instruction. They identify several goals for individualizing instruction:

- Instilling greater confidence, especially for the non-traditional, adult students
- Removing the mystery and lowering the anxiety that often associated with the instructional transaction
- Increasing the satisfaction that both the facilitator of learning and the learner receive from engaging in instructional endeavors
- Making teaching more rewarding and exciting
- Providing instructors with a practical and consistent way to organize instruction, so the learner will assume greater responsibility for his own learning, an idea that is supported by Piaget's theory and Roueche and Roueche's discussion of "best practices"
- Eliminating the problem associated with test anxiety (Hiemstra & Sisco, 1990)

Many of the features of Kelly's personalized system of instruction are evident in the emporium model used in the redesign of the writing program.

Chickering and Gamson (1987) outlined several principles of effective teaching in higher education at the undergraduate level. According to these authors, the key factors in improving learning outcomes are the teachers and the students. Defining the principles of effective teaching, Chickering and Gamson (1987) provided the following:

- Good practice encourages contact between faculty and students
- Good practice develops reciprocity and cooperation among students
- Good practice encourages active learning
- Good practice gives prompt feedback
- Good practice emphasizes time on task
- Good practice communicates high expectations

- Good practice respects diverse talents and ways of learning (Chickering & Gamson, 1987).

Although the primary responsibility for teaching and learning rest with the faculty and students, Chickering and Gamson (1987) asserted that college administrators, state and federal officials, and accrediting agencies all play a part in helping to recreate an environment that is conducive to effective teaching and learning.

Barbatis (2010) pointed to several interventions, which positively affect student success in developmental education: pre-college characteristics, external support, social involvement, and academic integration. Regarding academic interventions, Barbatis (2010) specifically stated that a competency-based curriculum influences incremental student success and timely progression. His assessment aligns with the earlier theories of Piaget and the findings of researchers Roueche and Roueche (1999).

Other Non-traditional teaching/learning Approaches

Addressing the subject of program effectiveness, Messick et al., (1971) commented on an instructional approach used at City University of New York, after admitting any student in the top 50% of his/her graduating class. Messick et al, (1971) reported that 50% of the students required placement in two or more remedial courses in reading, speech, mathematics or writing. Students were not responsive to the traditional instructional methods. With funding from federal grants, City College developed innovative instructional models, which included tutorial laboratories, modular courses, audiovisual media, self-paced learning, programmed texts.

Various technologies were used, including:

- Multimedia classrooms
- Self-instructional units in language laboratories

- Individual learning laboratories
- Audio-listening centers
- Instructional television
- Video-taping (Messick et al., 1971)

The common theme in the literature over a 40-year period, from the mid-seventies to the present is the growing need for developmental education programs to address the issue of college-readiness in providing support to under-prepared high school graduates. While the audience, purpose, and the position of these programs across the higher education landscape have drastically changed, there is consensus that the issue of college and career readiness should be adequately addressed, and the response to this call over the span of more than 40 years has been developmental education. The argument has been made for major overhauls in the existing developmental education programs. The call for improvement in these programs has been prompted by the increase in the number of high school students entering college unprepared and the decline in the number of college completers.

Community Colleges continue to be in the forefront of efforts to close achievement gaps between students who enter college academically prepared and those who must remediate skill deficiencies before enrolling in college-level courses. To meet the challenge, the community colleges must continue to review and revamp remedial education programs, in an effort to streamline the programs, decrease the amount time students expend in pre-college level courses and increase the overall program effectiveness.

A major change to address this issue was implemented in the developmental studies program at one of the Tennessee community colleges. Two different methods have been used to address remediation in reading, writing, and mathematics: a traditional approach, where lecture

was the primary method of instructional delivery, was compared to a technology-based approach to instruction. This study established a comparison of these methods relative to the writing program.

Description of the Developmental Writing Program

Institutions within the Tennessee Board of Regents (TBR) system were mandated in the 1980's to design a developmental studies program, which would prepare students to matriculate in college courses (Twiggs, 2009). The initial design of the programs focused on four disciplines: reading, writing, math, and basic oral communication skills. Assessment and placement procedures were key to the program. Students who were under the age of twenty-one were required to submit ACT scores as part of the admissions requirements. Sub-scores of 19 or higher in reading, writing, and mathematics were indicators of college-readiness, and students earning these scores moved directly into college-level courses. A sub-score less than 19 in either of the subject areas placed students in developmental reading, writing, and math courses. In the initial design of the program, students who placed in a minimum of two of the disciplines were also required to take study skills, a course designed to assist students in the development of test-taking, time-management, and study skills essential for success in college-level courses. Students were also required to take a course in basic communication skills. Students over the age of twenty-one who were seeking admissions in a TBR institution were required to take a secondary placement (AAPP), which measured the student's proficiency in reading, mathematics, and writing. This assessment also included a writing sample, which was assessed holistically by a team of readers, mostly members of the English department. The secondary assessment also served as a challenge exam for students who chose to challenge their ACT placement scores (TBR, A-100 guidelines).

The initial structure of the program was decentralized. Faculty in the English, Mathematics, and Speech departments taught remedial and developmental courses as part of their teaching load, which also included college-level courses in the respective disciplines. Faculty in all affected disciplines participated in the design of the remedial and developmental program, along with a separate department of reading faculty who taught reading and study skills courses. All departments – reading, writing, mathematics, and speech – were composed of a chair, faculty, clerical staff, teaching assistants, and tutors who were trained by the respective departments. The decentralized structure allowed faculty to teach at the college-level and the remedial/developmental levels.

The remedial and developmental courses were offered in different departments, however, the overall structure included an administrator, who coordinated the program and provided common goals and a set of policies and procedures specific to the program. The support services were also an integral part of the developmental program, and these services included testing, advising and counseling, and tutorial services; the coordinators of these units also reported directly to the program administrator. Due to budgetary constraints, major changes were made in the program, which affected the services that had been exclusively provided to remedial and developmental students. The testing, advising and counseling units of the college expanded their roles and responsibilities to include the R/D students. The tutorial unit, however, remained a part of the R/D program. The size of the program was affected by the reduction in funding; subsequently, the Basic Oral Communications course was eliminated from the program. Recognizing the importance of basic oral communication skills, these skills were integrated in other courses in the curriculum.

The Writing Course/Traditional Model

The writing courses were an important component of the Remedial and Developmental program: Basic Writing (DSPW 0700) and Developmental Writing (DSPW 0800). These courses were a pre-requisite for English Composition, which is required for degree programs, both the Associate of Applied Science and the University Parallel programs. The remedial/developmental writing program had two levels into which students could place: students scoring between 15 and 18 on the ACT writing section were placed into Developmental Writing (DSPW 0800), and students who scored below 15 on the ACT writing section were placed in Basic Writing (DSPW 0700). The lower level course focused on grammar, mechanics, and paragraph writing, while the higher-level course included writing the five-paragraph theme. A major change in the cut-off scores and placement procedures was later developed. The state policy for the writing cut-off score was revised to align with the ACT recommended cut-off score of 18, meaning that students who scored 18 or higher were placed in college-level English.

In the traditional model, lecture was used as the primary instructional method. Instructors designed lectures to cover the major topics in each writing course and students moved at a common pace, completing assignments and writing paragraphs or essays, determined by the level of the course. To supplement the instruction, a work text was used. Students completed exercises in the work text both as class assignments and as individualized assignments, based on their performance on the writing assignments. With the exception of individualized, work text assignments, all students completed the same requirements and moved at the pace set for the class. Students who unsuccessfully completed one of the courses re-enrolled and repeated all assignments in the class in an effort to pass the course. The grades in the course were A, B, and C and students were required to perform at C level or higher to successfully complete the course.

The average class size was 22, and the classroom setting was either a computer lab, a 21st classroom, or a traditional classroom with the instructor's desk and student desks or tables. In classes, which met in computer labs, the computers were primarily used for word-processing the required writing assignments.

