Predicting Student Academic Success in a Developmental English Community College Course

A dissertation presented to

the faculty of

The Patton College of Education

of Ohio University

In partial fulfillment

of the requirements for the degree

Doctor of Philosophy

Kathy Lynne Moore Pittman

May 2014

© 2014 Kathy Lynne Moore Pittman. All Rights Reserved.
This dissertation titled
Predicting Student Academic Success in a Developmental English Community College Course

by
KATHY LYNNE MOORE PITTMAN

has been approved for
the Department of Teacher Education
and The Patton College of Education by

James A. Salzman
Director of the Stevens Literacy Center

Renée A. Middleton
Dean, The Patton College of Education
Abstract

PITTMAN, KATHY LYNNE MOORE, Ph.D., May 2014, Curriculum and Instruction, Reading and Language Arts

Predicting Student Academic Success in a Developmental English Community College Course

Director of Dissertation: James A. Salzman

Almost half of all college matriculates currently require some form of developmental education, and the student numbers continue to grow, in spite of expensive national and state educational initiatives created to reduce their numbers. About two thirds of these developmental students seek educational opportunities in a community college. Most concerning is the research indicating that only about 25% of students enrolled in higher education developmental education go on to graduate within eight years.

Although the research is growing, especially for large, urban higher education institutions, much remains to be discovered about how to best meet student developmental needs, particularly in smaller, more rural community colleges. This study sought to identify predictors of student academic success in two developmental English courses at a rural Midwestern community college. Specifically, the independent variables were student age, student gender, student ASSET writing score, and developmental English writing class placement (with or without reading instruction). The binary dependent variable was developmental English course completion.

Logistic regression and descriptive statistics were used to analyze the research questions for this study. Findings showed that two variables among the four predictor
variables did indeed predict student academic success in the developmental English courses. The two predictors were gender and ASSET writing score. The significance of gender suggested that holding the other predictor variables constant, in the community college under study, females were almost twice as likely as males to be successful in the developmental English course. With regard to the ASSET writing score, removing the effects of all other variables, a 10-point increase in the score was almost twice as likely to increase the odds (or likelihood) of academic success in the developmental English writing courses.

Study findings in gender support other research indicating a major gender shift currently taking place in higher education with more females than males completing higher education degrees. The study finding in writing assessment test score underscores the importance for educators to choose writing assessment tools carefully and to use them as only one indicator for developmental course placement. Multiple measures for assessment are indeed best.
Dedication

This dissertation is dedicated to my mother who lovingly held my hand for a while and my heart forever. May the gates of heaven open wide enough to somehow let her know how much I want to honor her memory and remind her how proud I am to be her daughter.
Acknowledgments

It has taken me eight, long years to get to this place. It has not been an easy road for many reasons, some not appropriate for printing on this page. But one thing I know for certain, I could not have completed this project without the infinite patience, love, respect, and support of my three wonderful children, Daniel, Joshua, and Katie Rose. Your belief in your mother and your encouragement remain, always, priceless to me. I love you three more than words can express. You make me a better person.

To my Dissertation Chair, Dr. James Alan Salzman, your willingness to work with me during office time (and not) when you had a million other tasks waiting, your patience with me during those bumps in the road, and your experienced academic leadership have all strengthened this work. Also, a sincere thank you goes to my Ohio University faculty dissertation committee members: Dr. Gordon Brooks, Dr. George Johanson, and Dr. Sara Helfrich, who have all been supportive and willing to give their time and academic expertise to this project. Additionally, I must thank Dr. Godwin Dogbey, Ohio University CORE Research Bio-Statistician, a doctoral program colleague and friend, who has gone the extra mile to help me better understand statistics. Together, you make me a better scholar.

Finally, I must thank my students who continue to motivate and challenge me to find methods to better meet their developmental English writing needs, as they have for more than 35 years now. I continue to learn so much from you. You make me a better teacher.
I will take what I have learned from this challenging, lengthy process and continue to strive to make a positive difference in the lives of others---now perhaps with a little less stress and a little more time in my life. I look forward to the future as a mother, as a scholar, and as a teacher. I am blessed.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>3</td>
</tr>
<tr>
<td>Dedication</td>
<td>5</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>6</td>
</tr>
<tr>
<td>List of Tables</td>
<td>11</td>
</tr>
<tr>
<td>Chapter One: Introduction</td>
<td>12</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>18</td>
</tr>
<tr>
<td>Research Questions</td>
<td>18</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>19</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>21</td>
</tr>
<tr>
<td>Delimitations of the Study</td>
<td>22</td>
</tr>
<tr>
<td>Definitions of Terms</td>
<td>23</td>
</tr>
<tr>
<td>Developmental Education/Remediation</td>
<td>23</td>
</tr>
<tr>
<td>Sequence</td>
<td>24</td>
</tr>
<tr>
<td>College Ready</td>
<td>24</td>
</tr>
<tr>
<td>Assessment Placement Test Scores</td>
<td>24</td>
</tr>
<tr>
<td>Writing Class Placement</td>
<td>25</td>
</tr>
<tr>
<td>Age</td>
<td>25</td>
</tr>
<tr>
<td>Matriculate</td>
<td>25</td>
</tr>
<tr>
<td>Retention</td>
<td>25</td>
</tr>
<tr>
<td>Attrition</td>
<td>26</td>
</tr>
<tr>
<td>Gatekeeper Courses</td>
<td>26</td>
</tr>
<tr>
<td>Student Success</td>
<td>26</td>
</tr>
<tr>
<td>Summary</td>
<td>27</td>
</tr>
<tr>
<td>Chapter Two: Literature Review</td>
<td>28</td>
</tr>
<tr>
<td>A Brief History of Developmental Education</td>
<td>28</td>
</tr>
<tr>
<td>National Higher Education Initiatives and Reports</td>
<td>34</td>
</tr>
<tr>
<td>Diploma to Nowhere and Growing Developmental Education Numbers</td>
<td>36</td>
</tr>
<tr>
<td>National Dollars and Questionable Developmental Program Effectiveness</td>
<td>37</td>
</tr>
<tr>
<td>Developmental Education Can Be Effective</td>
<td>38</td>
</tr>
<tr>
<td>National 2020 Goal, President Obama’s Plan</td>
<td>39</td>
</tr>
<tr>
<td>Achieving the Dream: An Historic Dev. Ed. Reform Network</td>
<td>40</td>
</tr>
<tr>
<td>The Developmental Education Initiative</td>
<td>40</td>
</tr>
<tr>
<td>Ohio Initiatives and Historic Influences</td>
<td>41</td>
</tr>
<tr>
<td>Ohio Board of Regents and Higher Education History</td>
<td>41</td>
</tr>
<tr>
<td>Ohio’s Race to the Top: Will It Reduce Developmental Student Numbers?</td>
<td>42</td>
</tr>
</tbody>
</table>
## Study Power Analysis

Descriptive Statistics of Predictor Variables

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age as a Predictor of Course Completion</td>
<td>88</td>
</tr>
<tr>
<td>Gender as a Predictor of Course Completion</td>
<td>90</td>
</tr>
<tr>
<td>ASSET Writing Score as a Predictor of Course Completion</td>
<td>93</td>
</tr>
<tr>
<td>Class Placement as a Predictor of Course Completion</td>
<td>95</td>
</tr>
</tbody>
</table>

Results of Significance Testing Between Predictors

1. Categorical and Continuous Variables                                      | 97   |
2. Logistic Regression Analyses                                              | 98   |

Answers to the Research Hypotheses                                           | 102  |

Summary                                                                      | 103  |

## Chapter Five: Summary, Conclusions, and Recommendations

Introduction                                                                 | 104  |
Summary of the Research                                                       | 104  |
Statement of the Problem                                                       | 104  |
Procedure                                                                    | 106  |
The Research Questions                                                        | 106  |

Conclusions and Discussion                                                   | 107  |

Student Age as a Predictor of Student Academic Success                        | 107  |
Student Gender as a Predictor of Student Academic Success                     | 109  |
Precollege Writing Test Score as a Predictor of Student Academic Success      | 112  |
Writing Class Placement as a Predictor of Student Academic Success            | 117  |

Recommendations                                                             | 120  |

Course Completion (Academic Success)---How Do Students Get There?            | 120  |

References                                                                  | 125  |

Appendix A: Research Site Class Placement Chart                              | 137  |
Appendix B: Ohio University IRB Approval                                     | 138  |

Appendix C: Scatter Plot Graph for ENGL 0054, ASSET Writing Score by Age for Completion | 139  |
Appendix D: Scatter Plot Graph for ENGL 0121, ASSET by Age for Completion     | 140  |
Appendix E: Scatter Plot Graph for Successful Completers for Both Classes    | 141  |
Appendix F: Scatter Plot Graph for Non-Completers for Both Classes           | 142  |
List of Tables

Table 1. Descriptive Statistics of Student Age by Placement .............................................89
Table 2. Descriptive Statistics of Age by Gender................................................................89
Table 3. Descriptive Statistics of Student Age by Completion .............................................90
Table 4. Distribution of Students by Placement and Gender..............................................91
Table 5. Distribution of Developmental English Students by Gender, Placement, and Completion..................................................................................................................93
Table 6. Descriptive Statistics of ASSET Writing Scores by Placement .........................94
Table 7. Descriptive Statistics of ASSET Writing Scores by Gender ................................94
Table 8. Descriptive Statistics of ASSET Writing Scores by Completion ........................95
Table 9. Distribution of Students by Placement and Completion.....................................96
Table 10. Results of the Independent t-test for Difference in Gender with Regard to Age .........................................................................................................................97
Table 11. Results of the Independent t-test for Difference in Gender with Regard to ASSET Writing Scores ..............................................................................................98
Table 12. Pearson Correlation Matrix..................................................................................99
Table 13. One-Point Increase in ASSET Score with Associated Odds ..............................101
Table 14. Results of the Binary Logistic Regression showing Beta-Weights, Standard Errors, and Adjusted Odds Ratios ................................................................. 101
Chapter One: Introduction

Even these top universities often only have a 60-percent completion rate.

And the average university will have something like a 30-percent completion rate.

So you have an immense amount of wasted resource, and students who end up with a big loan and sort of a negative experience in terms of their own self-confidence. And so that failing student is a disaster for everyone. And yet there’s been surprisingly little put into finding out who does well.

(Young, 2012, “Conversation with Bill Gates,” [response to quest. 6])

In a June 25, 2012 interview with The Chronicle of Higher Education, philanthropist Bill Gates justified with his words above as to why The Bill and Melissa Gates Foundation has given tens of millions of dollars to improve higher education. For those of us who work with higher education students, his comments come as no surprise, and we continue to look for answers as to how we can better meet the needs of the academically underprepared student.

In 2009, only 27% of two-year college students and 57% of four-year college students graduated within 150% of the normal time, according to a U.S. Department of Education, National Center for Education Statistics report entitled, The Condition of Education 2011.

McCoy and Mejia (2012) referred to the higher education system as “at a crossroads” or a serious “tipping point,” one that requires cooperative efforts from not only secondary and higher education faculty and administrators, but also from
governmental policy makers and others, to better confront and attack the challenging issues (p. 1):

While more and more students are being urged to seek postsecondary education, an alarming number of students are entering colleges and universities ill equipped for the challenges ahead. At colleges across America, these opposing dynamics are putting a considerable strain (financially and otherwise) on these underprepared students and the institutions that support them. One of the greatest challenges that colleges, particularly community colleges, face in their endeavors to increase graduation rates is improving students’ success in developmental, or remedial, education programs—the courses that students without sufficient academic preparation must take before they can enroll in courses carrying college credit (p. 1).

The growing numbers of students are driven in part by the rising income disparity between those who have a higher education degree and those who don’t. The Fordham Institute (2012) reported that “thirty years ago, those with a bachelor’s degree earned an average of 40% more than those who only completed high school. Today, the earnings’ difference is about 80%” (Fordham, “Tipping the College Remediation Scales,” para. 1). Thus, the push is on for more students, hoping to avoid such salary disparities, to enter higher education.

David Prince of the Washington State Board for Community and Technical Colleges (SBCTC) and Davis Jenkins of the Community College Research Center (CCRC) conducted a five-year study that analyzed the labor market outcomes of low-skill Washington State adult students, students who, at most, had earned a high school
diploma. This 2005 study found that students who completed two full semesters (referred to as the “tipping point”) of college study and earned a certificate/credential within five years “had a considerable average annual earnings advantage: $7,000 for students who started in ESL, $8,500 for those who started in ABE or GED, and $2,700 and $1,700 for those who entered with at most a GED or high school diploma” (Jenkins, 2008).

But more alarming was the study’s finding “that few students reach the tipping point, with many adult basic skills students earning no credits at all” (Jenkins, 2008). This study has sparked much interest from higher education institutions across the country wanting to find methods for increasing retention rates that will allow increased numbers of students to reach the tipping point for academic success.

Additionally, a 2012 National Center for Statistics (NCES) report documented numerous, persistent higher education gaps and noted that more females (from all racial/ethnic groups) than males are now entering colleges and universities and completing bachelor’s degrees within six years (NCES, “Gaps in Access and Persistence Study,” Abstract). So females are contributing to the growing student numbers as well.

Higher education student developmental numbers alone are alarming. Strong American Schools (2008) reported that nationally the student numbers of those requiring remediation is said to be hovering around 43% for those in two-year higher education institutions and 29% for students in four-year higher education institutions. McCoy and Mejia (2012) cited a 2010 National Center for Public Policy and Higher Education report that increases those numbers “to 41% and 75% respectively” (p. 3). Horn, McCoy, Campbell, and Brock (2009) stated “almost half of those students entering higher education require some type of academic remediation” (p. 510). Gonzalez (2010) stated
that approximately 60% of students enrolled in community colleges must take at least one developmental course; only about 25% of those same students graduate within eight years. The Thomas B. Fordham Institute reported that “75% of students entering community college require remediation; 50% of these students do not return to community college for a second year” (Fordham, “Tipping the College Remediation Scales,” para. 2). Though the numbers vary somewhat, they are all very concerning.

Reports like *A Nation at Risk* and *Diploma to Nowhere* also paint a sobering picture of those higher education’s developmental education student retention rates and question the effectiveness of remediation (*A Nation At Risk*, 1983, Recommendations section; Strong American Schools, 2008). Higher education institutional accountability issues abound as a result (Bailey, Jeong, & Cho, 2010) with questions arising about where and when we are missing the mark when it comes to meeting the needs of these underprepared students.

And, yes, it is students who suffer the consequences most when they enter the doors of higher education and discover they are not ready for college studies. Developmental education can be expensive for students in terms of money and personal time. Students pay tuition for non-credit bearing courses and also may spend years working through a developmental sequence of precollege courses that do not count toward graduation (Romano, 2011; Bailey, Jeong & Cho, 2010). As stated above, many students give up before obtaining their educational goals.

Developmental education is also expensive for the nation. The U.S. government spends approximately $2.31 to $2.89 billion annually on developmental education; further, government subsidy monies allocated are between $1.61 billion and $2.01 billion
The Huffington Post reported in 2012 that “approximately 1.7 million college students nationwide take remedial classes at a national cost of $3 billion a year” (Huffington, “College Preparedness Lacking,” para. 5).

Even with increasing monies spent toward addressing the academic needs of the underprepared student, developmental education issues remain expensive and concerning. As the low student retention numbers illustrate, dedicated monies from federal and state programs aimed at correcting the dilemma do not seem to be making a significant reduction in the numbers of underprepared students enrolling in higher education, not to mention the attrition taking place once students start classes (Bailey, Jeong & Cho, 2010). Government funding is finite, and institutional accountability is becoming a bigger issue with student retention rates a direct measure of academic institutional success (Ingram & Morrissey, 2009).

Programs like Achieving the Dream and its partner, the Developmental Education Initiative, funded by the Lumina Foundation and others, strive to define key student success indicators, establish performance goals, compare outcomes and publish results, and invest in innovative remediation outcome-based, data-driven practices that prove to be successful with community college students (DEI, “Resources” tab). The work of these initiatives and others is ongoing and gives reasons for optimism.

Additionally, President Obama’s National 2020 Goal calls for increasing by “at least 50% the number of college graduates nationwide” (Meeting the Nation’s 2020 Goal, p. 1). With “community colleges currently enrolling more than 43% of all U.S. higher education students” (Biden, {Letter}, para. 2), the importance of community colleges perfecting methods for meeting underprepared students’ academic needs has never been
more imperative if the National 2020 goal is to be met. Thomas Bailey, Director of the Community College Research Center, Columbia University, summed it up with the following: “Addressing the needs of developmental students is perhaps the most difficult and most important problem facing community colleges” (Bailey & Cho, 2010, p. 46). Answers need to be found; future research can add to the knowledge base that may ultimately help academically underprepared college students.

So what does predict community college developmental student academic success? Surprisingly, the literature, though beginning to grow, remains “scant” in regard to specific predictive factors (Bailey, Jeong, & Cho, 2010, p. 1; Bahr, 2012; Porchea, Allen, Robbins & Phelps, 2010; Kazis, 2011; Perin, 2006). This study explored four variables that may predict student success in a community college developmental English course. The variables included student age, student gender, precollege test writing scores, and developmental writing course placement.

Yes, this study was an attempt to help fill the literature gap. But more importantly, this study was an effort by the researcher, a community college developmental education faculty member herself, striving to better understand what may predict the success of her students. It is about the students. It is about how a teacher in the higher education classroom can best meet the complicated, challenging academic needs of her students by better understanding what predicts their academic success.

As Bailey (2008) reminded us, meeting the special needs of the large numbers of underprepared students in community college is not a simple issue. Bailey, Jeong, and Cho (2010) used the following words to address the complexity of developmental education and what it means to the student:
The developmental education process is confusing enough simply to describe, yet from the point of view of the student, especially the student with particularly weak academic skills who has not had much previous success in school, it must appear as a bewildering set of unanticipated obstacles involving several assessments, classes in more than one subject area, and sequences of courses that may require two, three, or more semesters of study before a student (often a high school graduate) is judged prepared for college-level work (p. 1).

As educators, we must continue to seek ways to take some of the bewilderment out of the developmental education process. *It remains about the students.*

**Statement of the Problem**

Research remains limited in regard to specific factors that predict student academic success in community college developmental education courses. As community college student enrollment numbers steadily rise, identifying predictors for student success may help community colleges make the best use of limited resources as well as give insights for decreasing student attrition rates.

**Research Questions**

The following primary question was proposed for this research study:

Are selected academic factors of academic success as a group predictive of the completion of a community college English developmental writing course? The following research questions emanated from the primary research question:

1. Is age related to the completion of a community college developmental English writing course when controlling for gender, precollege writing assessment test scores, and developmental writing class placement?
2. Is gender related to the completion of a community college developmental English writing course when controlling for age, precollege writing assessment test scores, and developmental writing class placement?

3. Are precollege writing assessment test scores related to the completion of a community college developmental English writing course when controlling for age, gender, and developmental writing class placement?

4. Is developmental writing class placement related to the completion of a community college developmental English writing course when controlling for age, gender, and precollege writing assessment test scores?

**Significance of the Study**

Institutions of higher education, particularly community colleges, find themselves struggling to meet the special academic needs of increasing numbers of underprepared students. Shrinking federal and state dollars make the challenges now more daunting than ever to community colleges. Even more alarming are the growing numbers of developmental college matriculates who fail to graduate within eight years. Student attrition rates are not only concerning for the student, who suffers a great personal loss when he/she is unable to successfully complete a chosen course of study, but community colleges face accountability issues as well. Everybody loses, and the stakes are high.

With national mandates like President Obama’s 2020 Goal calling for not only increasing student numbers in higher education, but also for rising corresponding graduation rates, community colleges must find strategies to better meet the special academic needs of developmental students in order for students to be successful.
Gage (1991) noted in his article, “The Obviousness of Social and Educational Research Results,” that sometimes notions accepted as “truisms” are not always as “obvious” or simple as they appear at superficial first glance. One of the examples Gage used was the “probabilistic statement that students learn more, the more time they spend on a subject” (p. 13). Gage pointed out that although time on task may be positively correlated with achievement, it is an imperfect correlation until “research aims to determine the strength of the tendency, or the magnitude of the positive correlation” (p. 13).

Gage (1991) concluded, “Even if intelligent people could always (without any research) predict the direction (positive or negative) of a relationship between two variables, they could not predict its size and its contingencies without research-based knowledge” (p. 13). Such factors as student age, student gender, developmental writing class placement test scores, and developmental writing class placements are all a part of the developmental student-classroom picture with related roles to student learning that together or separately, are not so obvious (NCES, 2011; NCES 2012; Collins, 2008; Scott-Clayton, 2012).

This study sought to identify predictors of academic success in two developmental English courses at a public two-year community college. The main goal of this research was to learn more about what may predict student success in order to better help developmental English students stay in college and reach their academic and professional goals. The study sought to learn more about developmental English enrollment numbers and attrition rates (who stays in school and who goes); study results
may additionally inform academic redesign efforts among administrators, faculty, and academic advisors who strive to best meet each student’s academic needs.

**Limitations of the Study**

This study had several limitations that the researcher could not control. First, this study did not control for student motivation levels, personal off-campus issues that may/may not have affected student academic performance, or advising or counseling services the developmental students may have accessed during the college experience.

Secondly, at the research institution under study, some faculty members take class attendance; some do not. Consistent class attendance records were not available to the researcher for this reason. In addition, students who never show up for class during the instructional period, or students who stop attending class without fulfilling course requirements, are automatically added to the list of non-completers in the study, unless they formally withdrew from the course before the end of the instructional period. Attendance was not a factor that could be accurately included in the study.

Thirdly, faculty teaching styles and expertise were omitted from this study, so accounting for differing teaching methods and course content among the nine sections of both classes was a limitation. Initially, at the beginning of the instructional time period, and in addition to the ASSET writing score used for course placement/instructional starting point, faculty look at student writing samples to better determine developmental student and writing class instructional needs. Faculty are encouraged by the English department to also advise students, if, after evaluating the writing sample, they feel a student has been placed in the wrong class. The student may then decide if he/she wants to move to a higher/lower level course, depending upon the faculty recommendation.
Some students, now secure with a course schedule for the quarter of study and plans set for following it, may reject the faculty recommendation and stay in the originally assigned class.

Faculty members who have previously instructed a student in a lower-level developmental class may also suggest placement for students before the next quarter of study begins. Students may/may not follow faculty advice, and faculty ultimately rely more on student advisers to place students accurately, more often than not. Students can also ignore their advisers’ placement recommendations for them as well, but this option is not often practiced at the institution under study. Some advisers are more aware of correct placement procedures than others. The researcher could not control any of these factors.

In addition, the ASSET cutoff scores for student placement (see Appendix A) for all English course placements span an 11-point range, admittedly narrow for placement among five different English courses. For placement into the two courses under study, English 0054, writing with reading instruction, and English 0121, writing instruction without reading instruction, the cutoff score range is within a very narrow four points. The narrow window for placement was another factor that the researcher could not control.

Finally, a distinct institutional research office is relatively new at the research site, so access to data, though growing, was still limited.

**Delimitations of the Study**

This study had several delimitations. First, the researcher chose not to consider student socioeconomic status or the variable of first-generation college students.
According to the research site’s Higher Learning Commission Self-Study Report completed in 2011, the majority of students enrolled in this public two-year technical community college are attending school with financial aid (73%). The research site also has a history of more first-generation college students than not, so those factors were deemed redundant for additional study.

This study was limited to the number of students enrolled in two developmental English courses for the fall quarter of the 2011 academic year. Because the objective of the study was to look at variables that may predict course completion, and fall quarter was typically the most likely quarter for the highest number of students to be enrolled in this community college, the researcher chose that time period for the study. The researcher did not choose to include developmental math skills in this study; the study’s focus is developmental student reading and writing skills.

This study was limited to one institution, so caution was advised for generalizing study conclusions to other institutions. Brooks (2011) stated that small-scale quantitative research studies sometimes use “convenient populations”; he emphasized it is important for researchers to acknowledge their use and thus aim for “local generalizability” (p. 14). As he put it, “We can then have confidence that our results have small-scale external validity within our local/convenient population” (p.14).

Definitions of Terms

Developmental Education/Remediation

Developmental education and remediation were used interchangeably throughout this research study. Bailey (2010) defined developmental education as the “broad array of services provided to students with weak skills” while “remediation” refers to specific
courses assigned to underprepared students (p. 255). However, also according to Bailey (2010), because *remedial* has taken on a negative connotation in recent years, some practitioners avoid its use. For the purposes of this research study, no negative or positive connotations for either term were intended.

**Sequence**

“The process that begins with initial assessment and referral to remediation and ends with completion of the highest level developmental course---the course that in principle completes the student’s preparation for college-level studies” (Bailey, Jeong, & Cho, 2010, p. 1).

**College Ready**

*College ready* means having the academic skills necessary to be successful in college courses.

**Assessment Placement Test Scores**

For placement into college level course work and/or pre-college level developmental course work, each student must complete a mandatory entrance exam. The purpose of the entrance exam is an attempt to get an accurate prediction of the student’s writing skill level for determining an instructional starting point. The community college research site for this study uses two tests, COMPASS, a computerized non-timed test, and ASSET, a timed paper and pencil test. Both exams test students in reading, writing, and math. Which test each student takes is often “the luck of the draw” because of time and space constraints during New Student Scheduling and Registration (NSSR) when large groups of potential students are served at one time. Because students are permitted to take each portion of a test a total of three times and take either test, some students have both
COMPASS and ASSET scores. ASSET writing scores were the assessment score of interest for this study. The writing scores of students who took the COMPASS test were converted to ASSET writing scores, using an ACT concordance chart. Because the writing score is used for the research site's developmental writing course placement, the writing score was the one used in this study.

**Writing Class Placement**

English 0054, Beginning Composition with Reading is a six-hour developmental writing course with reading instruction; the English 0121, Beginning Composition, course is a four-hour developmental writing course with no reading instruction. Both courses serve as the same developmental, non-credit bearing first writing course. Students who complete either class with a grade of “S” (satisfactory) move on to the first credit-bearing gatekeeper class in writing. Students who do not complete either class receive a grade of “U” (unsatisfactory) and must repeat the developmental class.

**Age**

For the purposes of this study, the *age* predictor variable was defined as student age at time of developmental course enrollment/entry into class.

**Matriculate**

A *matriculate* is a student who enrolls in a college or university.

**Retention**

*Retention* refers to whether or not the student was successful in completing the English developmental writing class with reading (English 0054) or the same English developmental writing course without reading (English 0121). *Retained* students have
successfully completed their first respective assigned developmental writing course and may enroll next in the first English gatekeeper (college-level) course.

**Attrition**

*Attrition* refers to the numbers of students who are lost to the institution because students are unsuccessful in completing courses or their programs of study due to academic failure or students dropping out.

**Gatekeeper Courses**

*Gatekeeper courses* are the first college-level courses for which students receive graduation credit. Students who successfully complete assigned developmental education courses or sequences, which are non-credit bearing, will then enroll in gatekeeper courses for college credit.

**Student Success**

For the purposes of this study, *student success* meant the student did complete the developmental English course to which he/she was assigned with a grade of “S” (satisfactory). In order for students to successfully complete either writing course in the study, English 0054 writing with reading instruction, or English 0121, writing without reading instruction, students were required to complete all coursework with a 70% course grade average and write a 650-word test-out essay (from a choice of three writing prompts composed by English faculty) that was graded and deemed to be passing (or not passing) by an English faculty committee at the end of the instructional period. Students had one opportunity (equal to a week’s course time and with the instructor’s guidance available) to revise the final test-out essay before that same faculty committee decided
whether the student was ready to move on (or not move on) to the first English college credit (gatekeeper) course.

**Summary**

The limited research on community colleges and the underprepared student is growing, but much remains to be learned, particularly in regard to specific predictors of student success. Gaps in the literature remain. Additionally, understanding academic predictors of student success is critically important to community colleges that continue both to work with diminishing financial resources and to simultaneously meet the increasing numbers of underprepared students with varying developmental education needs. This study explored four variables that may predict student success in a community college developmental English I course: student age, student gender, precollege test writing scores, and developmental English writing course placement. Further research garnering a better understanding of what predicts student success may assist community college administrators and faculty to discover improved methods for academic redesigns that ultimately will help developmental students to be more successful, and thus, lower attrition rates. Perhaps those “student disaster” numbers mentioned early in this chapter will someday grow smaller for institutions of higher education. Most importantly, students will benefit personally, academically, and professionally, and for those of us who are educators, best meeting student academic needs is what it is all about.
Chapter Two: Literature Review

The challenges for best meeting the academic needs of underprepared higher education students are as old as the institutions themselves; thus, a brief history of developmental education begins this chapter. Because underprepared college students continue to present academic challenges to higher education institutions nationwide, particularly for community colleges, this chapter also looks at the literature emanating from national education initiatives, Ohio’s response to those initiatives, some community college background, and several community college developmental education challenges. Because this research site is located in the foothills of Appalachia, some research studies related to the rural, Appalachian community college student are also discussed.

Gaps in the literature remain, particularly in regard to specific factors that may predict community college student academic success, so those gaps are addressed. Finally, this section explicates four specific variables – student age, student gender, precollege test writing scores, and developmental English writing course placement – that may predict student success in a community college developmental English I writing course. Additionally, and in specific relation to each of the predictors in this study, recent research studies regarding predictors of developmental student academic success will be discussed. A summary closes the literature review.