The redesigned program

The driving forces for most program redesigns are external factors, such as policy mandates, new funding guidelines, and fiscal constraints (Edgecombe, Cormier, Bickerstaff, & Barragan, 2013). The genesis of the Learning Support program was the result of a state mandate to implement a program that was technology-based, streamlined, and focused on improving student success. The funding formula also shifted from enrollment based funding to performance based funding. The new funding formula measured performance by student progression, that is the number of students meeting benchmarks in their college matriculation, earning 12, 24, and 36 credit hours. Another factor in the funding formula included transfer to a 4-year institution, but the ultimate measure of institutional performance was the number of students graduating with certificates and degrees (TBR, A-100 guidelines, 2016). The previous program was a multi-layered program, with three pre-college math courses, two pre-college writing courses, and two pre-college reading courses. The need to improve student progression and student retention influenced the decision to redesign the developmental education program. The following data tracked three cohorts of entering freshmen, reflecting course completion in developmental education programs, fall-to-spring, and fall-to-fall retention. The data illustrate the need for effective interventions via program reformation, with an emphasis on student success.

Table 2

Fall 2007, 2008 and 2009 first-time freshmen who enrolled in DSPW0800, DSPR0800, and either DSPM0800, DSPM0850 or DSPM0870 were analyzed to determine their pass rates in these courses and retention to subsequent spring semesters.

Term	Enrolled in all three courses (Developmental Reading, Writing, and Mathematics)	Passed all three courses	Returned Spring	Returned Fall
Fall 2007	262	41.6%	84.0%	62.2%
Fall 2008	359	36.8%	76.9	67.4%
Fall 2009	281	43.1%	75.1%	-----

The program underwent major renovations, including a name change. The current program is titled Learning Support, and it continues to focus on the basic skills in reading, writing, and mathematics. The program continues to follow the state devised A-100 guidelines, requiring degree-seeking students under the age of 21 to submit an ACT score and students 21-years old and older without recent ACT scores are required to take the COMPASS or ASSET test. The following scores guide the placement of students into college-level English, math, and reading intensive courses: (Tennessee Board of Regents, A-100 guidelines).

Table 3

Cut-off Scores for placement in college-level English, Mathematics, or a reading-intensive college-level course.

Course	ACT	COMPASS	ASSET	SAT
Writing	18	77	43	450
Reading	19	83	43	460
Mathematics	19	38	39	460

(TBR A-100 Guidelines, 2016)

Students scoring below the cut-off indicators are placed in Learning Support and a diagnostic assessment is administered.

Table 4

A Comparison of the previous ACT cutoff scores and the Student Enrollment at each level using the new ACT cutoff scores

Learning Support Breakout				
Cutoff	ACT Exam Range	New Cutoff Range	Course	Placement
English	01 - 14	01 - 12	Pre-Learning Support Writing	374
	15 - 18	13 - 17	Learning Support Writing	858
	19 - 36	18 - 36	College Level English	596
Math	01 - 14	01 - 12	Pre-Learning Support Math	51
	15 - 18	13 - 18	Learning Support Math	1546
	19 - 36	19 - 36	College Level Math	230
Reading	10-11	01 - 12	Pre-Learning Support Reading	571
	12-18	13 - 18	Learning Support Reading	818
	19-36	19 - 36	No reading course required.	439

The new guidelines stipulated that student Pell Grants could only be applied to courses, which were deemed to be at the high school level (TBR, A-100 guidelines, 2016).

Learning Support Reading, Writing, and Mathematics were deemed high school level courses, and the minimum score, which would earn a placement in these courses was an ACT score of 13. Students scoring less than 13 were referred to Pre-learning support courses, which were designed as part of the LEAP (Learning Early Academic Program) program.

The revised program is competency-based, and the diagnostic assessment is used to determine which competencies the student is required to complete. The courses are modularized, with specific modules grouped under each competency. The student moves at his/her own pace, and performance at C level mastery indicates the student's readiness to move to the next competency. Engaged in an open-entry and open-exit program, the student is allowed to exit a course at the point of readiness and to begin work in the next level course at multiple entry points. This feature of the program is facilitated through individualized, computer-assisted instruction. The specific assignments in the courses are tailored to the student's needs as indicated by several assessments, including a diagnostic writing assignment administered during the first week of class.

The Emporium Model

The primary method of instruction for the Learning Support writing program is based on the emporium model. In the emporium model, faculty who teach in the program collaborate in both course development and course delivery, eliminating the duplication of faculty effort and work in curriculum development and implementation. This approach saves time, and helps to achieve consistency in course design and content delivery (Twigg, 2009). The target of this redesign is the whole course, rather than a single class.

Twigg (2009) outlines several advantages of the emporium model, including the facilitation of active learning. With the emporium model, lectures are replaced with a variety of learning resources, and the student's role shifts from that of a passive note-taker to that of an active, engaged learner. Computer-assisted instruction supplements the variety of learning resources, which include tutorials, exercises, and quizzes that provide practice, regular feedback, and reinforcement of course content and learning objectives. The emporium model subscribes to the philosophy that students learn in skill-based courses by doing, not by simply listening. Twigg (2009) describes a modified self-paced class, which has the flexibility to allow the student to engage in the course at times independent of structured scheduled classes. Unlike the traditional classes, students move at a pace commensurate with their learning style and organized by specific learning objectives, which are presented in a modular format. While the emporium model has been compared to on-line teaching and learning because of its use of technology, it is

distinct in that it features on-demand assistance from instructors and teaching assistants in a computer lab setting (Graves & Twigg, 2006).

Graves and Twigg (2006) summarized a number of the benefits of the emporium model. This method eliminates all lectures and replaces them with a learning resource center, which has interactive instructional software and on-demand assistance from faculty and teaching assistants. Resources include interactive tutorials, instructional software, practice exercises, and quizzes, and tests. Students are able to select the learning materials based on their individual needs. The human resources available to students in the emporium class include faculty, GTA (Graduate teaching assistants), peer tutors, and others whose role is to respond to the students' specific needs and direct them to course materials geared toward their deficiencies. Graves and Twigg (2006) also recognize that the ability to teach more than one course in the emporium model as an advantage. Table 6 provides a basic description and comparison of the two models.

Table 5
The Traditional Model vs. The Emporium Model of Instruction

Model	Instruction	Pace	Setting	Assignments
Traditional	Lecture-based Group Instruction Units	Class	Classroom	Class
Emporium	Individualized Modularized Competency-based On-demand Assistance	Self-Paced	Computer lab	Diagnostic- Prescriptive

Summary

Current literature underscores the continued need for remediation to close the gap between high school achievement and college entrance requirements (Center for Community College Student Engagement, 2016). Further, it is widely believed that programs designed to provide remediation should be placed on the campuses of community colleges. Though the need for remediation exists, as illustrated by the high percentages of high school graduates who are referred to these programs, there is a difference of opinion regarding the actual effectiveness of current remedial programs (Bailey et al., 2008). Some theorists have concluded that participation in the program does not necessarily yield the intended outcomes (Bailey & Alfonso, 2005). In 2013, the state board of regents in Tennessee mandated a redesign of developmental education, and one response to this mandate was the implementation of technology-based programs (TBR, A-100 Guidelines). This study examined the effectiveness of the emporium-model, technology-based programs, and it draws a comparison of the emporium, technology-based programs and the traditional, lecture-based programs. The chapter provided a historic context of developmental education programs and a description of the two writing programs, which are subjects in the research. The next chapter describes the research method and approach.

Chapter 3: Research Method

Introduction

The purpose of this study was to examine if an emporium model of instruction used in a developmental writing program is more effective than the traditional lecture-based method of instruction. The effectiveness of the methods was measured by completion of the writing course, retention in the writing program, and success in the first college-level, gateway writing course. To conduct the research, three questions were formed. This chapter describes the research questions, research design and approach, and includes, the sample, data collection tools, and data analysis used in this study.

Research Design and Approach

This quantitative study used archival data to answer three research questions:

1. How does the completion rate of students enrolled in the traditional model of basic writing compare with the completion rate of students in the emporium model?
2. How does the retention rate of students who participated in the traditional model of basic writing compare with the retention rate of students in the emporium model?
3. How does the success rate of students who participated in the traditional model and advanced to the college level writing classes compare with the students who participated in the emporium model and advanced to the college-level English class?

There were three hypotheses generated from the research questions:

1. Null Hypothesis (H_01): There is no statistically significant difference ($p=.05$) between the completion rate of students enrolled in the traditional model and students enrolled in the emporium model of developmental writing.

Alternative Hypothesis (H_11): There is a statistically significant difference ($p=.05$) between the completion rate of students enrolled in the traditional model and students enrolled in the emporium model of developmental writing.