A Brief History of Developmental Education

Because each student is unique in his/her academic abilities and needs, it is not surprising that striving to meet such a diversity of academic abilities and needs is no small challenge for higher education institutions; nor has it ever been, particularly for students who arrive academically underprepared. As early as 1874, Harvard University
developed special English classes to help freshmen students with writing deficiencies (Markus & Zeitlin, 1998). Wilson (1980) noted that Wellesley College introduced the first remedial study skills course in 1894.

Markus and Zeitlin, (1998) stated that America’s first land grant colleges, established by Congress and the Morrill Acts of 1862 and 1878, focused on the need for higher education instruction to be both more practical and more accessible to all students, regardless of their economic or social status. An influx of underprepared students led to an increase in the number of preparatory classes, which placed remediation as “an integral component of American higher education” (p. 168).

Berlin (1987) added growing patriotism, the result of World War I and “the national threat posed from abroad” (p. 57) as other forces behind a “development that had been taking shape since late in the nineteenth century: English studies became the center of public school education in the United States” (p. 56). Berlin made the point that growing numbers of immigrants, the movement away from religion-based curriculum, and the “effort to make the world safe for democracy” (p. 57) all contributed to English studies moving to the American curricular forefront.

The prosperity of the 1920s, followed by The Great Depression, set the stage for progressive education, “an extension of political progressivism” (Berlin, 1987, p. 58). Berlin described this period as a time when “the social and behavioral sciences were strongly endorsed and constantly consulted as guides to understanding students” (p. 59). Berlin stated that empirical approaches to evaluating student writing and college placement testing grew from this time in our country’s history.
Berlin (1987) credited what followed next in the teaching of writing skills, general education programs, with their emphasis on the communications course, as the following: “This course, commonly interdepartmental, combined writing instruction with lessons in speaking, in reading, and sometimes in listening. Its appearance profoundly influenced the nature of college writing instruction during the years to come” (p. 93).

The Servicemen’s Readjustment Act of 1944, part of the G. I. Bill of Rights, further opened the doors to higher education by offering federal subsidy monies to the sixteen million men and women who had served in World War II (Markus & Zeitlin, 1998). President Harry S. Truman’s Advisory Commission on Higher Education in 1947 provided public support for a national network of two-year “community colleges” whose mission was to prepare students for the workplace or for transfer to four-year institutions to continue their educations (p. 170). Remedial reading and remedial writing courses increased in number to meet the growing numbers of students who came to higher education underprepared, and by the 1950s were “common and open to students who could afford tuition and fees” (Roeuche & Snow, 1977, p. 6).

America’s population spiraled after World War II; by the time the Baby Boomers began to enter college in the 1960s it became apparent that more and more students were lacking the basic skills necessary for their higher education studies. Markus and Zeitlin (1998) refer to the time period beginning in 1970 and continuing to the present as the “open door” policy (p.171). Boosted by governmental funding and programs, more diverse groups and growing numbers of students, bringing with them unprecedented numbers of remedial needs, have continued to flood the gates of higher education.
What may seem surprising to some is that the mandate for open admissions has been around for quite some time. For example, in Ohio, the mandate for open admissions in its state-supported institutions was made law in 1913 (Wilson, 1980). The federal government has always been a strong force for “reminding higher education of the need to expand educational opportunities to underrepresented groups” (Wilson, 1980, p.75). Wilson (1980) suggested that the Civil Rights Movement, the Civil Rights Act of 1964, and President John F. Kennedy’s support “for increasing higher educational opportunities for all” spurred the intense growth of student numbers during the 1960s and beyond. The federal Higher Education Act of 1965, “which provided precollege programs to help underprepared high school students to become more successful college students, along with the financial aid to enable them to attend college,” was also a major factor (Wilson, 1980, p. 77).

Challenges associated with increasing student numbers and with their unique, diverse academic needs are “both complex and controversial” (Wilson, 1980, p. 58). As Wilson (1980) stated, “The establishment of remedial programs in higher education probably engendered as much controversy as open admissions. Both open admissions and remedial programs raised a host of questions relative to the mission of higher education” (p. 58). The debate as to whether the mission of higher education is to meet or is not to meet the academic needs of underprepared students rages on.

It is not only the escalating numbers of underprepared students, but also how to best serve their academic struggles that continue to pose problems for higher education. Shaughnessy (1977) likened the “long, subtle” writing process to learning any other skill, like tennis (p. 99). Few of us remember how we learned to write, and it remains a
continuous, lifelong exercise for each of us. Shaughnessy reminded us that the underprepared higher education student, for whatever reason(s), has not learned to speak or understand the academic language required by the Academy. This . . . “linguistic habit and not simply the result of inattentiveness, may be more resistant to direct instruction” (p.99). Shaughnessy (1977) concluded that much further research is necessary to determine what is going on and what should be going on in the freshman composition classroom.

In August 1981, Secretary of Education T. H. Bell appointed the National Committee on Excellence in Education to conduct an 18-month study of the American educational system. What followed Bell’s charge was *A Nation At Risk: The Imperative for Educational Reform*, the Committee’s report, published in April 1983. Bell challenged students, parents, teachers, administrators, the government, and all interested others to take a more active role in improving America’s educational system.

*A Nation At Risk* (National Commission on Excellence in Education, 1983) detailed recommendations in the areas of content/curriculum, standards and expectations, time, teaching, leadership and fiscal support. The Commission stipulated strengthening high school graduation requirements, including foreign language studies as part of the core “New Basics” curriculum for college bound high school students. It proposed an increase in the use of rigorous texts and exams that demonstrate mastery of course content, more emphasis on the teaching of study skills, an extension to the school year with longer school days, and changes in teacher education preparation, teacher evaluation, and teacher compensation, in addition to addressing other challenges. For higher education, the report cited the need for a closer look at college admissions
requirements, including placement testing (A Nation At Risk, 1983, Recommendations section).

In terms of developmental students, A Nation at Risk stated the following:

“Nevertheless there remains a common expectation: We must demand the best effort and performance from all students, whether they are gifted or less able, affluent or disadvantaged, whether destined for college, the farm, or industry” (A Nation at Risk, 1983, Recommendations section). Secretary of Education Bell challenged students, parents, teachers, administrators, the government, and all interested others to take a more active role in improving America’s educational system. The findings and recommendations from the A Nation At Risk report began a movement for major educational reform that remains influential almost 30 years later.

In 1994, President Clinton signed and put into law a new initiative meant to provide equal educational opportunities and raise achievement levels of all American students. The Goals 2000, Educate America Act (P. L. 103-227), provided hundreds of millions of dollars in competitive grant monies to help schools meet proposed educational goals by the year 2000. Some of the goals included raising the national high school graduation rate to 90%, improving the placement of U.S. students to first in math and the sciences, increasing the academic competency levels of students tested at fourth, eighth and twelfth grades, building parental/school partnerships to support student learning, and providing teacher improvement programs for strengthening instruction (Goals 2000, Educate America Act, sec.102).

Perhaps the educational goals were too lofty, or the amount of federal monies too costly, but Goals 2000 ultimately met with mixed reviews. Political conservatives, like
Phyllis Schlafly (1997), accused President Clinton of trying to take away the states’ power to educate students, claiming that states accepting Goals 2000 monies were subject to federal government restrictions for using the funding. Others, like the U.S. Secretary of Education at the time, Richard W. Riley (1998), who supported President Clinton’s Goals 2000, spoke more directly to the issue of developmental education and protecting American students from being labeled by saying it was time to expect every child to succeed by giving each the best educational opportunity to do so. At the beginning of a new century, funding for Goals 2000 ended when President George Bush signed into law new educational reform. The push for equal educational opportunities for all American students was to live on, but in a new, perhaps even more controversial Act.

**National Higher Education Initiatives and Reports**

Signed by President George Bush in 2002, the *No Child Left Behind* (NCLB) Act of 2001 continues to be an attempt to raise the academic performance of all American students, no matter what their socio-economic background, race, ethnicity, English speaking skills, or academic ability. But according to a Center for the Study of Evaluation (CSE), National Center for Research on Evaluation, Standards, and Student Testing Technical Report 567, conducted by the University of California in June 2002, NCLB has posed many challenges for states in terms of testing and accountability issues. This CSE report documented that NCLB requires that all states “must develop adequate yearly progress (AYP) objectives that set goals for having all students at the ‘proficient’ level by the end of school year 2013-2014” (p. 3).

Linn, Baker, and Betebenner (2002), authors of the above CSE technical report, pointed to a number of problems connected to NCLB including the fact that content
standards, rigor of their tests, and performance levels vary from state to state: “In a number of cases, the proficient level has been set so high that it may be completely unrealistic for all students to meet that goal by 2014” (p. 4), suggesting possible NCLB implementation complications nationally and state-to-state. This is especially concerning in developmental education; “proposed leaps for developmental students may not only be unrealistic in their expectations, but also measurably unfair” (New York State Ed. Archives, p. 79). Because student learning levels and student learning rates are unique to each student, when tests are used to decide eligibility for promotion/graduation, the “opportunity to learn” (OTL) standards, what students should be expected to achieve, become a controversial issue, both academically and politically (New York State Ed. Archives, p. 70).

In 2006, Margaret Spellings, Secretary, U. S. Department of Education, made public her commissioned report findings regarding the future of higher education. One of the report’s conclusions about America’s high school graduates is the following: “According to the National Assessment of Educational Progress (NAEP), only 17 percent of seniors are considered proficient in mathematics, and just 36% are proficient in reading” (p. 7). The implications for high school graduates who plan to attend college are both obvious and ominous in some cases. With more than 80% of seniors not proficient in math and 64% not proficient in reading, the numbers alone are alarming. Byrd and MacDonald (2005) cited McCabe (2000) who found that 41% of students entering community colleges and 29% of all students entering college are “developmentally deficient in one or more of the basic reading, writing and/or math skills” (p. 22). Horn, McCoy, Campbell, and Brock (2009) stated that almost half of those students entering
higher education “require some type of academic remediation” (p. 510). Developmental higher education courses continue to multiply in an effort to meet the rising numbers of students with academic needs.

**Diploma to Nowhere and Growing Developmental Education Numbers**

Another report, *Diploma To Nowhere*, issued in 2008 by Strong American Schools, noted some alarming statistics concerning America’s high school graduates and their lack of preparedness for college course work. According to that report, in 2004, approximately 60% of the 40,000 freshmen students entering California State University, the largest university system in the country, needed remediation in English, math, or both before they could be successful in the college classroom (Strong American Schools, 2008). For an earlier year, the California State University website reports that 54% of CSU freshmen needed remediation in math and 47% of CSU freshmen needed remediation in English in the fall 1998. In 1999, the CSU Chancellor’s Office allocated nine million dollars to 18 CSU campuses to partner with area high schools to assist them in programs aimed at reducing the number of students needing higher education remediation by the year 2007 (“CSU Allocates $9 Million,” 1999). Obviously, in 2004 the numbers of students needing remediation had increased, in spite of the nine million allocated to reduce them.

*Diploma To Nowhere* also noted that 80% of Oklahoma’s community college students and 70% of Indiana’s community college students required remediation. Nationally, the student numbers of those requiring remediation are said to be hovering around 43% for those in two-year higher education institutions and 29% for students in four-year higher education institutions (Strong American Schools, 2008). A similar Texas
study (Terry, 2007) found that 24% of that state’s high school graduates were also underprepared. Findings in a 2009 study of more than 500 11th-grade Texas public school students included that even at 75% student reading comprehension levels, almost half, 49% of those students, were not prepared to comprehend reading material in first-year college textbooks (Wilkins, Hartman, Howland, & Sharma, 2010). Gonzalez (2010) stated that approximately 60% of students enrolled in community colleges must take at least one remedial course; only about 25% of those same students graduate within eight years.

**National Dollars and Questionable Developmental Program Effectiveness**

The national challenge for meeting underprepared student academic needs obviously looms large, not to mention the national dollar amounts allocated to address the academic shortfalls. It has been estimated that the remedial cost per student enrolled in a two-year public higher education institution spans from $1,607 to $2,008 each year; for students in four-year higher education institutions, the dollars are $2,025 to $2,531 per student annually (Strong American Schools, 2008). Using those same cost-per-student figures, the U.S. government spends approximately $2.31 to $2.89 billion annually on remedial education; further, government subsidy monies allocated are between $1.61 billion and $2.01 billion (Strong American Schools, 2008). More recently, the *Huffington Post* reported that in 2012 “approximately 1.7 million college students nationwide take remedial classes at a national cost of $3 billion a year” (Huffington, “College Preparedness Lacking,” para. 5).

Ironically, the national challenges of student academic remediation and the costs associated with it become further confounded by research findings that question college
remedial program effectiveness. Once again, Strong American Schools (2008) found that 57% of students who take no college remedial classes graduate college within eight years; 29% of students who take one or two remedial courses graduate within eight years, but only 19% of those students who take four or more remedial college classes graduate within eight years. Additionally, those students who need reading remedial classes are especially at risk. “Some experts refer to college remedial reading as the educational kiss of death” (Strong American Schools, 2008, p. 12). Obviously, students who struggle with college-level reading struggle in all courses requiring college-level reading, a prescription for failure.

The 2006 U.S. Department of Education report gave another sobering statistic: “Where once the United States led the world in educational attainment, recent data from the Organization for Economic Cooperation and Development indicate that our nation is now ranked 12th among major industrialized countries in higher education attainment” (A Test of Leadership, 2006, p. ix). And again from Margaret Spellings, “As if this weren’t bad enough, there are also disturbing signs that many students who earn degrees have not actually mastered the reading, writing, and thinking skills we expect of college graduates. Over the past decade, literacy among college graduates has actually declined” (A Test of Leadership, 2006, p. 7).

**Developmental Education Can Be Effective**

While some question the effectiveness and high costs of remediating higher education academically underprepared students, others do not. The Chronicle of Higher Education reported that in an April 2010 annual meeting of the American Association of Community Colleges, Melinda Gates spoke about her foundation’s $110 million pledge
to work toward improving higher education remedial programs and practices. “Our research indicates that improving remediation is the single most important thing community colleges can do to increase the number of students who graduate,” she stated (Gonzalez, para. 4). Ms. Gates recommended looking at innovative, successful remedial programs as one key to future change for improving graduation rates (Gonzalez, 2010). Remedial program effectiveness and the costs associated with it remain controversial. It is a complex, complicated issue that continues to be debated. Perhaps, as Ms. Gates suggested, part of the answer may lie in looking at developmental strategies and programs that do work.

**National 2020 Goal, President Obama’s Plan**

President Obama took action in response to academic statistics like those above; he has set a national 2020 goal when, “the nation should once again have the highest proportion of college graduates,” as he made clear in his first joint address to Congress in February, 2009 (*Meeting the Nation’s 2020 Goal*, 2009, p. 1). In order to meet the 2020 goals and the president’s directives, America’s higher education institutions must formulate strategies for increasing the current number of college graduates by 50%. The president has called upon each and every state “to have a vital role and a unique opportunity today to help America again lead the world in college attainment” (*Meeting the Nation’s 2020 Goal*, p. 1). States will have to respond and overcome their individual challenges in order to meet the national 2020 goal; it is a process that will take both time and money; its future academic outcomes remain speculative.
Achieving the Dream: An Historic Dev. Ed. Reform Network

Founded in 2004 by the Lumina Foundation, the Bill and Melinda Gates Foundation, and other founding partners, Achieving the Dream is “the nation’s most comprehensive non-governmental reform network for student success in higher education history,” according to its website (Achieving the Dream, “Goal” tab). Achieving the Dream is a student-centered, evidence-based initiative. It became an independent national nonprofit organization in 2010, focused on finding innovative strategies for helping “millions of community college students realize greater economic opportunity and achieve their dreams” (Achieving the Dream, “History” tab). Its network includes 200 colleges, 15 state policy teams, 20 investors, and 100 coaches and advisors who work in 32 states and the District of Columbia (Achieving the Dream, “Network,” tab). Narrowing the achievement gaps for the academically underprepared, low-income, and students of color is an initiative goal using data driven findings that will hopefully influence developmental reform at state and national levels in the future. Already in place is the Voluntary Framework of Accountability, the nation’s first accountability system for community colleges, as well as a system for reporting state progress adopted by the National Governors Association and Complete College America (Achieving the Dream, “Policy” tab). Ohio is one of the states participating in the work of Achieving the Dream.

The Developmental Education Initiative

In 2009, Ohio and five other states involved in Achieving the Dream including Connecticut, Florida, North Carolina, Texas, and Virginia joined forces as a part of the Developmental Education Initiative (DEI) to better help their community colleges develop strategies for improving developmental education. The DEI website states that
while an estimated “60 percent of students enrolling in community colleges must take remedial classes to build their basic academic skills. . . For low-income and students of color, the figure topped 90 percent at some colleges (DEI, “What We Do”). Additionally taxpayers pay more than two billion dollars a year dedicated to remediation; yet, many students do not academically advance” (DEI, “What We Do”). As a part of Achieving the Dream, the DEI aims to define key student success indicators, establish performance goals, compare outcomes and publish results, and invest in innovative remediation outcome-based, data-driven practices that prove to be successful with community college students (DEI, “Resources”).

**Ohio Initiatives and Historic Influences**

Ohio is no exception to the national picture and is responding with a number of state higher education initiatives. For example, for Ohio to meet the nation’s 2020 goal, the “state must raise its 2009 baseline college level from 37% to somewhere between a 56% to 60% baseline college level, which calls for an increase of more than 300,000 students to be enrolled in Ohio’s higher education institutions by 2020” (*Meeting the Nation’s 2020 Goal*, p. 2).

**Ohio Board of Regents and Higher Education History**

The University System of Ohio Board of Regents (OBR) was created in 1963 to establish, manage, and finance all public institutions and their programs. Wilson (1980) stated that one of the first intents of the OBR “was to establish a two-year campus within thirty miles of every person in the state and to establish a four-year campus in all eight major urban areas of the state” (p. 71).
The OBR made good on its promise. Today, according to the OBR website, Ohio has 14 public universities and 24 branch campuses. In addition, Ohio serves students in 23 community colleges, and 100 adult training centers. Chancellor Jim Petro stated that each 1% increase in the number of baccalaureate degrees generates approximately $2.5 billion per year in business revenue (OBR, *Ohio Needs More College Graduates* [Video webcast]). The OBR makes it clear on its website: Ohio wants and needs more college graduates.

**Ohio’s Race to the Top: Will It Reduce Developmental Student Numbers?**

In August 2010, Ohio was one of nine states and the District of Columbia chosen to share $3.4 billion in grant monies over a four-year period from the U.S. Department of Education as a part of the *Race To The Top* (RttT) education initiative. One of the goals of RttT, according to the Ohio Department of Education in a 2011 handout from the Governor’s office, is to have Ohio’s public school districts work more closely with Ohio’s institutions of higher education to better understand what it means to be “college ready” and then work together to reduce the number of students needing higher education remediation (ODE, “Education that Gets Results,” pp. 18-19.) Then Governor Ted Strickland, Deborah S. Delisle, Superintendent of Public Instruction, and Deborah Cain, President of the State Board of Education, were instrumental in obtaining the funding. In their application for Phase Two monies, they reported the following statistics:

In 2002, Ohio ranked 40th among all states for the percentage of the state’s student population who had completed a bachelor’s degree or higher. Ohio’s rate was 21.9% compared to the national average of 25.9%. In 2006, this number increased

Governor Strickland also reported that “40% of Ohio’s school children are economically disadvantaged (up from 33% five years ago)” and come from homes of “112 different home languages” (*Fifth to First: Ohio’s RttT Strategy*, 2010, p. A1-2). Ohio’s populations are diverse, ranging from large, urban areas to small Appalachian (and other ethnicities) pockets of people that make meeting the academic needs of its residents no small challenge. In fact, the Ohio Department of Education website lists a typography of districts, comprised of nine groups for the purpose of disaggregating the reporting of data and dispersing state funds.

In the *RttT Year One Progress Report* website link, the Ohio Department of Education documents the following:

Ohio’s RttT strategy is focused on achieving five goals over four years:

Increase high school graduation rates by 5% per year for four-year grant
Reduce graduation rate gaps by 50% between under-represented and majority students.
Reduce performance gaps by 50% of national and state-wide tests between under-represented and majority students. Reduce the performance gaps by 50% on reading and mathematics proficiency between Ohio and the best-performing states. More than double college enrollment for students age 19 and younger.


**Other Ohio Initiatives**

Ohio initiatives demonstrate that the state is making efforts to strengthen student performance for a wide range of ability levels, including the more gifted students and
those who need more academic assistance. In July 2009, Governor Ted Strickland signed HB 1 into legislation, calling for primary and secondary educational reforms that contain “mutually supporting elements” to RttT (Fifth to First: Ohio’s RttT Strategy, 2010, p. A1-9). House Bill (HB) 1, for example, increased the number of credits required for high school graduation in an attempt to better prepare students for higher education studies partially in order to decrease the student numbers needing higher education developmental education.

Likewise, The Choose Ohio First Scholarship is a motivation to students for improving academic performance and an attempt to raise student academic ability levels. The Choose Ohio First Scholarship Program, another Ohio higher education initiative, was created to encourage students to excel in science, technology, engineering, mathematics, and medical (STEMM) fields. “To date, Choose Ohio First scholarships have been awarded to more than 4,000 students in 28 programs involving 41 Ohio public and private institutions” (OBR, Agency Initiatives tab).

**Shifting Gears Initiative: Matching Worker Skills to Employer Needs**

“Nothing is more important to our economic future than matching worker skills to employer needs,” says Ellen S. Alberding, President, Joyce Foundation (Shifting Gears, “About” tab, para. one). Ohio’s Shifting Gears Initiative, launched by the Joyce Foundation in 2007, aims to provide lower-income working adults with opportunities to have easier access to post-secondary work force education and streamline the time it takes for them to earn degrees or credentials. In a collaborative effort among Adult Basic and Literacy Education, Adult Career-Technical Education, and Community and Technical Colleges, Ohio hopes to make assessment, data collection, career exploration,
advising, contextualized curriculum, and enrollment status more uniform and consistent for students across the state (Shifting Gears, “Progress” tab).

**Adult Basic Literacy Education Program, Important to Ohio Higher Ed**

As mentioned above as a Shifting Gears collaborative, the Adult Basic Literacy Education (ABLE) Program is another Ohio initiative. Ohio has 68 Adult Basic Literacy Education (ABLE) programs that provide free services to 88 counties. ABLE offers academic help to students who are transitioning from high school to higher education and adult workers who may need more post-secondary training. “Ohio’s ABLE program continues to be one of the best performing in the country, ranking in the top 10 of several performance indicators in FY 2010 including students entering employment upon completion (2nd), placement in post-secondary (3rd), GED completion (4th), and enrollment (10th)” (OBR, ABLE tab). ABLE programs sometimes partner with higher education institutions to better meet student academic needs, thus reducing the levels of remediation needed at postsecondary in terms of developmental student numbers and the number of developmental courses advised for them. ABLE instructors work with the most academically challenged students at partnering institutions in courses that may precede the developmental courses to give students the opportunity to review and enhance academic skills that may ultimately shorten their need for time spent in developmental courses, if at all.

**Growing Student Numbers and Open-Admissions Policy**

Yet, in spite of federal and state programs (like Ohio’s) aimed at lowering student numbers needing academic remediation, the student numbers continue to grow. The Thomas B. Fordham Institute reported that 75% of students entering community college...
require remediation; 50% of these students do not return to community college for a second year (Fordham, “Tipping the College Remediation Scales,” para. 2).

In 2010, Fordham also reported that of the 110,000 first-year students who enrolled in community colleges in Ohio in 2010, 42% of them took at least one remedial course during that first year. In regard to monies spent, Ohio “spends $130 million a year on developmental education while nationally, two-year institutions spend $1.4 billion a year” (Fordham, “Tipping the College Remediation Scales,” para. 2).

Ohio’s growing student numbers are not unlike those of other underprepared students in the United States. According to the Huffington Post, nearly one-third of all college freshmen in 2001 required remediation; in 2012 the number now stands at 40% (Huffington, “College Preparedness Lacking,” para. 4). National and state dollars and programs do not appear to be reducing the numbers of students requiring developmental education at college entry.

And another challenge specific to the community college, Fike and Fike (2008) stated that universities have selective admissions standards that limit the number of academically underprepared students they enroll, but community colleges, on the other hand, are known for their open-door policies. Thus, community colleges “tend to enroll more underprepared students than the university” (p. 70). Other factors, as well, however, lead to these underprepared students enrolling in community colleges, including lower tuition, more part-time attendance opportunity, more (geographically) local, easier access, and lower parental educational levels (Fike & Fike, 2008).

According to the American Association of Community Colleges website, “Today, community colleges educate more than half the nation’s undergraduates”; more than 100
million U.S. students have attended community colleges in the last century (Community Colleges Past to Present section, para. 4). Ironically, easier, more open access for developmental students entering community college poses challenging issues that can be problematic for the institutions they enroll in. However, what follows shows these challenges are not new.

**The Community College: A Brief Background**

Joliet Junior College in Illinois, founded in 1901, is “the oldest existing public two-year college” (AACC, Community Colleges Past to Present section, para. 2). Boggs (2010) stated the community college movement has given higher education access to students who would have been denied otherwise “due to economic, mobility and social barriers” (p.1). According to Boggs (2010), the 1947 Truman Commission Report forever changed the landscape of higher education because of its support of universal access to post-secondary education and the impetus it gave to community college building expansion across the country. The American Association of Community Colleges website reported that after World War II and the GI Bill, more Americans headed for higher education to help them train for employment. They were followed by the baby boomer generation, who began flooding the gates of higher education in the 1960s with the opening of 457 public community colleges (Community Colleges Past to Present, para. 2, 3). Today, U.S. community colleges number approximately 1600 (para. 3), meaning that “a short commute affords 90% of Americans the opportunity to attend a community college” (Boggs, 2010, p. 2). Open access to higher education, however, has become to some degree, part of the developmental education dilemma community colleges now find themselves engaged in. With President Obama’s 2009 call for community colleges to
have a 50% increase in program completers nationally over a 10-year period, the former emphasis on access now becomes one of both access and retention (Boggs, 2010).

**Community Colleges Face Challenges in Developmental Education**

In October 2010, Dr. Jill Biden led the first-ever White House Summit on Community Colleges where she referred to the work of community colleges as “one of America’s best-kept secrets” and the “fastest growing segment of higher education in America,” enrolling 43% of all college students (Biden, {Letter}, para. 2). She predicted that “nearly eight out of ten new jobs will require higher education or workforce training” to meet President Obama’s National 2020 goal (Biden, {Letter}, para. 3). Critical and challenging work lies ahead for community colleges to meet the expected continuing increase in student numbers and the various academic needs that will come with these students (Romano, 2011). Boggs (2010) reinforced that community colleges not only play an important role in the nation’s workforce, they are essential to “both workers upgrading skills and to workers who want to prepare to reenter the workforce” (p.2).

As stated earlier, most community colleges have a history of an open-admissions philosophy, which can pose its own set of unique issues, meeting the needs of the increasing numbers of students who are academically underprepared (Ingram & Morrissey, 2009). As we all know, achieving our dreams through hard work and education is supposed to be the American dream. The basic premise behind open admissions is that it affords universal access to all who want it because that is the ethically right thing to do (Ingram & Morrissey, 2009). Further, it follows that all students have the right to seek help in terms of remediation while enrolled in higher
education, in order to reach their life improvement goals and become better citizens as a result (Ingram & Morrissey, 2009).

Fike and Fike (2008) spoke to the important link between student access to higher education and student attrition: “For every student lost, an educational dream goes unfulfilled. And for every unfulfilled dream, there is a long-term impact (in salary earning power, for example) . . . Clearly, student attrition represents huge potential losses to individuals, their families, and society as a whole” (p. 85). When students fail to realize their academic goals, the loss is felt personally and institutionally; as a result, attrition accountability belongs to both the student and the institution.

As early as 1987, Tinto described the special needs of what he called “the disadvantaged student” (1987, p. 160). The observations he made more than 25 years ago remain equally relevant today. Tinto stated that some disadvantaged students come from minority backgrounds; he suggested student and faculty role models who can serve as mentors can be especially helpful in navigating these new students through the college frontier. Many of these students are first generation college students and do not have family support. Tinto stressed that disadvantaged students require additional academic and social support systems, as do “adult” students and those who are part-time and commuters. For this latter group, who are often juggling jobs, parenthood, and the physical distance of life away from the college campus, “maintaining the necessary persistence to continue college studies can be especially challenging” (Tinto, 1987, p. 160).

Boggs (2010), 25 years later makes much the same point, “Community colleges provide access to higher education to the most diverse student body in history . . .
diversity in every respect” (p. 2). Again, ironically, it is the wide diversity and high student numbers and their numerous, diverse academic needs that pose special institutional challenges for the community college.

Further, because the research site for this study is in the foothills of Appalachia and most of the students come from a radius of approximately 50 miles from the research site, much of what is described above regarding the challenges of the community college student is especially relative to the Appalachian/rural community college student.

**The Appalachian/Rural Student: Some Considerations**

“Rural communities and people are different from the valued cosmopolitan mainstream” (Howley, 2009, p. 542). Howley (2009) defines rural as the following: “Rural people have connections to working the land, and to a set of concepts about place, kinship, and community” (pp. 449-450). The very “differences” that make those from rural areas unique are also the very qualities that for centuries some from non-rural areas have perceived as “backward,” “inferior,” and “powerless” (Howley, 2009, pp. 539-540). Howley further contends that educational systems and the corporate minds of America could have much to learn from the “rural view” (p. 543).