2. Null Hypothesis (H_02): There is no statistically significant difference ($p=.05$) between the retention rate of students who participated in the traditional model of basic writing and the students enrolled in the emporium model of developmental writing.

Alternative Hypothesis (H_12): There is a statistically significant difference ($p=.05$) between the retention rate of students who participated in the traditional model of basic writing and the students enrolled in the emporium model of developmental writing.

3. Null Hypothesis (H_03): There is no statistically significant difference between the success rate of students who participated in the traditional model and advanced to the college level writing classes when compared to the students who participated in the emporium model and advanced to the college-level English class.

Alternative Hypothesis (H_13): There is a statistically significant difference between the success rate of students who participated in the traditional model and advanced to the college level writing classes when compared to the students who participated in the emporium model and advanced to the college-level English class.

This study is a nonexperimental, quantitative analysis that uses a comparative approach with ex post facto data. Simon and Goes (2013) stated that ex post facto research, which uses data already collected, is ideal for studies in which the manipulation of participants is either impossible or unacceptable. In this study, there is no need to manipulate the subjects; moreover, ex post facto data received from the institutional database facilitated the data collection and analysis process.

I used a quantitative method for this study. While qualitative methods may inform a researcher of the thought processes and opinions of the subjects in the research, it cannot generalize the findings to a broader, comparable audience (Babbie, 2007). Subjects used in the research were students enrolled in two instructional groups: traditional lecture-based class and the emporium model. Each group was subdivided based on similar ACT scores, ranging from a score below 10 to a score of 17: this range of scores placed students in the remedial/developmental classification.

Data were collected on each group of students reflecting their enrollment over a period of four semesters, and an analysis of the data was conducted, using Chi-Square and Cramer's V tests. Dependent variables included retention, passing grades (a grade of C or higher) in the developmental course, and a passing grade (a grade of C or higher) in the college-level gateway course; the independent variable was the course type. Information relative to sampling, instrumentation, and data collection follows.

Sampling and Setting

Secondary data reflecting a cohort of first-time freshmen placed and enrolled in the traditional remedial and developmental studies courses comprised the first group. Persistence is a measure of the successful foundation built in the basic courses; thus, the percentage of students remained at the college, and the percentage of those who progressed to the next academic level, are key factors in comparing the effectiveness of the two instructional models. A power analysis was conducted using G* Power to determine the minimum number of students needed to obtain statistically valid results.

The power analysis was conducted for Chi-square analysis assuming a power level of .80, a significance level of .05, and a medium effect size of 0.3. Using the stratified sampling method, students 20 years old and under, representing the traditional-age college students, were selected. After removing students older than 20 years of age, I randomly sampled 88 cases using the “select cases” procedure in SPSS to serve as sample for data analysis. I analyzed the data reflecting students from the semester of their first placement in Basic/Developmental Writing to their first enrollment in a college-level English composition course. Data reflecting the percentage of students who progressed to English composition, as well as the number of semesters it took to complete developmental writing courses, were analyzed. The students’ success rate in English composition was measured, defining success as a final course grade of C or higher. A similar data collection method was used for the first-time students enrolled in the Learning Support writing program. This cohort included first-time students placed and enrolled in the Learning Support writing program. A division of students by placement

test scores was also reflected in the data collection. An email correspondence was issued to the Institutional research unit of the college requesting information from the Banner database, which reflects the students enrolled in both groups, the ACT scores received, and the grades earned in the basic/developmental writing and English courses. The sample size was 88 first-time, degree-seeking students placed and enrolled in developmental writing courses. To protect the identity of students, ID numbers were used, rather than a roster of names, in collecting and analyzing the data. The data were returned as a PDF file attached within an email correspondence.

Description of the Learning Support Writing Program

The Learning Support writing program is a 14-week, semester long program, which meets in various time slots for a period of 3 hours per week, 2 or 3 days per week. This writing program uses the emporium model of instruction. A computer lab configuration facilitates both individual and small group work. Two instructors are assigned to each lab, and each one serves as the instructor of record for up to 30 of the enrolled students, while remaining available to provide on-demand assistance to any student in the lab. The instructor of record prescribes assignments, monitors and records the student's progress, and electronically submits the final course grade to the records office. A modularized concept is used, where modules in the courses are grouped under two major competencies, allowing the student to work with a small portion of the course content at a time. Through the use of computer-assisted instruction, students work at their own pace, and they take unit tests upon their demonstration of readiness. Students who do not perform at C level competency on unit tests are given other prescribed

assignments focused on the deficiencies, and they are allowed to retake unit tests as many times as necessary to demonstrate mastery of content. The program is competency-based, and C level competency is required before the student moves to the next unit or exits the course. The program is open entry and open exit, a program feature that allows the student to move from one course level to the next during the same semester.

Although the competencies are built into the design of two courses – Learning Support Writing (Engl 0810) and Learning Support Writing (Engl 0820) - the open-entry and open-exit and the self-pace features in the course allow highly motivated students to complete both courses in one semester. For students who require more than the usual two semesters, this flexibility in course design allows the student to continue working in the course until all modules are successfully completed. Although the student who does not successfully complete the course must re-enroll, s/he does not repeat any of course content; once mastery is demonstrated, the student moves to the next skill set.

Description of the Traditional Writing Program

The traditional writing class is also a 3-hour per week class, structured as 60-minute MWF (Monday, Wednesday, Friday) or a 90-minute TR (Tuesday, Thursday) classes. Classes meet in a traditional classroom with a teacher desk and student stations or in a computer lab with a teacher station and computers in a traditional configuration. Some classrooms are configured in a 21st century model, with a computer, a projector and projection screen, a smart board, and a document camera. The primary mode of instruction is teacher-designed lectures. Students move at the pace of the class, and after each series of lectures, students are required to complete various writing assignments.

Students must submit assignments on the scheduled due dates or a penalty for late assignment is issued. While the overall course objectives are the same as the learning support writing class, the method of preparing students to meet the course objectives is vastly different. A textbook is used, and assignments from the text vary from class assignments to individualized assignments, given as the result of performance on a writing assessment. Grades on all assignments are averaged at the end of the term, and students who fall below a passing grade (C or higher), must re-enroll in the course and repeat all course assignments, in much the same way as a student enrolled in the course for the first time. The developmental course work is divided into two distinct courses, DSPW 0700 and DSPW 0800, similar to the Learning Support writing courses. Unlike the Learning Support writing program, there are not multiple points of entry and exit. Each term is defined by a 15-week semester, and students have one point of entry and one point of exit.

Data Collection and Analysis Procedure

Archival data, reflecting the enrollment of first-time freshmen, were used, and a specific term was selected, which would allow data collection over a period of four semesters. Students in the cohort met the criteria for placement in one of the two levels of developmental studies or Learning Support writing: an ACT sub-score in English below the cut-off score of 18 and a COMPASS score that falls below 77. A similar cohort of Learning Support students was used and data reflecting a period of four terms were analyzed. Data were collected and analyzed at three critical points during the study: the point and rate at which the students completed the developmental studies or Learning

Support; the point and rate at which students enrolled in a gateway college-level English class, and the rate at which the students successfully completed the gateway English course. Successful completion is defined as a grade of C or higher. The instructors of record entered end-of-the-semester grades into a software program, Banner; for the purpose of this study, the director of institutional research ran an Argos report to extract the data from the Banner system and presented it in a PDF file, attached to an email. The data were analyzed and conclusions were drawn to determine student progression and student success. Students in both groups were categorized based on their ACT sub-scores in English. A review of the data determined (a) at what point and rate each group completed developmental writing or learning support writing, (b) at what point and rate each group advanced to English 1010, the gateway college-level course, (c) at what percentage rate students from each group successfully completed the gateway course. Both the persistence rate and the level of performance (as indicated by course grades) of these groups were measured and compared to determine if group II experiences a greater level of success than the group I.

Instrumentation and Operationalization of Constructs

Data were extracted from the institution's database system. After removing students older than 20 years of age, 1867 cases remained. I randomly selected 88 cases using the "Select Cases" procedure in SPSS. The data sets containing a cohort of 88 first-time, degree-seeking students enrolled in basic writing (DSPW 0700) and developmental writing (DSPW 0800) were collected and analyzed. This data collection included the placement scores, success rates in basic and developmental writing courses, and

enrollment and completion rates in English 1010, the college-level gateway course. These statistics were compared with similar data collected on students enrolled in the Learning Support writing classes: English 0810 and English 0820. The data collection covered a period of four semesters. The dependent variables used in the study include successful completion of developmental writing courses, learning support writing courses and English 1010. Placement examinations were used to assess the students' skills in three basic areas: reading, writing, and mathematics. These scores determine whether the student is initially placed in college-level courses or in basic and developmental courses. Additionally, these assessments determine how many developmental courses students must take. For the purpose of this study, cohorts referred to and enrolled in developmental writing or Learning Support writing during the designated time period were the subjects in the research.

Reliability and Validity of the Study

Reliability in research was determined to a great extent by the measure of consistency within the study. Babbie (2007) asserted that reliability is an issue of whether a specific technique, when applied to the same subjects under the same condition, will yield the same results each time it is applied. The statistical test of significance and the test of strength, Chi-square and Cramer's V , would yield the same results each time applied to the same subjects under the same conditions. In this study the data contained in the student files, including placement scores and course grades, were extracted from the institution's computer system, Banner, using Argos reports, and the institutional research department provided the data to the researcher in PDF files

attached to an email. Because of the secure nature of the data system from which the student information was collected, all data were assumed reliable and could not be altered by users.

Students were placed in the program based on the scores they earned on the placement test. Educators have observed the reliability of the college placement tests – ACT, COMPASS, ASSET, SAT – as a means of determining college readiness (College Board, 2003), and these tests continue to serve as admissions criteria for colleges and universities with selective admissions. These assessments indicate whether students will matriculate at the college level or at the remedial/developmental level. For institutions with multiple levels of remedial and developmental courses, the college assessment instruments are also used to determine the level at which students will begin their study. First-time, full-time, degree seeking students at the institution used in this study are required to complete an entrance/placement exam. The dependent variables—successful completion of developmental writing, learning support writing and English I – are considered reliable due to the standard nature of the placement – ACT (American College Testing), and the standardized exit criteria. The ACT has been measured for test score consistency and test-retest reliability (College Board, 2003). Course completion is based on the demonstration of competencies identified in the standard testing instrument designed by American College Testing. Course standardization of content, requirements, and performance measures ensure consistency, which is characteristic, according to Babbie (2007), of reliability in research. Additionally, the institutional research

personnel retrieved the course completion data, including grades earned in courses, from the institution's database.

Validity is critical with ACT, in that the instrument may be used for multiple measures. Although there is not a cut-off ACT score for admission, since the institution practices an open door policy, students are required to submit ACT scores, and the sub-scores in English, reading, and mathematics are used to place students in remedial/developmental courses or in college-level courses. The College Board conducts the reliability levels as part of its quality assurance efforts. The dependent variable is enrollment in college level English. The independent variables are the traditional mode of instruction in developmental writing and the emporium model of instruction used in the redesigned learning support program. Nominal and ratio measures were used to evaluate the hypothesized relationship between traditional method of instruction, the emporium model, and success in the gateway freshman English course.

Ethical Procedure

Confidentiality for participation in this study were protected and maintained. Because this study used archived data, reflecting student enrollment and academic performance, there was no individually identifiable student data necessary for the study. The institution's Office of Institutional Research removed all students' identification information from the data before releasing it. All required procedures, including the securing of appropriate approvals, were carefully followed.

The researcher received the data from the department of institutional research for interpretation and statistical analysis. Pin numbers, rather than personal identification data, distinguished participants. Upon conclusion of this study any identifying names of participants for this study were not disclosed, minimizing ethical concerns for participants.

Summary

The purpose of chapter 3 was to explain the methodology used to conduct the study. Ex post facto data analyses, employing a non-experimental quantitative research design, were used to compare the effectiveness of two instructional models implemented in a developmental writing program at a community college. In chapter 4, the findings of this quantitative study are reported and in chapter 5, the conclusion of the study, recommended topics for further research, and suggested applications of the findings are presented.

Chapter 4: Results

Introduction

The purpose of this study was to examine the success rate in developmental writing courses delivered using the emporium model, which focuses on technology-based instruction when compared to the traditional method of instruction.

Specifically, this study was designed to address the following research questions:

RQ1- How does the completion rate of students enrolled in the traditional model of basic writing compare with the completion rate of students in the emporium model?

Null Hypothesis (H_01): There is no statistically significant difference ($p = .05$) between the completion rate of students enrolled in the traditional model and students enrolled in the emporium model of developmental writing.

Alternative Hypothesis (H_11): There is a statistically significant difference ($p = .05$) between the completion rate of students enrolled in the traditional model and students enrolled in the emporium model of developmental writing.

RQ2 - How does the retention rate of students who participated in the traditional model of basic writing compare with the retention rate of students in the emporium model?

Null Hypothesis (H_02): There is no statistically significant difference ($p = .05$) between the retention rate of students who participated in the traditional model of basic writing and the students enrolled in the emporium model of developmental writing.

Alternative Hypothesis (H_12): There is a statistically significant difference ($p = .05$) between the retention rate of students who participated in the traditional model of basic writing and the students enrolled in the emporium model of developmental writing.

RQ3 - How does the success rate of students who participated in the traditional model and advanced to the college level writing classes compare with the students who participated in the emporium model and advanced to the college-level English class?

Null Hypothesis (H_03): There is no statistically significant difference between the success rate of students who participated in the traditional model and advanced to the college level writing classes when compared to the students who participated in the emporium model and advanced to the college-level English class.

Alternative Hypothesis (H_13): There is a statistically significant difference between the success rate of students who participated in the traditional model and advanced to the college level writing classes when compared to the students who participated in the emporium model and advanced to the college-level English class.

This chapter begins with a description of the data processing procedures conducted prior to the analysis, followed by a report of descriptive statistics for the sample. The data analysis and results for each research question are then presented. Finally, this chapter concludes with a brief summary.

Pre-Analysis Data Processing

There were a total of 1,936 student cases in the dataset. Prior to the analysis, the data were filtered to only include students who were 20 years old or younger. After removing students older than 20 years old, 1,867 cases remained in the dataset. From the remaining cases, I randomly sampled 88 cases using the “Select Cases” procedure in SPSS to serve as the sample for data analysis. This was done to ensure that any significant results obtained were not simply due to an overly large sample size.

Descriptive Statistics

The final sample for this study consisted of 88 students. Descriptive statistics were computed for each of the study variables. Table 7 displays the means and standard deviations for the continuous variables. The average age of students in the sample was 18.31 ($SD = 0.75$). The students' average ACT score was 12.99 ($SD = 2.55$).

Table 6
Means and Standard Deviations for Continuous Variables

Variable	<i>M</i>	<i>SD</i>
Age	18.31	0.75
ACT score	12.99	2.55

Table 8 displays the frequencies and percentages for the categorical variables. A slight majority of the students in the sample were men ($n = 54, 51.1\%$). Although enrollment status data was not available for students in the traditional class, 25% ($n = 22$) of the students overall were enrolled full-time. There were 39 students from the learning support class (44.3%) and 49 from the traditional class (55.7%). Overall, the majority of students succeeded in their developmental course ($n = 54, 61.4\%$) and were retained in school ($n = 53, 60.2\%$). A majority of students did not succeed in their advanced course ($n = 73, 83.0\%$).

Table 7
Frequencies and Percentages for Categorical Variables

Variable	<i>n</i>	%
Gender		
Female	43	48.9
Male	45	51.1
Class type		
Learning support	39	44.3
Traditional	49	55.7
Success in developmental course		
Did not succeed	34	38.6
Succeeded	54	61.4
Retention		
Did not retain	35	39.8
Retained	53	60.2
Success in advanced course		
Did not succeed	73	83.0
Succeeded	15	17.0

Research Question 1

Research question 1 was: How does the completion rate of students enrolled in the traditional model of basic writing compare with the completion rate of students in the emporium model? In order to answer this question, a chi-square analysis was conducted. A chi-square analysis is appropriate when the aim of the research is to examine the relationship between two categorical variables (Pagano, 2009). Specifically, the goal of this analysis was to determine if the proportion of students who succeeded in the developmental course was different for the learning support class compared to the traditional class. In order to conduct a statistically valid chi-square analysis, the data must come from random samples and the expected frequencies should not be too small. Pagano (2009) suggested that expected frequencies below five should not compose more than 20% of the cells, and no cell should have an expected frequency of less than one. All of these conditions were met for this analysis.