Additionally, Howley, Pendarvis, and Woodrum (2005), concurred that rural students may indeed face discrimination. “Prejudice against rural life plays out everywhere, in the mass media and in daily life, both in school and out” (p. 50). Educators who do not come from rural backgrounds themselves may have difficulties in understanding “rural lifeways” (Howley et. al., 2005, p. 50).

It follows then that students who have grown up in rural areas choose, more often than not, to attend rural colleges, and students who have lived in urban and suburban
areas typically choose to attend a college or university located in a suburban/urban locale, according to Guiffrida’s 2008 research review. Guiffrida (2008) cited a 1989 U.S. national study by Gibbs that found that 53% of rural students chose to attend a rural college. This finding was somewhat surprising because only 20% of U.S. colleges are considered rural. On the other hand, and also noted by Gibbs, only 15% of urban students graduated from a rural college. In terms of graduation/retention rates, once rural and urban students enrolled in their respective colleges, there was no significant difference; graduation rates were similar.

However, Guiffrida (2008) concluded that rural students who do enroll in large urban and suburban colleges and universities do have more difficult adjustments as compared to their urban student counterparts. According to Guiffrida, (2008) rural students attending urban colleges and universities are especially challenged by “the increased size of the campus and surrounding community; becoming comfortable with racial/ethnic diversity; becoming accustomed to expanded social, academic, and career options; adapting to broad cultural differences between urban and rural cultures; and accessing student support services” (p. 19).

Thus, it is critical for higher education institutions to be aware and especially vigilant when it comes to potentially challenging adjustments the rural student must make in order to be academically successful; higher education institutions need to be proactive in meeting the needs of their students (Guiffrida, 2008).

Gaps in Developmental Education Research Remain

In Seidman’s (2005) foreword, Tinto wrote, “A significant gap remains between what researchers know about the nature of student retention and what practitioners need
to know to enhance student retention.” Tinto continued, “Today it is more important than ever for institutions to respond to the challenge of increasing student success. Forced to cope with tight, if not shrinking budgets, institutions face mounting pressure to improve their rates of student retention and graduation” (Seidman, 2005, foreword).

Further, Bahr (2012) in regard to educational equality, identified two additional reasons for studying student attrition in remedial community college programs: college students enrolled in remedial classes do not always become competent in the subject, and because many student characteristics “that are correlated with attainment (e.g., race/ethnicity, socioeconomic status) also are correlated with need for remedial assistance at college entry” (Bahr cited Attewell et al. 2006, Bahr, 2010b, Bettinger & Long, 2005; Perry et. al. 2010, Roksa & Calcagno 2010.). “Consequently, the promise of equity in U.S. higher education hinges in no small part on the success of remedial education in community colleges” (Bahr, 2012, cited Bailey & Morest, 2006.) (p. 662).

Equality in terms of universal access to community colleges is only part of the picture. As a 2012 McGraw-Hill Education policy paper pointed out, there is a “subtle but important distinction between students’ being ‘college eligible’ and truly ‘college ready’” (p. 4). For the student needing college developmental education classes, the challenges are more personal, and potentially more costly, in terms of time and money. Remediation, depending upon the number of classes a student must take and the time it takes for the student to successfully complete those courses, may slow student degree/certificate completion rates as well as increase student college costs (Romano, 2011). In addition, over a lifetime, community college graduates earn more than those with just a high school education; “research has shown a direct link between formal
education and annual earnings” (Romano, 2011, p. 76). So, the stakes are individually high for the community college student who can be affected for a lifetime in terms of earning potential.

Thomas Bailey, Director, Community College Research Center, Columbia University, summed it up with the following: “Addressing the needs of developmental students is perhaps the most difficult and most important problem facing community colleges” (Bailey & Cho, 2010, p. 46). Yet, the research specifically addressing developmental community college students, though beginning to grow, is still limited (Bahr, 2012; Porchea, Allen, Robbins & Phelps, 2010). Reasons for “substantial disparities” among students at college entry in college-level skills attainment remain unresolved (p. 662). Kazis, (2011) stated it this way:

State officials working to improve community college results have a limited evidence base from which to draw. Take the critical area of developmental education: there is little hard evidence on whether and for which population groups the upside of developmental education (learning or relearning college readiness skills in English and math) outweighs the downside (slower progress and more opportunities to stop and quit). The research literature on what it takes to scale innovative pilots is thin (pp. 6-7).

Continued research in community college developmental education is needed.

**Predictors of Community College Developmental Student Academic Success**

So what do educators know about specific variables used to predict the road to academic success for developmental community college students? Perhaps it is Bill Gates, who, during his interview with Young (2012), commented the following and
exemplified just how complex, diverse, and research incomplete higher education continues to be, particularly as it relates to developmental education and the work of the Gates Foundation:

One of the strengths of higher ed is the variety. But that variety has also meant that if somebody is doing something particularly well, it’s hard to map that across a lot of different institutions. There aren’t many good metrics. At least in high schools we can talk about dropout rates. Completion rate was really opaque, and not talked about a lot. The quality-measure things are equally different. We don’t have a gold standard like SAT scores or No Child Left Behind up at the collegiate level (p. 11).

“Comprehensive understanding of developmental education and successful strategies to improve its effectiveness cannot be built on a simplistic view” (Bailey, Jeong, & Cho, 2010, p. 256). Research study numbers are growing, but study results, as one may have deducted from some of the studies cited in this paper, have been sometimes vague and inconclusive, particularly in relationship to specific variables that may or may not predict academic developmental student outcomes.

As stated earlier, the purpose of this study was to add to the literature and look at four specific variables that may/may not have been predictive of developmental English student academic success at a small, rural, public Midwestern community college. To that end, this study’s variables included student age, student gender, precollege writing assessment test score, and developmental English writing course placement. What follows is a discussion of the four, separate variables as addressed in some of the current literature. A brief summary concludes Chapter Two.
Age as a Predictor of Student Academic Success

In September 2012, The National Center for Education Statistics (NCES) published a 329-page report, documenting the most recent statistics in regard to the status of American education. “In 2010, a lower percentage of 18-to 24-year-old males than females were enrolled in college or graduate school (39% vs. 47%). A higher percentage of 18-to 24-year-old males than females were still enrolled in high school in 2010 (10% vs. 8 %)” (p. 162).

Concern for such growing gaps between male and female students in higher education was a primary focus of the 2012 NCES report (as was stated by Jack Buckley, Commissioner, NCES, in his introductory letter, prefacing the report). One of those gaps, as the above statistics illustrated, is that a gender/age shift has taken place in recent years; more women than men are beginning their higher education immediately after high school while they are younger, according to the 2012 NCES report.

Porchea, Allen, Robbins, and Phelps (2010) tracked 4,481 entering community college students for five years across 21 institutions located in thirteen Midwest states, beginning in 2003. In regard to student age, Porchea et. al. (2010) studied students who were 16 to 65 years old; 71% of the students were between 17 and 21 years old (p.761). Research study results indicated “that older students are more likely to obtain a two-year degree and not transfer, rather than drop out. However, younger students are more likely to transfer to a four-year institution without first obtaining a two-year degree” (p. 768).

Porchea et al. (2010) posited that perhaps younger students could be more mobile without “the possible work and family obligations characteristic of those older” (p.771). But, with 71% of this study’s participants in the younger 17 to 21-year-old age group,
and only 29% of participants older than 21-years-old but younger than 65-years-old, the study’s broad age spans and small relative percentage of older student participants made this study’s findings questionable in terms of generalization.

Sheldon and Durdella (2009) studied the enrollment data of 21,165 students from a large suburban community college in southern California that examined the relationship between developmental course length and course success. They compared compressed course length (both 5-6 week and 8-9 week courses) to regular-length courses (15-18 week courses). The researchers controlled for social and academic background characteristics and looked at six different courses that included one English course, two math courses, and three reading courses. In terms of student age, the researchers’ study findings included the following:

Students of all age groups performed better in compressed developmental courses than did students enrolled in regular length courses. Students aged 25 years and above had a success rate of 77% in compressed courses compared to 63% for their counterparts enrolled in regular-length courses. Traditional age students followed the same pattern. The success rate for traditional age students in compressed courses was 68% compared to 53% for their counterparts enrolled in the regular-length courses. However, nontraditional age students (those aged 25 and older) were more likely to succeed than traditional students (those ages 17 to 24 years) in compressed format courses. The success rate for nontraditional students was 77% compared to 68% for traditional students (p.51).
Gender as a Predictor of Student Academic Success

According to *The Condition of Education 2011*, published by the U.S. Department of Education, National Center for Education Statistics, some notable gender shifts have taken place in educational attainment in the U.S. since 1975. For example, in terms of high school graduation rates, in 1975, 3% more males than females graduated high school. But, by 2010, those numbers flipped by gender: 3% more females than males graduated high school. Likewise, in terms of bachelor degree attainment within six years, males in 1975 outnumbered female graduates by 6%; in 2010, 8% more females than males earned a bachelor’s degree within six years (p. 74). What remains concerning about those same 2010 percentages is that for students ages 25 to 34-years-old, only “27% males had earned a bachelor’s degree within six years; 35% females had earned a bachelor’s degree within six years,” so graduation rates were comparatively low for both sexes (NCES, 2012, p. 214).

Further reinforcing the gender shift numbers and following the 2011 NCES report above, a 2012 NCES report primarily examined “differences between males and females overall and within racial/ethnic groups” and included “descriptive multivariate analysis of variables that may influence male and female postsecondary attendance attainment in different ways” (p. iii). In regard to postsecondary entry among students who graduated in 2004, “a higher percentage of females (83%) than males (76%) had ever attended a postsecondary institution by 2006” (p. 170). The numbers attested that more females than males are enrolling in U.S. higher education immediately or shortly after finishing high school and graduating with bachelor degrees within six years (NCES, 2011).
Higher female numbers were apparent in a Karp and Bork (2012) qualitative study of more than 96 students and 76 faculty and staff at three Virginia community colleges. This study was small and was an effort to learn more about student roles and community college academic success. In this study, 55% of the students were female, and 55% were between 18 and 20-years-old. Although the study did not focus on gender, but on college readiness, study findings suggested that a better understanding of student roles in the community college may help both male and female students and their higher education institutions to develop strategies for improving student readiness and higher education academic success.

Gender and higher female participant numbers were more visible to the Porchea, Allen, Robbins, and Phelps study (2010) mentioned above. Again, that study tracked 4,481 entering community college students for five years across 21 institutions located in thirteen Midwest states; 57% of the students in this study were female (Porchea et al., 2010). Research findings suggested that males were “less likely to be still enrolled during the fifth year without a degree and without having transferred, rather than drop out” (p.768); females were more likely to still be enrolled or to have transferred. Though the study did not make the following association clear, gender numbers may or may not have been related to another research finding of this study: “Students enrolled in vocational-technical colleges were more likely to obtain a degree and not transfer when compared to students from other community college types” (p. 769). If so, males may be more likely to finish certificate studies and/or two-year vocational degrees and move onto jobs, while females remain in community colleges longer and/or transfer to four-year institutions in greater numbers.
Limitations in this study were that many institutional factors, such as the degree of professional training for faculty and staff, student/college transfer articulation agreements with four-year institutions, and student academic advising issues were not addressed (Porchea et al., 2010). The researchers also admit the “probability of type-I errors,” rejection of the null hypothesis when it is true, in terms of student risk factors because students’ family obligations, such as parenthood, student financial aid, etc. were not factored in (p. 774). Factoring these student risk factors in could have affected study outcomes, so type-I error for study findings was obviously a common research concern.

Although Porchea et al. (2010) did not address developmental education directly in this study (another study limitation), the “most prevalent outcome among students in their research sample was drop out” with 48% of students in the study no longer enrolled (p. 766). “This percentage alone speaks to the need for programs to help community college matriculates attain their degree goals” (p. 766). Conclusions were that this study’s results may have proved insightful for identifying high risk students, speaking to institutional accountability, and reinforcing the need for more community college data and research on student risk factors.

Sheldon and Durdella (2009), who studied the data of 21,165 students in a large suburban southern California community college, found that in terms of gender, females (73%) were more likely to complete courses in compressed-format developmental than their male counterparts (67%). Females (57%) were also more likely to complete regular-length courses than males (52%). It should also be noted that total female numbers in the study were almost double that of males. In the compressed-format courses, the female
enrollment percentage was 67% and males 33%; in the regular-length course format, the
female percentage enrollment was 66% and males 34%.

**Precollege Placement Assessment Testing as a Predictor of Student Success**

Bailey and Cho (2010) pointed to many problems with precollege placement
assessment testing. “Overall, there is no consensus about what constitutes preparation for
college. States and institutions use many different assessments, and even when they use
the same assessments, they often set different cutoff scores” (p. 47). Bailey and Cho
(2010) also stated that students have many different problems with test taking and
specific academic needs that placement assessment testing cannot always detect. For
example, non-traditional students, who have been out of school for a period of time, may
have forgotten much of what they learned. (Course content review before testing could
boost test scores dramatically.) Other student obstacles may include a lack of computer
skills necessary for test taking, or language issues that make understanding test questions
difficult. These are all possible individual student factors that may directly or indirectly
affect student placement scores at all higher education institutions (Bailey & Cho, 2010).

Sheldon and Durdella (2009) did not use placement test scores as a part of their
study that looked at the data of 21,165 community college students in California. They
did look at GPA and found that those students who had above a 2.0 were more likely than
those students who had a GPA below 2.0 to complete English, math and reading courses,
both in compressed-format and in regular-length format.

Jaggars and Hodara (2011) stated students in many cases do not understand the
importance of the placement testing, so they do not give the testing their best efforts.
Some students say stress, test anxiety, or fatigue affect their test scores. Test scores alone
reflect none of these problems with test taking, and as a result, test scores do not always correctly place students in classes. “Assessments that do a better job of identifying particular weaknesses could lead to more customized developmental programs that have the potential to reduce the time that students must spend in remediation” (Bailey & Cho, 2010, p. 48). Bailey (2008) noted, too, that some states and colleges do not require students to take placement assessments at all, further convoluting the issue of correct student college entry course placement across the country.

The Porchea, et al. (2010) study perhaps had more to say relative to precollege assessment testing than about other predictive academic variables. The primary research question was the following: “What are the student characteristics that are predictive of enrollment and degree outcomes for students that initially enroll at a community college and how does the predictive value of each characteristic vary by specific outcome (obtaining degree/certificate, transfer to a four-year institution, or dropped out” (p. 757)?

Using data gathered by the National Student Clearinghouse (NSC), the ACT’s Institutional Data Questionnaire, the National Center for Education Statistics’ College Navigator, and the Student Readiness Inventory (SRI), Porchea et al. (2010) used five sets of predictor variables. “Student characteristics accounted for four sets of the predictor variables including academic preparation, psychosocial, socio-demographic, and situational; the fifth set of predictor variables was institutional characteristics.” The span of research study time and variety/combination of student and institutional predictor variables made this study different from previous ones according to the researchers. The researchers used a “multinomial logit model, similar to logistic regression” (p.765) and descriptive statistics in this study.
In regard to college entrance placement testing Porchea et al. (2010) reported that of the 4,481 students involved in the study, 2,332 (52%) took the ACT tests of educational achievement before enrolling. Students who took the Computer-Adaptive Placement Assessment and Support System (COMPASS) numbered 1,968, and 180 students took the Scholastic Aptitude Test (SAT I). Concordances were used to convert scores so that “the ACT Composite score was used as a predictor variable for all students” (p. 761). Study results suggested higher student achievement test scores are “predictive of obtaining a degree or certificate and transferring to a four-year institution, rather than dropping out” (p.768).