The results of the chi-square analysis were not significant ($\chi^2(1) < 0.01, p = .976$), indicating that the proportion of students who succeeded in the developmental course was not different between the learning support and traditional classes. Additionally, a Cramer's V test was conducted to determine the strength of association between class type and success in the developmental course. The results of the Cramer's V test were not significant (Cramer's $V < 0.01, p = .976$), indicating that there was not a significant association between class type and success in the developmental course. Therefore, the researcher failed to reject H_0 . Table 9 displays the observed and expected frequencies and percentages for the chi-square analysis.

Table 8
Chi-square Analysis for Class Type vs. Success in Developmental Course

Class Type	Success in Developmental Course			
	Did not succeed	%	Succeeded	%
Learning support				
Observed	15	38.5	24	61.5
Expected	15.1	38.7	23.9	61.3
Traditional				
Observed	19	38.8	30	61.2
Expected	18.9	38.6	30.1	61.4

Note. $\chi^2(1) < 0.01, p = .976$. Cramer's $V < 0.01, p = .976$.

Research Question 2

Research question 2 was: How does the retention rate of students who participated in the traditional model of basic writing compare with the retention rate of students in the emporium model? In order to answer this question, a chi-square analysis was conducted. The goal of this analysis was to determine if the proportion of students who were retained in school was different for the learning support class compared to the traditional class. All conditions required to conduct a statistically valid chi-square were met for this analysis.

The results of the chi-square analysis were not significant ($\chi^2(1) = 0.44, p = .508$), indicating that the percentage of students who were retained in school was not different between the learning support and traditional classes. Additionally, a Cramer's V test was conducted to determine the strength of association between class type and retention. The results of the Cramer's V test were not significant (Cramer's $V = 0.07, p = .508$), indicating that there was not a significant association between class type and retention.

Therefore, the researcher failed to reject H_0 . Table 10 displays the observed and expected frequencies and percentages for the chi-square analysis.

Table 9
Chi-square Analysis for Class Type vs. Retention

Class Type	Retention			
	Did not retain	%	Retained	%
Learning support				
Observed	14	35.9	25	64.1
Expected	15.5	39.7	23.5	60.3
Traditional				
Observed	21	42.9	28	57.1
Expected	19.5	39.8	29.5	60.2

Note. $\chi^2(1) = 0.44, p = .508$. Cramer's $V = 0.07, p = .508$.

Research Question 3

Research question 3 was: How does the success rate of students who participated in the traditional model and advanced to the college level writing classes compare with the students who participated in the emporium model and advanced to the college-level English class? In order to answer this question, a chi-square analysis was conducted. The goal of this analysis was to determine if the proportion of students who succeeded in their advanced course was different for the learning support class compared to the traditional class. All conditions required to conduct a statistically valid chi-square were met for this analysis.

The results of the chi-square analysis were significant ($\chi^2(1) = 22.72, p < .001$), indicating that the proportion of students who succeeded in their advanced course was different between the learning support and traditional classes. More specifically, the proportion of students from the learning support class who succeeded (38.5%) was greater than the proportion of students from the traditional class who succeeded (0.0%). Additionally, a Cramer's V test was conducted to determine the strength of association between class type and success in the advanced course. The results of the Cramer's V test were significant (Cramer's $V = 0.51, p < .001$), indicating that there was a significant association between class type and success in the advanced course. Therefore, H_{03} was rejected. Table 11 displays the observed and expected frequencies and percentages for the chi-square analysis.

Table 10
Chi-square Analysis for Class Type vs. Success in Advanced Course

Class Type	Success in Advanced Course			
	Did not succeed	%	Succeeded	%
Learning support				
Observed	24	61.5	15	38.5
Expected	32.4	83.1	6.6	16.9
Traditional				
Observed	49	100.0	0	0.0
Expected	40.6	82.9	8.4	17.1

Note. $\chi^2(1) = 22.72, p < .001$. Cramer's $V = 0.51, p < .001$.

Summary

This chapter began with a brief introduction, followed by a report of the data processing procedures and descriptive statistics for the study sample. Then the analyses of the research questions were presented. The results for research question 1 revealed that the proportion of students who succeeded in the developmental course was not different between the learning support and traditional classes. The results for research question 2 revealed that the proportion of students who were retained in school was not different between the learning support and traditional classes. Finally, the results for research question 3 revealed that the proportion of students who succeeded in their advanced course was different between the learning support and traditional classes. A greater proportion of students from the learning support class succeeded in their advanced course compared to the students from the traditional class. Chapter 5 will include a discussion of these findings in relation to previous literature and the theoretical framework of the study. This chapter will also include suggestions and directions for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to compare the effectiveness of an emporium model of instruction used in developmental writing, when compared to the traditional, lecture-based model of instruction. This chapter provides a summary, conclusion, and recommendations derived from the findings in Chapter 4. The discussion will be presented in the order that the research questions were examined. A brief summary of the significant findings related to each research question will be followed by a discussion of these findings and will include references to previous and current research, limitations incurred during the analysis, implications for social change, and suggestions for improvements in teaching and learning.

Summary

The study explored and identified any notable differences in the performance of students enrolled in the emporium model of instruction when compared to students in the lecture-based model, as measured by the completion of developmental writing, retention in the writing program, and successful outcomes in the first gateway college-level English course. Although studies have focused on the effectiveness of pedagogies employed in remedial math courses (Bonham & Boylan, 2012), there is a gap in the literature that links the emporium model of instruction to achievements in remedial and developmental writing programs.

This study was conducted as a nonexperimental, quantitative, comparative analysis of two instructional models: lecture-based and technology-based instruction.

The problem addressed in the study was the high percentage of students who enter college needing remediation, which extends the time-to-degree completion, or, in many cases, contributes to the statistics of college noncompleters (CCA, 2011).

The purpose of the study was to determine the effectiveness of the emporium, technology-based instructional model when compared to the lecture-based, traditional model of instruction. The participants in the study were first-time, full-time freshmen enrolled in developmental education writing courses. Secondary data were extracted from the institution's database, reflecting the student's enrollment in the traditional writing course or the redesigned, emporium model writing class, retention in the writing program, and success in the first gateway, college-level English course.

The study highlights the current debate regarding the effectiveness of remedial and developmental programs. Much of the literature concludes that there is no definitive evidence that developmental education programs work. There continue to be questions regarding who should be referred to remedial placement in these programs and the long-term effect of placement (Bettinger & Long, 2009). This research study specifically focused on writing programs, which are a component of developmental education programs, comparing two instructional models to determine which method had a more positive effect on the retention, progression, and success of developmental students enrolled in courses, which use the models.

As stated in Chapter 1, the technology-based writing program, which is modularized, competency-based, and individualized, responds to the need and effort to streamline remedial education. The program is designed to provide an opportunity for

completion within one semester, an improvement over previous programs that included courses with multiple levels.

Using a combination of student data files reflecting enrollment and performance in writing and English courses, the study drew a comparison between the traditional, lecture-based instruction and technology-based instruction. Chapter 4 presented the results of the analysis of data, which reflect the performance and retention of students who participated in the two modes of instructional delivery. Analyses of the descriptive statistics were discussed. There was one statistically significant relationship found as a result of the Chi-square test, as well as the two analyses, which accepted the null hypothesis. The results of the Chi-square test were specified in Chapter 4.

Variables contained in the Banner system data set were used to draw a contrast between the students who participated in the traditional course and those who participated in the technology-based course. The independent variables were the two instructional types, and the dependent variables included the completion of the writing course, retention in the writing program, and success in the gateway English course.

The remainder of the chapter will provide the conclusions from the study and recommendations for future studies.

Conclusion

College completion has been a major issue in the overall performance of higher education (Policy Alert, 2011). Bettinger, Boatman, and Long (2013) posited that less than 60% of the students at 4-year colleges graduate within a period of 6 years, and this

number is as low as 10% at some higher education institutions. In addressing the issue of college completion throughout the higher education landscape, it is imperative that attention is given to the success of remedial/developmental programs, designed to prepare students for college-level work (Boroch, 2010). There continues to be a need for programs that address remediation, since 60% of the students enrolling in community colleges are deemed unprepared or under-prepared for college (Dalek, et al., 2012).

Traditional developmental programs have been described as a “bridge to nowhere” (Complete College of America, 2012, p.2), a comment on the unsuccessful efforts of these programs to prepare students to succeed in college level courses and to complete college credentials in a timely manner. Critical to the reformation of these programs is a reduction in the time to completion of the remedial program, allowing students to move expeditiously to the college level programs. As part of their mission, community colleges must continue to review and revamp remedial education programs that prepare students to be successful at the college level (Tschechtelin, 2011) . The call for accountability from various sectors of society, to include accrediting agencies, local boards, and the federal government, requires a response from community colleges to improve student learning, student retention, and student success by increasing student engagement (McClenney, Marti, & Adkins, 2012).

The results of this study were informative and significant to the continuous review and revamping of developmental education writing programs. As stated in chapter 2, some of the features of an emporium model, such as competency-based instruction, were advocated more than 30 years ago (Burns, 1973). These features, however, were not

coupled with the technology-based instruction provided currently in some developmental education writing programs and in the program, which was the subject of this research. Consequently, the additional research applied these theories specifically to an individualized, self-paced, technology-based writing program. Quantitative data from the Banner database were examined, and a significant relationship was discovered in one of the three research hypotheses.

Research Question 1

The first question investigated is, “How does the completion rate of students in the traditional model of basic writing compare with the completion rate of students in the emporium model.” The question mirrored the hypothesis that posited that no significant difference existed between the instructional models used in basic writing programs. The results of the chi-square analysis were not significant ($\chi^2(1) < 0.01, p = .976$), indicating that the percentage of students who succeeded in the developmental course was not different between the learning support and traditional classes. Additionally, a Cramer’s *V* test was conducted to determine the strength of association between class type and success in the developmental course. The results of the Cramer’s *V* test were not significant (Cramer’s *V* $< 0.01, p = .976$), indicating that there was not a significant association between class type and success in the developmental course. Therefore, the researcher failed to reject H_0 . Since the analysis of the data revealed that there was no significant difference in the completion rate of students enrolled in the learning support when compared to the completion rate of students enrolled in the traditional basic writing class, the null hypothesis was accepted.

To improve the success rate in the developmental writing course, other strategies should be considered, beyond the instructional methodology. Since the program utilizes a number of instructional strategies that are different from the traditional course, attention should be given to the hiring, on-boarding, and continuous professional development of the faculty teaching technology-based courses. New faculty must be properly trained as part of the on-boarding process, and faculty development must be an integral part of the program. The faculty must be technology competent, since the course is technology-based. They must be thoroughly familiar with the software and must have a working knowledge of the hardware to create an effective teaching and learning environment in a lab-setting classroom. In the emporium lab setting, faculty must be trained to provide on-demand assistance to individual students, while ensuring that the entire class is on-task, completing computerized assignments or completing end-of-unit assessments.

Research Question 2

The second question investigated is “How does the retention rate of students in the traditional model of basic writing compare with the retention rate of students in the emporium model.” This question mirrored the hypothesis that suggested there is no significant difference in the retention rate of students enrolled in the traditional model when compared to students enrolled in the emporium model. The results of the Chi-square analysis were not significant ($\chi^2(1) = 0.44, p = .508$), indicating that the proportion of students who were retained in school was not different between the learning support and traditional classes. Additionally, a Cramer’s V test was conducted to determine the strength of association between class type and retention. The results of the Cramer’s V

test were not significant (Cramer's $V = 0.07$, $p = .508$), indicating that there was not a significant association between class type and retention.

In this study, the differences were measured between students enrolled in the traditional writing class and those enrolled in the emporium model. Students in both groups – traditional and emporium - were retained in the writing program at the same rate.

Therefore, the null hypothesis was accepted.

Much of the research on retention make the point that both academic and non-academic strategies must be employed to create an environment that promotes student retention. With the appropriate academic support, students who test just below the cutoff for college level English may be able to by-pass placement in a remedial or developmental course (Boylan, 2009). Tinto's (1973) discourse on retention stresses the importance of institutional changes in practice, policy, and instructional delivery. Institutions should focus on setting expectations of student success and creating a climate of student support. Continuous research should be conducted in this area to explore ways of increasing student retention in developmental education programs of study.

Research Question 3

The null hypothesis (H_03) of the third research question stated that there is no significant difference between the success rate of students who enrolled in the traditional writing class and progressed to the college level English course and the students who enrolled in the emporium model and progressed to the college level English course. The alternate hypothesis (H_13) assumed that a significant difference does exist between the performance of students who enrolled in the traditional writing course and progressed to

college level English and those who enrolled in the emporium model and progressed to college level English. The results of the Chi-square analysis were significant, revealing a higher proportion of students who matriculated in the emporium model successfully completed the college level English course. Specifically, the students enrolled in the emporium model succeeded in the college level English course at a rate of 38.5%, compared to 0% of the students in the traditional writing course were successful in the college-level English course. Therefore, the researcher rejected the null hypothesis (H_03). The results of the chi-square and Cramer's V analyses revealed that students who enroll in the emporium model and progress to college level English are more likely to succeed than students who enroll in the traditional model and advance to College level English. Consequently, the results are consistent with the research that suggests that features of the emporium model, which includes individualized instruction, self-paced progression, and modularized, technology-based instruction, provide a stronger foundation for students who advance to college level English.

These results are critical to the conversations and the work to improve developmental education programs. Many of the strategies used in the developmental writing, technology-based program may be duplicated in the other two disciplines: reading and mathematics. These strategies include competency-based instruction, modularized course, individualized instruction, computer-assisted instruction, and on demand assistance in a computer lab setting. Since the purpose of developmental education programs is to prepare students to perform well in the college-level courses, the

research results in this study are pertinent to the future of developmental education programs.

Implication for Social Change

Addressing the gap in the literature on the impact of technology-based remedial writing programs, the current study focused on the impact these programs have on the college completion rate of students who enter college without the requisite writing skills to be successful. The goal of the study was to test three research questions to discover the answers to these questions, and to provide a framework for continuous research that will serve to guide the development of effective remedial writing programs.

While the data analysis did not show that students who enroll in a technology-based writing program are retained at a higher rate, or that they complete the writing course at a more rapid pace, it did show that these students perform better in the gateway English course, once they progress to this level. It is concluded that the technology-based program provides a more solid foundation for students to build upon the basic writing skills in the college level course.

This research may be used to improve pedagogy in remedial writing programs. A diagnostic-prescriptive approach would provide instruction tailored to the specific needs of the student. The theme was iterative throughout the literature, over a period of more than 20 years. Further, Piaget's theory of cognitive development emphasized the merits of tailoring instruction to meet both the competency level of the student and the individualized learning styles, which students bring to the classroom (Ginns & Opper,

1969). Moreover, technology-based instruction facilitates self-paced learning as well as ensuring that the consistent quality of instruction meets the demands of the program.

Another feature of the nontraditional model is competency-based learning: students demonstrate skills acquired at one level before moving to the next level or unit. The research results show that students who participated in the nontraditional model succeeded at a higher rate once enrolled in the gateway course than the students who participated in the traditional model. The features of this model are consistent with Piaget's theory of cognitive development. The individualized assignments and the self-paced method of completing the assignment, respond to Piaget's concern that all students should not study the same materials, from the same texts, within the same time period, as pre-determined by the instructor (Gins & Opper, 1969). In this instructional modality, students learn via active engagement, a strategy, which is advocated in Piaget's theory of cognitive development.