Karp and Bork (2012) conducted a qualitative study of 96 students and 72 faculty and staff at three Virginia community colleges in an effort to provide a framework for better understanding institutional and student roles in order to help students become more successful. The study used interview data from the three study sites. Karp and Bork cited Jenkins et al. (2009) as background for their study: “Even many students who are deemed ‘college ready’ by virtue of their placement test scores or completion of developmental work still do not earn a credential” (p. 1), leading to questions about test scores and their accurate, predictive value. Students in the study were 55% female, and 55% were between 18 and 20 years old. Study findings suggested that a better understanding of student roles in the community college may prove beneficial for students and institutions in developing strategies for improving student readiness, according to the researchers.

In Karp and Bork’s (2012) relatively small study, the focus was more on personal student college readiness as opposed to student academic readiness, but obviously
separation of the two is next to impossible. Though personal student college readiness as a separate variable was not a part of this study, its link to student academic readiness, as noted by Karp and Bork, was noteworthy to their findings and the fact that students remain individuals. According to their findings, students need to be more self-aware, flexible in handling multiple roles, and willing to ask for help. Students also need to be clear on institutional expectations. Thus, academic placement test scores and high school academic preparation are only a part of the picture for increasing student success in community colleges; the skills, habits, attitudes and behaviors of institutions and students must also be taken into account. Institutions and students can and should work together to reduce student attrition.

Scott-Clayton (2012) analyzed the predictive validity of the COMPASS, using data from 42,000 college entry students in a large, urban community college system. Approximately 60% of students were female. More than half were age 19 or younger, but 25% were 22 or older. Her research findings suggested, “placement exams are more predictive of success in math than in English, and more predictive of who is likely to do well in college-level coursework than of who is likely to fail” (p.32). Scott-Clayton found high school GPA alone, as opposed to placement test score alone, to be the better predictor. Better still were multiple measures, such as GPA, high school background, and placement test score. The correlation between placement test score and course outcome proved weak in this study; material on the test may not have been suitably related to material required for successful course completion. Scott-Clayton contended that placement test scores alone are not enough for accurate college course placement.

“Alarmingly low student success rates have compelled many community college systems to put all their policies and practices under the microscope, looking for a relationship between placement policies and student success” (p. 4). As of 2008, 27 states had state-level policies requiring assessment of students for developmental education at college enrollment, and 21 states had specified placement exams. Fourteen states specified COMPASS; eleven states used ACCUPLACER, and seven states chose ASSET.

“Nineteen states used standardized cut scores for placing students into developmental education programs” (p. 2).

Some of the “pressures for change” included inconsistent entrance standards and cut scores among community colleges that allow students with possibly the same assessment scores to be placed in a developmental education program at one college, but be considered college-ready at another community college a short distance away (Collins, 2008). Such inconsistencies lead to improper student course placement (and course sequences) “that make student transfers among colleges difficult, not to mention the questions that arise about quality standards across higher education” (pp. 4-5). Collins said the work of Achieving the Dream States, thus far, shows that by systemizing placement assessment policies and standardizing cut scores, student placement will be more accurate, leading to improved developmental education and increased student success.
Not all agreed. Hughes and Scott-Clayton (2011) voiced a different perspective; they predicted potential problems with standardizing assessment placement testing and cut scores. While they saw the need for assessment reform, “Yet centrally driven simplifications of the assessment process may work against a more tailored approach, in which colleges might select a range of assessments to guide placement of students into different interventions” (p. 26). They also contended that if placement and cutoff scores are standardized, it would seemingly follow that course curriculum content would be standardized as well for students to benefit. So, the potential for loss of individual institutional freedom for making decisions regarding student assessment placement testing was another ongoing debate within the research literature, as well as the suggestion that more is better in terms of numbers of assessments.

Hughes and Scott-Clayton (2011) suggested that because “the most comprehensive evidence of the predictive power of placement tests comes from the test developers themselves, one might worry about the inherent conflict of interest” (p. 15). They pointed out that test validity and predictive validity are estimated measures, so one test score can be less than accurate for placing students in college entry courses. Multiple student measures are a first step for improving developmental student success by ensuring that students begin college with proper course placement. Hughes and Scott-Clayton (2011) cited Safran and Visher (2010):

[F]our-year colleges develop a picture of students’ readiness by reviewing transcripts and student work in addition to standardized test scores. Yet community colleges tend to rely on single test scores for placement in reading, writing, and math. This is likely the reason that we located few studies comparing
the outcomes of using one or multiple cognitive measures for incoming college students (p.21).

**Developmental English Class Placement as a Predictor of Success**

Bailey, Jeong, and Cho (2010) studied the exit points of students in their referred sequences of remedial courses using data from the Achieving the Dream Community Colleges Count Initiative. Part of the study sample included approximately 250,000 students from 57 colleges in seven states. Results were checked against a data analysis of 3400 students using the National Educational Longitudinal Study of 1988 (NELS: 88). One of the major findings from this study was that 45% of students, ignoring advisors or placement instructions, skipped their originally assigned developmental reading sequence and enrolled directly into gatekeeper courses. Of those who did so, approximately 72% went on to pass the gatekeeper course. But only 27% of the students who followed through as assigned with remediation sequence eventually completed the gatekeeper course. Bailey, Jeong, and Cho (2010) speculated that either developmental sequences are too long and create “obstacle courses for students that outweigh benefits” or students know more about their academic skills than do their student advisors (p. 261).

Other findings from the Bailey, Jeong, and Cho (2010) study included that the shorter the developmental pipeline is, the better; students do best when assigned to one developmental course as opposed to three. Less than half of the students assigned to developmental education complete their sequences; about 40% in developmental reading complete a gatekeeper course within three years. Acceleration of remediation is a strong study recommendation, with emphasis for developmental instructors to meet students where they are and incorporate study skills into “meaningful educational experiences”
that will more quickly get students into academic mainstream (p. 268). Study limitations included the age and relatively small sample size of the 1988 data and the fact that most students were from urban colleges, making comparisons for rural students indefinite. In addition, the researchers stressed that “multivariate analysis is exploratory, not definitive,” with some causal inferences questionable (p. 267).

Sheldon and Durdella’s (2009) research findings also supported shortening the developmental pipeline through compressed developmental course formats. Their findings included that when math, English, and reading courses included in their study were offered to students in compressed developmental formats, that is 5-6 week courses and 8-9 week courses as opposed to 15-18 week courses, students were more likely to complete (experience success) in the shorter course formats. English had the highest student completion rate (87%) among the eight-week format; reading had the highest student completion rate (77%) in the six-week format. The major finding of this study was that students enrolled in compressed-format developmental courses were more likely to succeed than those developmental students enrolled in the traditional developmental semester-length courses.

Fike and Fike (2008) studied 9,200 first-time-in-college (FTIC) over a four-year period beginning in Fall 2001 who enrolled in a community college in Texas. Fike and Fike based their research somewhat on previous research by Tinto (1993), Bean (1990), and Astin (1991) to include retention theories that describe interaction between students and institutions. While previous researchers had focused on four-year institutions, the Fike and Fike study did not. The researchers suggested that community college students are often different from traditional university students in terms of age (About 60% of
FTIC adults, aged 25 and older, enroll in community colleges; “community college students are more likely to attend college part-time due to work and family obligations; community college students are more likely to be academically underprepared, and minority and low income students are more likely to attend community colleges” (Fike & Fike, 2008, p. 70).

Using logistic regression and a multiple of other statistical tests, Fike and Fike (2008) assessed predictors of student retention. Placement assessment test scores were not a part of this study. Female students were predominant at 56%, and median age for students was 19. Study findings suggested that gender is not a predictor of retention, nor is age a strong predictor. Passing a developmental reading course (fall-to-fall and fall-to-spring) is the strongest positive correlate with retention in this study, as is passing a developmental writing course, but for fall-to-fall, not fall-to-spring.

However, similar to the findings of Porchea et al. (2010), more than half of the FTIC students in the Fike and Fike (2008) study who enrolled in the fall did not enroll in the subsequent fall semester. Because of the positive developmental reading and writing course finding, Fike and Fike maintained that developmental education can be successful and should be a high priority at community colleges. The researchers also suggested future research is warranted to further assess the impact of developmental education on retention and better understand student characteristics that will predict academic success.

Jaggars and Hodara (2011) conducted a mixed methods study of six of The City University of New York (CUNY) community colleges. Qualitative data was collected through hour-long individual interviews with 67 faculty and administrators. Quantitative analysis included data from anonymized transcript information from approximately
75,000 students enrolled between fall of 2004 and spring of 2008. Student tracking took place through fall of 2009, and each student was tracked at least two academic years. Although CUNY at first appeared to be a centralized system, upon further inspection by the researchers “many inconsistencies were noted, particularly in regard to college assessment placement testing and cutoff scores” (p. 13).

CUNY gives the responsibility for developmental education to the community colleges within the system; four-year CUNY institutions require students who need academic remediation to complete it before student entry is permitted into a four-year university program (Jaggars & Hodara, 2011). Referral numbers (82% need some developmental education) to the community colleges are high “in part due to the disadvantaged populations the system serves” (p.2). Across the six community colleges within the CUNY system, “28% of the students in the study were 25 or older. Approximately 56% of the students required developmental writing, and 24% required developmental reading “(p.3). A study limitation was that the study was of only one college system that serves primarily urban students.

Jaggars and Hodara (2011) suggested that most students take very few intensive reading and writing courses” correlated with critical thinking and complex reasoning over time “during their college experience, and colleges need to be more proactive in requiring said courses, as well as providing course requirements for faculty who teach them” (p. 57). Faculty of different disciplines should closely work together to determine and develop student learning outcomes and develop assessment tools that are relative to those outcomes to improve teaching and learning. Placement exams alone are not enough; they
“can fall short in their diagnostics and relationship to student learning outcomes” (p. 58).

CUNY deployed a new writing exam in 2010 to improve diagnostic assessment.

**Summary**

The challenges for best meeting the academic needs of underprepared higher education students are as old as the institutions themselves; thus, a brief history of developmental education began this chapter. Because underprepared college students continue to present numerous academic challenges to higher education institutions nationwide, particularly for community colleges, this chapter also looked at the literature emanating from national education initiatives, and Ohio’s (state’s) response to those initiatives. Next, some community college background history was given. Because this study’s research site is both rural and Appalachian in location, some considerations of the rural/Appalachian student were also discussed, followed by several community college developmental education challenges.

Next, some gaps in developmental education research were also noted. Additionally and in specific relation to the four predictors in this study, recent research studies regarding these four potential predictors of developmental student academic success were reviewed. Research, though growing with developmental education, is still very limited, specifically in regard to specific predictors of student success in smaller, non-urban community colleges. This study explored four variables that may be predictive of student success in a community college developmental English writing course: student age, student gender, precollege test writing scores, and developmental English writing course placement.
Chapter Three: Methodology

This chapter contains a description of the methodology used to gather and analyze the data relative to selected predictors of academic success in two developmental English writing courses at a rural, Midwestern community college. The chapter begins with a description of the research design. Descriptions of the research site and sample follow, and operational definitions of the variables are given. Data entry procedures and data analysis procedures are explained. Research questions and limitations and delimitations of the study are listed. The chapter concludes with a summary of the methodology.

Using secondary data, the researcher’s goal was to analyze the relationship between student age, student gender, college pretest writing assessment scores, and developmental English writing class placement as they may predict performance in developmental English community college courses.

The Research Design

A retrospective ex post facto study design was used in that the researcher “began by registering the values of the dependent variable and afterwards the values of the independent ones” (Montero & Leon, 2007, p. 854). The independent variables cannot be manipulated; Heinman (1995) refers to the variables as correlational.

Salzman (1997) gave three major factors that could question the internal validity of ex post facto research including the non-manipulation of independent variables, “the lack of randomization in group assignment, and the risk of incorrect interpretation of results” (p. 63).

However, Salzman (1997) also stated that ex post facto is a commonly used research design in education and cited Newman and Newman (1994) who argued for the
“positive scientific value and strong, external validity of ex post facto research” (pp. 63-64). Lee (1985) concurred, “In spite of the limitations of ex post facto designs, some specific threats to validity are controlled, namely history, testing, instrumentation, and regression” (p. 36).

Because this study used the data from only one higher education institution, caution was advised when generalizing the conclusions to other institutions. However, the results of this study added to the body of literature regarding the academic performance of higher education students in developmental English courses.

**Description of the Research Site**

The research site for this study is a small Midwestern, rural community college. Founded in 1968, this small community college is situated in the foothills of Appalachia and served more than 6500 students in 2010. The College offers 50 associate degree programs.

In terms of student demographics and headcount, the research site recruits students from across the United States and globally, but the largest numbers of students carry with them traditions of the Appalachian culture, coming from a 50-mile wide radius of the campus. According to a Higher Learning Commission Self-Study Report completed in 2011, a total of 6,599 students were enrolled in fall 2010; 5,915 were in-state residents; 171 were out-of-state residents, and 63 were international students or non-U.S. residents.

In the fall of 2010, male students seeking degrees numbered 2,749; 717 males were non-degree seeking. For females in fall 2010, the numbers were 2,807 degree seeking and 326 non-degree seeking.
Almost 40% of the student population was non-traditional. According to the 2011 Self-Study Report, 3,975 students were below age 24 years, and 2,624 were older than 25 years in fall 2010.

More than 70% of the research site’s students require some form of remediation at college entry based upon required placement testing results. ASSET writing scores were the assessment score of interest for this study. Perin, (2006), spoke to the dilemma community colleges face in regard to the debate between access and standards. The research site, like other community colleges across the country, is struggling to keep open access and yet maintain the college standards necessary for students to be successful, professionally competent, and, as a result, more productive citizens.

Description of the Sample

Students who completed developmental writing English courses at a rural, Midwestern community college during the 2011 fall quarter were the subjects for this study. A sample size of 488 students was obtained. English 0054, Beginning Composition with Reading, had 127 students who completed the course, and English 0121, Beginning Composition (without reading instruction), had 361 students who completed the course for a total of 488 students. Some students successfully completed the course while others did not.

The G*Power 3.10 software (Faul, Erdfelder, Lang & Buchner, 2007) was used to determine the sample size for this study. For a power of .80, using a two-tailed medium-size effect (according to Cohen’s conventions), four predictors, and with an alpha level of 0.05 for logistic regression, the power analysis indicated a minimum sample size of 473
subjects. This study obtained a sample size of 488 subjects, and so the study power could be achieved with the observed sample size.