There continues to be a critical need to improve remedial and developmental education programs offered in 2-year colleges. It is predicted that approximately 63% of all occupations will require a postsecondary education by year 2018. The job growth for individuals with an associate degree is projected to increase to nearly 19% (Rath, Rock, & Laferriere, 2013). The authors refer to several barriers to student success, which must be addressed as community colleges prepare individuals for the anticipated job growth and the increasing workforce demand. These issues include a lack of preparation for college, remedial education, student financial aid, poor non-academic skills, and competing obligations. Additionally, community college students lack a clear

understanding of their role in the community college setting (Karp & Bork, 2012). These issues are especially critical to the agenda of community colleges, since approximately 44% of low-income students attend community colleges as their first institution of enrollment after high school. Low-income has been defined as a family income of less than \$25,000 (Policy Alert, 2011). Additionally, the students tend to be first generation college students and members of the underrepresented racial or ethnic groups (Policy Alert, 2011). Community colleges must continue to develop programs and services that address the needs of this population. The “Achieving the Dream” (Morest & Jenkins, 2007) initiative emphasizes the importance of institutional research that documents the effectiveness of innovative programs and services. Currently, there is a theoretical divide among researchers regarding the ability of developmental education programs to help academically underprepared students to experience success at the college level (Collins, 2010). Efforts to improve the development and delivery of developmental education should be grounded in the research.

This study will have significant use within the Tennessee Community College system because the statistical analysis presented provides a model for other institutions to measure the success of their students as they move through the stages of remedial education and into the college-level courses. When features of the program are replicated with perhaps similar results, it can be concluded that the emporium model helps to build a stronger foundation for students as they progress to the English I gateway course. Once the instructional model is more fully developed and implemented with wide spread success, there may be the potential for it to be replicated and used in developmental

education writing programs throughout the region. This improvement will greatly impact the overall performance of the developmental education programs, an area where it is currently estimated that \$3 billion is spent each year in efforts to remediate academic deficiencies. Moreover, there is a greater impact for social change as the success of the program leads to increased graduation rates. It is projected that the average lifetime earnings for individuals with an associate's degree is approximately \$1.6 million, an increase of nearly \$400,000 more than the earnings of a high school graduate (Rath et al., 2013).

I hoped that the findings from the study would indicate whether the emporium model would affect a greater retention and progression rate than the traditional lecture-based model used in remedial writing programs. Although further research must refine and explore a more effective model that will impact retention and reduce time to program completion, the preliminary findings in this study are hopeful in that they demonstrate that the cited factors do contribute to a greater success rate for developmental students who progress to the gateway course.

Recommendations for Future Study

This study has primarily focused on instructional models used in developmental education writing programs and the effectiveness of these models as measured by course completion and persistence rates. I recommend that further studies be conducted which focus on non-academic factors that may impact student success in remedial programs. Additionally, the studies should take into account the profile of students who place in developmental programs. Understanding the common characteristics of developmental

students would warrant further study. The ultimate goal of developmental education programs is to help students to build academic skills that will allow them to successfully navigate the college-level course of study. The research in this study shows a model that increases the success rate once the student progresses to the college-level gateway course. Further study is needed which focuses on decreasing the length of time students experience in remedial writing programs. Moreover, further study should explore methods of improving the retention rate of students who place in developmental education writing programs. Effective developmental education programs that increase retention and promote academic success in college-level courses will have a major impact on the overall college completion rate for students enrolled in colleges and universities nationally.

References

- Arendale, D. (2002). History of supplemental instruction: Mainstreaming of developmental education. Eds. Lundell, D. & Higbee, J, *Histories of developmental education*. Minneapolis, MN: The Center for Research on Developmental Education and Urban Literacy, General College, University of Minnesota.
- Babbie, E. (2007). *The Practice of social research* (11th ed.). Belmont, CA: Thompson Wadsworth.
- Bailey, T.R. & Alfonso, M. (2005). Path to persistence: An analysis of research on program effectiveness at community colleges. *Lumina Foundation for Education*, 6(1), 5-37.
- Bailey, T. (2009) Rethinking developmental education in community colleges. *Journal of Developmental Education*. 40.
- Bailey, T. (2009) Rethinking the role and function of developmental education in community college. *New Directions for Community Colleges*, 145, 11-30.
- Bailey, T., Jeong, D. & Cho, S. (2008). Referral, enrollment, and completion in developmental education sequences in community colleges. *Community College Research center*. Working Paper No. 15.
- Bailey, T., Jaggars, S., & Scott-Clayton, J. (2013). Characterizing the effectiveness of developmental education: a response to recent criticism. *Community College Research Center*.

- Barbatis, P. (2010). Underprepared, ethnically diverse community college students: factors contributing to persistence. *Journal of developmental education, 33*(3), 16-20.
- Bettinger, E.P., Boatman, A. & Long, B.T. (2013). Student supports: Developmental education and other academic programs. www.futureofchildren.org
- Bettinger, E.P., & Long, B.T. (2009) Addressing the needs of underprepared students in higher education: Does college Remediation work? *Journal of Human Resources*.
- Boatman, A. & Long, B. (2010). Does remediation work for all students: How the effects of postsecondary remedial and developmental courses vary by level of academic preparation. NCPR Brief.
- Bonham, B. & Boylan, H. (2012). Developmental mathematics: Challenges, promising practices, and recent initiatives. *Journal of Developmental Education, 36*(2), 14-19.
- Boylan, H. (2009). Targeted intervention for developmental education students. *Journal of developmental education, 32*(3), 14-18.
- Boylan, H.R. & White, W.G. (1987). Educating all the Nations' people: The Historical roots of developmental education. *Research in developmental education, 4*(4).
- Boroch, D et al. (2010). *Student success in community colleges: a practical guide to developmental education*. San Francisco, CA: Jossey-Bass, Inc.
- Brothen, T., & Wambach, C.A. (2012). Refocusing developmental education. *Journal of Developmental Education, 36*(2), 34.

- Burns, R. (1973). *Competency-based education: An introduction*. Englewood Cliffs, N.J: Educational Technology Publications.
- Casazza, M. & Silverman, S. (1996). *Learning assistance and developmental education: A guide for effective practice*. San Francisco, CA: Jossey-Bass, Inc.
- Center for Community College Student Engagement. (2016). *Expectations meet reality: The underprepared student and community college*. Austin, TX: The University of Texas at Austin, College of Education, Department of Educational Administration, Program in Higher Education Leadership.
- Chickering, A. & Gamson, G. (1987). Seven principle of good practice in undergraduate education. *AAHE Bulletin*, 39, 3-7.
- Cohen, A.M., Brawer, F.B., & Kisker, C.B. (2013). *The American College, 6th*. San Francisco, CA: Jossey-Bass, Inc.
- College Board. (2003). *Trends in college pricing: 2003*. Washington, DC: The College Entrance Examination Board.
- Collins, M.L. (2010). Bridging the evidence gap in developmental education. *Journal of developmental education*, 34(1), 2-8.
- Collins, M.L. (2009). Setting up success in developmental education: How state policy can help community colleges to improve student outcomes. *Achieving the Dream: Community Colleges count*. www.jff.org.
- Collins, T. (2002). Foreword in *Histories of Developmental Education*. Eds. Lundell, D.B., & Higbee, J.L. Minneapolis, MN: Center for Research on Developmental Education and Urban Literacy, General College, University of Minnesota.

- Complete College America. (2012). "Remediation: Higher education bridge to nowhere." *www.completercollege.org*.
- Connor, C.M. & Morrison, F.J. (2016). "Individualizing student instruction in Reading: Implication for policy and practice." *Policy Insights from the Behavioral and Brain Sciences*, 3(1), 54-61.
- Cross, K.P. (1976). *Accent on Learning*. San Francisco, CA: Jossey-Bass.
- Dalek, D., Dixon, S., & Talbert, L. (2012). At Issue: developmental education and the success of our community college students. *Community College Enterprise*, 18(1).
- Edgecombe, N., Cormier, M., Bickerstaff, S., & Barragan, M. (2013). Strengthening developmental education reforms: Evidence on implementation efforts from the scaling innovation project. Community College Research Center. Working paper no. 61.
- Erickson, E. (1968). *Identity, youth, and crisis*. New York: W.W. Norton & company.
- Eyre, H.L. (2007). Keller's personalized system of instruction: Was it a fleeting fancy or is there a revival on the horizon? *The Behavior Analyst Today*, 8 (3), 317-324.
- Graves, W. H. & Twigg, C. (2006) "The Future of course redesign and the National Center for Academic Transformation: An interview with Carol A. Twigg." *Innovate: Journal of Online Education*, 2(1).
- Ginsburg, H. & Opper, S. (1969). *Piaget's theory of intellectual development*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Hiemstra, R & Sisco, B. (1990). *Individualizing instruction: Making learning personal, empowering, and successful*. San Francisco: Jossey-Bass Publishers.