**Definitions of the Operational Variables**

Definitions for the variables included in this study were as follows:

**Independent Variables**

The independent variables for this study included student age, student gender, precollege writing assessment test scores, and developmental writing class placement.

**Age**

The age of the student at the point of entry into the course (AGE) was a continuous variable.

**Gender**

The gender of the student (GENDER) was a categorical variable.

**Pre-college Writing Assessment Test Score**

Pre-college writing assessment test score at the point of course entry was a continuous variable. For placement into college level course work and/or pre-college level developmental course work, each student completed a mandatory entrance exam. The purpose of the exam was to make an attempt to find an accurate starting point for student writing instruction. The community college research site for this study used two tests, COMPASS, a computerized non-timed test, and ASSET, a timed paper and pencil test. Both exams test students in reading, writing, and math. Which test each student took was often “the luck of the draw” because of time and space constraints during New Student Scheduling and Registration (NSSR) when large groups of potential students were served at one time. Because students were permitted to take each portion of a test a
total of three times and take either test, some students had both COMPASS and ASSET scores. ASSET writing scores were the assessment score of interest for this study. The writing scores of students who took the COMPASS test were converted to ASSET writing scores, using an ACT concordance chart (*Concordant, ACT*, 1999).

The ASSET Test Administration Manual (2000) described the test as “an assessment-advising program designed to identify the basic skill levels of students as they enter two-year institutions . . . The ASSET tests are intended as placement instruments” (p. 1).

In terms of test development, a Supplement to the ASSET Technical Manual (2000) documented that “ACT contracted with item writers from across the country to develop ‘units’ of items that were then subjected to rigorous content reviews and editing from both ACT staff and external consultants” (p. 4). Next, two ASSET writing field tests, with sample sizes of 926 and 940 test examinees respectively, indicated the tests were not culturally biased and were accurate and appropriate for college student writing placement. Internal consistency reliability estimates reported were .86 and .89 for the two field test groups described above (p. 8).

Because the writing score was the criterion used for the developmental writing course placement at the research site, the ASSET writing score was the one used in this study. The community college placement chart is attached (Appendix A).

**Open-Admission Community Colleges**

Open admission refers to allowing students to enter a higher education institution (more often than not a community college) without requiring a specific level of academic
ability; it is an open-door policy, based on the philosophy that any student who desires a college education should have the opportunity and right to pursue it.

**Developmental Writing Class Placement**

Developmental writing class placement was a categorical variable and the study’s grouping variable. English 0054, Beginning Composition with Reading was a six-hour developmental writing course with reading instruction; the English 0121, Beginning Composition course was a four-hour developmental writing course with no reading instruction. Both courses served as the same developmental, non-credit bearing first writing course. Students who completed either class with a grade of “S” (satisfactory) moved on to the first credit-bearing class in writing. Students who did not complete either class received a grade of “U” (unsatisfactory) and repeated the developmental class. Those students who were enrolled in the English 0054 (with reading instruction) writing course were coded as “1.” Those students who were enrolled in English 0121 (without reading instruction) were coded as “0” for no reading instruction.

**Dependent Variable**

The dependent variable for this study was performance in the developmental English class. Performance was categorized as either successful completion (code = 1) or non-completion (code = 0) of the course. For the purposes of this study, successful student performance meant that the student did complete the developmental English course to which he/she was assigned with a grade of “S” (satisfactory). In order for students to successfully complete either writing course in the study, English 0054 writing with reading instruction, or English 0121, writing without reading instruction, students were required to complete all coursework with a 70% course grade average and write a
650-word essay, graded and deemed to be passing or not passing by a faculty committee at the end of the instructional period. Students had one opportunity (with a week’s period of class time to do so and guidance from the classroom teacher available) to revise the final test-out essay before that same faculty committee decided in a group revision grading session whether the student was ready to move on (or not) to the first English college credit (gatekeeper) course. Students were deemed unsuccessful or non-completers if all or one of the following prevailed: Students obtained a grade below 70%; students failed the test-out essay; students never attended class, or students stopped attending class without completing course work.

**Data Entry Procedures**

The researcher obtained student data from electronic transcript information, Faculty Grade Reports, and other institutional records from the Institutional Research Office for the college under study. The college president gave permission to the researcher to access student records. The Ohio University Institutional Review Board granted exempt status to this study (Appendix B).

The researcher obtained the data and was responsible for data entry as needed. All student data were held strictly confidential, with no student identification used; every effort was made to protect private student information. All data entries input by the researcher and downloaded from the college mainframe were checked after entry to ensure accuracy of information. The data were analyzed statistically using SPSS Statistical Package Version 21.
Data Analysis Procedures

Descriptive statistics and significant testing, involving key demographic variables, were conducted. A binary multiple logistic regression was used as the overarching analysis to address the research questions in this study. In logistic regression a set of independent variables in combination is used to predict the probability of a binary dependent variable (Meyers, Gamst & Guarino, 2006). Meyers et al. (2006) also stated that the dependent variable in binary logistic regression is dichotomous, meaning that it consists of two possible values, as was the case with the dependent variable in this study (successful completion “1,” or non-completion, “0”).

The predictor variables in logistic regression can be “a combination of categorical and quantitative variables” (Meyers et. al., 2006, pp. 7-8). In this study, the categorical variables were gender and developmental writing course placement; the continuous variables were age and pre-college writing assessment test scores.

The dichotomous dependent variable (course completion/non-completion) and the variety of predictor variables made logistic regression the logical research method of choice for this study. In addition, the data were further explored with descriptive statistics for the categorical and continuous variables. The multivariate logistic regression model is sigmoidal, not linear, so the model allowed the predictor variables to be related to the dependent variable in a nonlinear manner. Thus, “what is being predicted---is the probability of the cases falling into one of the dependent variable’s categories. The outcome is often expressed as an odds ratio” (Meyers et. al., 2006, p. 8). “The transformation to odds ratio will result in predicting possibilities that are not less than 0 but may still exceed 1” (LeBlanc & Fitzgerald, 2000, p. 346).
Menard (1995) stated that the assumptions of the research model must not be violated in order for the model to be accurate. LeBlanc and Fitzgerald (2000) cited the basic assumptions for using logistic regression according to Austin, Yaffee, & Hinkle (1992) as follows:

1. Logistic regression uses a quantitative variable (x) to predict the outcome variable (y) that has only two outcomes.
2. Multi-collinearity should be minimal. As with other regression forms, high correlations between the predictor variables can obscure actual relations.
3. The responses should be statistically independent.
4. Large sample sizes (i.e., $n > 30$ for each predictor variable) are preferred (pp. 344-358).

**Research Questions**

The following primary research question was proposed for this research study: Are selected factors of academic success as a group predictive of the completion of a higher education developmental English writing course? The following research questions emanated from the primary research question:

1. Is age related to the completion of a community college developmental English writing course when controlling for gender, precollege writing assessment test scores, and developmental writing class placement?
2. Is gender related to the completion of a community college developmental English writing course when controlling for age, precollege writing assessment test scores, and developmental writing class placement?
3. Are precollege writing assessment test scores related to the completion of a community college developmental English writing course when controlling for age, gender, and developmental writing class placement?

4. Is developmental writing class placement related to the completion of a community college developmental English writing course when controlling for age, gender, and precollege writing assessment test scores?

The four specific associated research null hypotheses that emanated from the research questions were the following:

1. Age does not predict the completion of a higher education developmental English writing course when controlling for gender, precollege writing assessment test scores, and developmental writing class placement.

2. Females are equally as likely as males to complete a higher education developmental English writing course when controlling for age, precollege writing assessment test scores, and developmental writing class placement.

3. Precollege writing assessment test scores do not predict the completion of a higher education developmental English writing course when controlling for age, gender, and developmental writing class placement.

4. Students placed in a higher education developmental English writing course with reading instruction are equally as likely as students who are placed in a higher education developmental English writing course without reading instruction to complete a higher education developmental English writing course when controlling for age, gender, and precollege writing assessment test scores.
Limitations of the Study

This study had several limitations, which the researcher could not control. First, this study did not control for student motivation levels, personal off-campus issues that may/may not have affected student academic performance, or advising or counseling services the developmental students may have accessed during the college experience.

Secondly, at the institution under study, some faculty members take class attendance; some do not. Consistent class attendance records were not available to the researcher for this reason. In addition, students who never showed up for class during the instructional period, or students who stopped attending class without fulfilling course requirements, were automatically added to the list of non-completers in the study, unless they formally withdrew from the course before the end of the instructional period. Attendance data were not readily available to consider attendance a factor that could be included in the study.

Thirdly, faculty teaching styles and expertise were omitted from this study, so accounting for differing teaching methods and course content for the total 36 sections of both classes was a limitation. Initially, at the beginning of the instructional time period, and in addition to the ASSET writing score used for course placement/instructional starting point, faculty look at student writing samples to better determine developmental student and writing class instructional needs. Faculty are encouraged by the English department to also advise students, if, after evaluating the writing sample, they feel a student has been placed in the wrong class. The student may then decide if he/she wants to move to a higher/lower level course, depending upon the faculty recommendation. Some students, now secure with a course schedule for the quarter of study and plans set
for following it, may reject the faculty recommendation and stay in the class originally assigned.

Faculty members who have previously instructed a student in a lower-level developmental class may also suggest placement for students before the next quarter of study begins. Students may/may not follow faculty advice, and faculty ultimately rely more on student advisers to place students accurately, more often than not. Students can also ignore placement recommendations from advisers as well, but this option is not an often-practiced one at the research institution under study. Some advisers are more aware of correct placement procedures than others. The researcher could not control any of these factors.

In addition, the ASSET cutoff scores for student placement (see Appendix A) for all English course placements span an 11-point range, admittedly narrow for placement among five different English courses. For placement into the two courses under study, English 0054, writing with reading instruction, and English 0121, writing instruction without reading instruction, the cutoff score range is within a very narrow four points. The narrow range for ASSET writing scores was another factor that the researcher could not control. Finally, a distinct institutional research office is relatively new at the research site, so access to data, though growing, was still limited.

**Delimitations of the Study**

This study had several delimitations. First, the researcher chose not to consider student socioeconomic status or the variable of first-generation college students. According to the research site’s Higher Learning Commission Self-Study Report completed in 2011, the majority of students enrolled in this public two-year technical
community college are attending school with financial aid (73%). The research site also has a history of more first-generation college students than not, so those factors were deemed redundant for additional study.

This study was limited to the number of students enrolled in two developmental English courses for the fall quarter of the 2011 academic year. Because the objective of the study was to look at variables that may predict course completion, and fall quarter was typically the most likely quarter for the highest number of students to be enrolled in this community college, the researcher chose that time period for the study. The researcher did not choose to include developmental math skills in this study; the study’s focus is developmental student reading and writing skills.

This study was limited to one institution, so caution was advised for generalizing study conclusions to other institutions. Brooks (2011) stated that small-scale quantitative research studies sometimes use “convenient populations”; he emphasized it is important for researchers to acknowledge their use and thus aim for “local generalizability” (p. 14). As he put it, “We can then have confidence that our results have small-scale external validity within our local/convenient population” (p.14).

**Summary of the Methodology**

The researcher’s plan was to address the primary research question: Are selected factors of academic success predictive as a group to the completion of a higher education developmental English writing course? Data were obtained by the researcher from a Midwestern community college, and permission was granted to the researcher by the college president. The data were entered and carefully rechecked by the researcher, who made every effort to keep all student information strictly confidential. A logistic
regression model and descriptive statistics were constructed and used to answer the research questions. Because of the continuous and categorical independent variables and the binary dependent variable, logistic regression was an appropriate statistical method for this study.
Chapter Four: Data Analysis and Results

Introduction

This chapter presents the results from the data analyses conducted for this study. The introduction section includes the research questions, the four research hypotheses drawn from the research questions, and information on data collection and the power analysis.

Following the introduction section as described above, the chapter continues with a discussion of the descriptive statistics as they relate to the four predictor variables – student age, student gender, precollege writing test assessment scores, and developmental writing class placement – and the dependent variable, course completion (or academic success in developmental English writing). A section dedicated to the significance testing between the variables, including categorical and continuous predictor variables, follows, with the binary logistic regression analyses last. Finally, explicit answers to the research hypotheses and a short summary conclude this chapter.

Research Questions

The general research question discussed in Chapter Three was the following: Are selected factors of academic success as a group predictive of the completion of a higher education developmental English writing course? This chapter presents the results from the data analyses based on the four research questions that specifically emanated from the primary research question. The study’s specific research questions based on the general question were the following:
1. Is age related to the completion of a community college developmental English writing course when controlling for gender, precollege writing assessment test scores, and developmental writing class placement?

2. Is gender related to the completion of a community college developmental English writing course when controlling for age, precollege writing assessment test scores, and developmental writing class placement?

3. Are precollege writing assessment test scores related to the completion of a community college developmental English writing course when controlling for age, gender, and developmental writing class placement?

4. Is developmental writing class placement related to the completion of a community college developmental English writing course when controlling for age, gender, and precollege writing assessment test scores?

The four specific associated research null hypotheses that specifically emanated from the study’s basic research questions were the following:

1. Age does not predict the completion of a higher education developmental English writing course when controlling for gender, precollege writing assessment test scores, and developmental writing class placement.

2. Females are equally as likely as males to complete a higher education developmental English writing course when controlling for age, precollege writing assessment test scores, and developmental writing class placement.

3. Precollege writing assessment test scores do not predict the completion of a higher education developmental English writing course when controlling for age, gender, and developmental writing class placement.
4. Students placed in a higher education developmental English writing course with reading instruction are equally as likely as students who are placed in a higher education developmental English writing course without reading instruction to complete a higher education developmental English writing course when controlling for age, gender, and precollege writing assessment test scores.

Data Collection

The researcher obtained student data from electronic transcript information, Faculty Grade Reports, and other institutional records from the Institutional Research Office for the college under study. The college president gave permission to the researcher to access student records. The Ohio University Institutional Review Board granted exempt status to this study (Appendix B). All data entries input by the researcher or downloaded from the college mainframe were checked after entry to ensure accuracy of information. The data were analyzed statistically using SPSS Statistical Package Version 21.

Study Power Analysis

The power analysis for sample size of this study assumed a medium-sized two-tailed effect (according to Cohen’s conventions), four predictors, and an alpha of .05% for a power of 80%. The power analysis indicated a minimum sample size of 473 subjects. This study obtained a sample size of 488 subjects, so the study power could be achieved with the observed sample size.
Descriptive Statistics of Predictor Variables

Age as a Predictor of Course Completion

The differences in student age ranges and mean ages between the two courses are noteworthy in regard to study results and will be discussed further in Chapter Five. Because student course completion begins with student class placement, descriptive statistics for age by class placement are displayed first. Thus, Table 1 shows the descriptive statistics of one of the continuous predictor variables, student age by class placement. The range of ages for students enrolled in the English 0054 (with reading instruction) was a minimum age of 17 years to a maximum age of 46 years at course entry. The mean age at course entry was 20.5 years (standard deviation [SD] ± 5.32).