- Hodara, M., Jaggars, S. & Karp, M. (2012). Improving developmental education assessment and placement: Lessons from community colleges across the country. CCRC Working Paper No. 51. Community College Research Center.
- Iravani, M.R., Samifar, H., & Zade, A.R. (2014). Individualized instruction in computer-assisted Instruction. *Journal of educational and management studies*, 4(2), 350-354.
- Jaggars, S., & Hodara, M. (2013). The Opposing forces that shape developmental education. *Community College Journal of Research and Practice*, 37 (7), 575-579.
- Karp, M. & Bork, R. (2012). "They never told me what to expect, so I didn't know what to do": Defining and clarifying the role of a community college student. (CCRC Working Paper No. 47. Community College Research Center.
- Kulik, J.A., Jaksa, P. & Kulik, C. (1978). Research on component features of Keller's personalized system of instruction. *Journal of Personalized Instruction*, 3(1), 2-14.
- Lederman, D. (2009). Redefining access and success. *Inside higher ed*.
<https://www.insidehighered.com/news/2009/12/04/edtrust>
- Levin, H.M. & Calcagno, J.C. (2007). Remediation in the community college: An evaluator's perspective. *Community College Review*, 35(3), 181-207.
- Long, T. & Boatman, A. (2013). The role of remedial and developmental courses in access and persistence. *The state of college access and completion: Improving college success for students from underrepresented groups*. Ed. Jones, A. & Perna, L. New York: Routledge Books.

- Martorell, P. & McFarlin, I., Jr. (2010). Help or hindrance? The effects of college remediation on academic and labor market outcomes. Institute of Education Sciences.
- McCabe, R. H. & Day, P.R. (1998). *Developmental Education: A twenty-first century social and economic imperative*. Luguna Hills, CA: League for Innovation in the Community College.
- McClenney, K., Marti, C., Adkins, C. (2012). Student engagement and student outcomes: Key findings from “CCSSE.” *Community College Survey of Student Engagement*. <http://www.ccsse.org/center>.
- Messick, S, & Associates. (1976). *Individuality in Learning*. San Francisco: Jossey-Bass Publishers.
- McPhail, C.J. (2011). The completion agenda: A Call to action (AACCC)
<http://www.aacc.nche.edu>
- Miller, A., Valle, K., Engle, J., & Cooper, M. (2014). Access to attainment: An access agenda for 21st century college students. *Institute for Higher Education Policy*.
- Morest, V.S. & Jenkins, D. (2007). Achieving the Dream: Institutional research and the culture of evidence at community colleges. *Community College Research Center*. Report No 1.
- Pagano, R. R. (2009). *Understanding statistics in the behavioral sciences* (9th ed.). Belmont CA: Wadsworth Cengage Learning.
- Policy Alert. (2011). Affordability and transfer: Critical to increasing baccalaureate degree completion. The National Center for Public Policy and Higher Education.

- Quint, J., Jaggars, S., Byndloss, D. (2013). Bringing Developmental Education to scale: Lessons from developmental education initiative. MDRC. www.mdrc.org
- Rath, B., Rock, K., & Lafferriere, A. (2013). Pathways through college: Strategies for improving Community College student success. Hartford, CT. Our Piece of the Pie, Inc.
- Resing, W. (2013). Dynamic testing and individualized instruction: Helpful in cognitive education? *Journal of cognitive education and psychology*, 12(1), 81-95.
- Richardson, R., Fisk, E. & Okun, M. (1983). *Literacy in the open-access college*. San Francisco, CA: Jossey-Bass.
- Ryan, B.A. (1974). *Keller's personalized system of instruction: An appraisal*. Washington, D.C.: American Psychological Association, Inc.
- Roueche, J.E., & Roueche, S.D. (1999). *High stakes, high performance: Making remedial education work*. Washington, D.C.: American College Press.
- Rutschow, E. & Schneider, E. (2011). Unlocking the gate: What we know about improving developmental education. MDRC
- Simon, M. & Goes, J. (2013). *Dissertations and scholarly research: Recipes for success*. Seattle, WA: Dissertation Success LLC
- Southwest Tennessee Community College (STCC) Catalog. 2016
- Tennessee Board of Regents (2016). Remedial/Developmental Studies Program operational guidelines (Guideline No. A-100). Available: Tennessee Board of Regents, 1415 Murfreesboro Road, Nashville, Tn. 37217.

- Tinto, V. (1973). Promoting student retention through classroom practice. Presented at Enhancing student retention: Using International Policy and Practice, an International Conference. Staffordshire University. Amsterdam, November 5-7. 2003.
- Tschechtelin, J. D. (2011). Increased enrollment + student success – funding = ? *New Directions for Community College*. 156, 49-59.
- Twigg, C. (2009). Developmental Courses: An oxymoron? The National Center for Academic Transformation.
- Twigg, C. (2013). How to redesign a Developmental Math Program using the Emporium Model. National Center for Academic Transformation. <http://www.theNCAT.org/Guides/Math/TOC.html>
- U.S. Department of Education, Office of Vocational and Adult Education (2011). *Connecting Curriculum, Assessment, and Treatment in Developmental Education*. Washington, D.C.
- Wilson, C. (2004). Coming through the open door: A student profile. Keeping America's promise: A report on the future of the Community College. Ed. Boswell, K. & Wilson, C. The Education Commission of the States and The League for Innovation in the Community College.

APPENDIX A: Data Use Agreement

Data Use Agreement

This Data Use Agreement (“Agreement”), effective as of December 9 (“Effective Date”), is entered into by and between Barbara Roseborough (“Data Recipient”) and _____ Community College (“Data Provider”). The purpose of this Agreement is to provide Data Recipient with access to a Limited Data Set (“LDS”) for use in scholarship/research **in accord with laws and regulations of the governing bodies associated with the Data Provider, Data Recipient, and Data Recipient’s educational program.** In the case of a discrepancy among laws, the agreement shall follow whichever law is stricter.

1. Definitions. Due to the project’s affiliation with Laureate, a USA-based company, unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the USA “HIPAA Regulations” and/or “FERPA Regulations” codified in the United States Code of Federal Regulations, as amended from time to time.
2. Preparation of the LDS. Data Provider shall prepare and furnish to Data Recipient a LDS in accord with any applicable laws and regulations of the governing bodies associated with the Data Provider, Data Recipient, and Data Recipient’s educational program.
3. Data Fields in the LDS. **No direct identifiers such as names may be included in the Limited Data Set (LDS).** In preparing the LDS, Data Provider shall include the **data fields specified as follows**, which are the minimum necessary to accomplish the project: Gender, ACT Scores, Grades, Enrollment Status.
4. Responsibilities of Data Recipient. Data Recipient agrees to:
 - a. Use or disclose the LDS only as permitted by this Agreement or as required by law;
 - b. Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;
 - c. Report to Data Provider any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law;
 - d. Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Data Recipient under this Agreement; and

- e. Not use the information in the LDS to identify or contact the individuals who are data subjects.
5. Permitted Uses and Disclosures of the LDS. Data Recipient may use and/or disclose the LDS **for the present project's activities only.**
6. Term and Termination.
- a. Term. The term of this Agreement shall commence as of the Effective Date and shall continue for so long as Data Recipient retains the LDS, unless sooner terminated as set forth in this Agreement.
 - b. Termination by Data Recipient. Data Recipient may terminate this agreement at any time by notifying the Data Provider and returning or destroying the LDS.
 - c. Termination by Data Provider. Data Provider may terminate this agreement at any time by providing thirty (30) days prior written notice to Data Recipient.
 - d. For Breach. Data Provider shall provide written notice to Data Recipient within ten (10) days of any determination that Data Recipient has breached a material term of this Agreement. Data Provider shall afford Data Recipient an opportunity to cure said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for cure within thirty (30) days shall be grounds for the immediate termination of this Agreement by Data Provider.
 - e. Effect of Termination. Sections 1, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.
7. Miscellaneous.
- a. Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.
 - b. Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.

- c. No Third Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.
- d. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.
- e. Headings. The headings and other captions in this Agreement are for convenience and reference only and shall not be used in interpreting, construing or enforcing any of the provisions of this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

DATA PROVIDER**DATA RECIPIENT**

Signed: _____

Signed: _____

Print Name: _____

Print Name: _____

Print Title: _____

Print Title: _____