For the English 0121 (without reading instruction) course, the minimum age was 16 years, and the maximum age was 57 at course entry. Maximum age span was 11 years greater for English 0121 students than for English 0054 students. Mean age for this same group was 21.1 years at course entry SD ± 5.99). Thus, the English 0121 students had a greater age span and a higher mean age than those students in the English 0054 classes.

Table 1 presents the frequencies for age by placement in each class.
Table 1

Descriptive Statistics of Student Age by Placement

<table>
<thead>
<tr>
<th>Placement</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 0054</td>
<td>127</td>
<td>17</td>
<td>46</td>
<td>20.53</td>
<td>5.320</td>
</tr>
<tr>
<td>English 0121</td>
<td>362</td>
<td>16</td>
<td>57</td>
<td>21.19</td>
<td>5.987</td>
</tr>
</tbody>
</table>

Table 2 presents the descriptive statistics of age with regard to gender. Females on average were older in mean age 21.7 SD ± 6.74 when compared with males 20.5 SD ± 5.11).

Table 2

Descriptive Statistics of Age by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>191</td>
<td>16</td>
<td>52</td>
<td>21.71</td>
<td>6.743</td>
</tr>
<tr>
<td>Male</td>
<td>298</td>
<td>16</td>
<td>57</td>
<td>20.57</td>
<td>5.110</td>
</tr>
</tbody>
</table>

Further, regarding course completion and the age predictor variable, Table 3 gives descriptive statistics of student age by completion. The mean age for students who completed the courses successfully was 20.8 SD ± 5.76 compared with 21.3 SD ± 5.98) for the unsuccessful student group.
Table 3

Descriptive Statistics of Student Age by Completion

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard deviation (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsuccessful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>152</td>
<td>18</td>
<td>52</td>
<td>21.34</td>
<td>5.982</td>
</tr>
<tr>
<td>Successful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>336</td>
<td>16</td>
<td>57</td>
<td>20.88</td>
<td>5.760</td>
</tr>
</tbody>
</table>

Gender as a Predictor of Course Completion

Table 4 shows the distribution of students in the two developmental English courses by the categorical predictor variables, placement and gender. As Table 4 illustrates, a total of 191 females were enrolled in both English 0054 and English 0121 class sections during the 2011 fall quarter. The English 0054 class had 44 enrolled females, and the English 0121 class had 147 enrolled females. A total of 298 males were enrolled in both English 0054 and English 0121 class sections during the same fall quarter. The English 0054 class had 83 enrolled males, and the English 0121 class had 215 enrolled males. Table 4 shows the student distributions in the two developmental English courses by placement and gender. The English 0054 Beginning Composition with Reading class had 44 (35%) enrolled females and 83 (65%) enrolled males. Males outnumbered females by 30%. In the English 0121 Beginning Composition class, 147 (41%) females and 215 (59%) males were enrolled. Again, males outnumbered females by 18%. 
Table 4 also shows a total of 489 students were enrolled in the two developmental English writing classes during the fall of 2011. English 0054, Beginning Composition with Reading, was a six-hour developmental writing course with reading instruction and had 127 students enrolled in 9 class sections. English 0121, Beginning Composition, was a four-hour developmental writing course with no reading instruction and had 361 students enrolled in 27 class sections.

Table 4 shows the distribution of students in the two developmental English courses by placement and gender, the categorical predictor variables.

Table 4

*Distribution of Students in Developmental English Courses by Placement and Gender*

<table>
<thead>
<tr>
<th>Course Placement</th>
<th>Gender, N</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>English 0054</td>
<td>44</td>
<td>83</td>
</tr>
<tr>
<td>English 0121</td>
<td>147</td>
<td>215</td>
</tr>
<tr>
<td>Total</td>
<td>191</td>
<td>298</td>
</tr>
</tbody>
</table>

Table 5 shows the distribution of developmental English students by gender, placement, and completion. At first glance and in terms of raw numbers alone in the “Successful” column, it appears in Table 5 that more males (184) were successful than females (152) in developmental English course completion. But, in the “Unsuccessful” column, 39 females (8%) of the 488 total student number did not complete the course, and 113 males (23%) did not complete the course. By 15%, more males were
unsuccessful than females in the context of the total student number, 488. Additionally, males outnumbered females by 106 (31%) in placement.

Further, in terms of the study’s 191 total females, 152 (80%) completed the developmental English courses; 39 (20%) females did not complete the courses. For the 297 total males in the study, 184 (62%) completed the courses, and 113 (38%) did not complete the courses. Thus, even though males outnumbered females by 106 (31%) in course placement, females completed at an 18% higher rate than males.

In terms of the two developmental English courses, 49 males (59%) in the English 0054 course (with the added reading instruction) successfully completed it; 34 males (41%) did not. In the English 0121 course (no added reading instruction), 135 males (63%) successfully completed the course while 79 males (37%) did not.

In English 0054, 32 females (73%) were successful in completing the course; 12 females (27%) did not. Females had a 14% higher completion rate than males in English 0054. In English 0121, 120 females (82%) completed the course; 27 females (18%) did not complete. Females had a 19% higher completion student rate than males in the English 0121 course.

Table 5 gives the distribution of developmental English students by gender, placement, and completion.
## Table 5

*Distribution of Developmental English Students by Gender, Placement, and Completion*

<table>
<thead>
<tr>
<th>Gender/Placement</th>
<th>Completion, N</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsuccessful</td>
<td>Successful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 0054</td>
<td>12</td>
<td>32</td>
<td></td>
<td>44</td>
</tr>
<tr>
<td>English 0121</td>
<td>27</td>
<td>120</td>
<td></td>
<td>147</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>152</td>
<td></td>
<td>191</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 0054</td>
<td>34</td>
<td>49</td>
<td></td>
<td>83</td>
</tr>
<tr>
<td>English 0121</td>
<td>79</td>
<td>135</td>
<td></td>
<td>214</td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>184</td>
<td></td>
<td>297</td>
</tr>
</tbody>
</table>

### ASSET Writing Score as a Predictor of Course Completion

Table 6 shows descriptive statistics of ASSET writing scores by placement. The lowest ASSET writing score for the English 0054 class was 6; the highest score was 50. The mean score was 34.7 SD \( \pm 5.99 \). The lowest ASSET writing test score for the English 0121 class was 12; the highest score was 60. The mean score was 38.1 SD \( \pm 3.97 \). English 0121 students had a higher mean score than the English 0054 students, with a wider and higher range of scores overall.
Table 6

**Descriptive Statistics of ASSET-Writing Scores by Placement**

<table>
<thead>
<tr>
<th>Placement</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 0054 ASSET Writing Score</td>
<td>127</td>
<td>6</td>
<td>50</td>
<td>34.75</td>
<td>5.999</td>
</tr>
<tr>
<td>English 0121 ASSET Writing Score</td>
<td>358</td>
<td>12</td>
<td>60</td>
<td>38.11</td>
<td>3.975</td>
</tr>
</tbody>
</table>

Table 7 shows the descriptive statistics of ASSET writing score by gender.

Females on average scored slightly higher on the ASSET writing in mean score 37.7 SD ± 4.12 than males 36.9 SD ± 5.19).

Table 7

**Descriptive Statistics of ASSET Writing Scores by Gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th>ASSET Writing Score</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>ASSET Writing Score</td>
<td>189</td>
<td>23</td>
<td>50</td>
<td>37.75</td>
<td>4.129</td>
</tr>
<tr>
<td></td>
<td>Valid N (listwise)</td>
<td>189</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>ASSET Writing Score</td>
<td>296</td>
<td>6</td>
<td>60</td>
<td>36.90</td>
<td>5.190</td>
</tr>
<tr>
<td></td>
<td>Valid N (listwise)</td>
<td>296</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8 shows the descriptive statistics of ASSET writing scores by completion. ASSET writing mean scores were higher on average for the successful student group, mean score 37.7 SD ± 4.13 than for the unsuccessful group, mean score 36.1 SD ± 5.87).

Table 8

Descriptive Statistics of ASSET-Writing Scores by Completion

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard deviation (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsuccessful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASSET Writing</td>
<td>150</td>
<td>6</td>
<td>49</td>
<td>36.15</td>
<td>5.870</td>
</tr>
<tr>
<td>Successful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASSET Writing</td>
<td>334</td>
<td>19</td>
<td>60</td>
<td>37.75</td>
<td>4.133</td>
</tr>
</tbody>
</table>

Class Placement as a Predictor of Course Completion

Table 9 shows the distribution of students by placement and completion. As Table 9 shows, English 0121 had 234 more students than English 0054. In comparing the two classes, more English 0121 students did complete the course, and fewer English 0121 students were unsuccessful when compared to those enrolled in English 0054. More
specifically, 46 (36%) English 0054 students did not complete the course, but 81 (64%) English 0054 students did complete the course successfully.

For English 0121, 106 (29%) of the students did not complete the ENGL 0121 course, but 255 English 0121 students (70%) did complete the course. Thus, there were approximately 6% more students enrolled in English 0121 who were successful in course completion than students enrolled in English 0054.

A total of 152 (31%) students from all sections of both classes were unsuccessful in completing the course. A total of 336 (69%) students from all sections of both classes were successful in completing the course.

Table 9 gives a distribution of students by placement and completion.

<table>
<thead>
<tr>
<th>Placement</th>
<th>Completion, N</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsuccessful</td>
<td>Successful</td>
</tr>
<tr>
<td>English 0054</td>
<td>46</td>
<td>81</td>
</tr>
<tr>
<td>English 0121</td>
<td>106</td>
<td>255</td>
</tr>
<tr>
<td>Total</td>
<td>152</td>
<td>336</td>
</tr>
</tbody>
</table>

Results of Significance Testing Between Predictors

In this section, a preliminary exploration of the relationships among the predictor variables was conducted as a precursor to the main binary logistic regression analyses in
addressing the main research question and the follow-up questions. These preliminary analyses, although not associated explicitly with the research questions, provided supplemental insight into understanding the nature of the relationships under study.

1. Categorical and Continuous Variables

Based on Table 4, a Pearson Chi-Square test indicated no statistically significant association between gender and course/class placement, $\chi^2(1) = 1.404, p = .236$. An independent $t$-test (See Table 10.) showed that there was a significant statistical difference in gender with regard to age, $t(327.238) = 1.991, p = .047$, but there was no significant statistical difference in gender with respect to ASSET writing score, $t(483) = 1.894, p = .059$. That is, females (21.7 years) were statistically significantly older than their male (20.6 years) counterparts in the developmental English writing classes.

Tables 10 and Table 11 show the results of the independent $t$-tests:

Table 10

Results of the Independent T-test for Difference in Gender With Regard to Age

<table>
<thead>
<tr>
<th></th>
<th>$t$</th>
<th>$df$</th>
<th>$p$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>1.991</td>
<td>327.238*</td>
<td>.047</td>
<td>[0.080, 2.193]</td>
</tr>
</tbody>
</table>

* The degree of freedom ($df$) was based on the fact that the Levene's test failed the assumption of equal variance.
Table 11

*Results of the Independent T-test for Difference in Gender With Regard to ASSET Scores*

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSET Writing Score</td>
<td>1.894</td>
<td>483</td>
<td>.059</td>
<td>[-0.032, 1.726]</td>
</tr>
</tbody>
</table>

2. Logistic Regression Analyses

To address the research questions of this study, a logistic regression analysis was conducted. The independent variables included student age, student gender, ASSET writing score, and developmental writing class placement. The dependent variable was course completion.

Before proceeding to conduct the logistic regression analysis, some preliminary steps were taken to ensure that common problems associated with regression analysis were minimized. As is the case for multiple linear regression, multi-collinearity can be a problem in logistic regression analysis. Stevens (1999) defined multi-collinearity as the existence of “moderate to high inter-correlations among the predictors” (p. 253). Multi-collinearity often results in inflated standard errors that render parameter estimates unstable. Furthermore, the existence of multi-collinearity makes it difficult to untangle effects of each predictor from the other.

Menard (2002) noted that concern about multi-collinearity is with the relationship among the predictor variables. In light of Menard’s note, analyses of correlation for continuous variables and association for categorical variables were conducted between the predictor variables.
A Pearson correlation matrix (Table 12), showed no statistically significant correlation between age and ASSET writing score \((r = -0.010, n = 485, p = .822)\) gender and placement \((r = -0.054, n = 489, p = .237)\), and age and placement \((r = 0.050, n = 489, p = .274)\). However, there were statistically significant correlations between age and gender \((r = -0.095, n = 489, p = .035)\) as well as placement and ASSET writing score \((r = 0.307, n = 485, p < .001)\).

Table 12

*Correlation matrix of the dependent and independent variables of the study*

<table>
<thead>
<tr>
<th>Completion</th>
<th>Placement</th>
<th>Gender</th>
<th>Age</th>
<th>ASSET Writing Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placement</td>
<td>0.065</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.186**</td>
<td>-0.054</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.037</td>
<td>0.050</td>
<td>-0.095*</td>
<td>1.00</td>
</tr>
<tr>
<td>ASSET Writing Score</td>
<td>0.154**</td>
<td>0.307**</td>
<td>-0.086</td>
<td>-0.010</td>
</tr>
</tbody>
</table>

Note: * correlation significant at 0.05 and ** correlation significant at 0.01 at two tails.

This background screening of predictors found significant inter-correlations among some of them; a binary logistic regression was run preliminarily with interaction terms. The dependent variable was academic success measured by course completion (successful/unsuccessful). The independent variables were student age, student gender, student ASSET writing score, student writing class placement, and their first-order interaction terms.
The preliminary results indicated that the interaction terms and the main predictor variables were not statistically significant. A final model without the interaction terms was run, and the results of the binary logistic regression, showing beta-weights, standard errors, and adjusted odds ratios are given in Table 14. Results of the logistic regression indicated that placement ($\chi^2(1) = .119$, ORa = .921, $p = .731$) and age ($\chi^2(1) = 1.391$, ORa = .980, $p = .238$) were not statistically significant predictors of completion.

On the other hand, the results showed that two variables among the four predictor variables did indeed predict student academic success in the developmental English writing courses. The two predictors of completion were gender ($\chi^2(1) = 15.600$, ORa = 2.399, $p < .001$) and ASSET writing score ($\chi^2(1) = 7.082$, ORa = 1.063, $p = .008$). The significance of gender suggested that holding the other predictor variables constant, females were almost twice as likely as males to be successful in the developmental English course in the community college under study.

With regard to the ASSET writing score, removing the effects of all other variables, a 10-point increase in the score was almost twice (specifically 1.877 – derived from raising the adjusted odds ratio 1.063 to a power of 10) as likely to increase the odds (or likelihood) of academic success in the developmental English writing course. However, because of the narrow range of the distribution of the scores, a 10-point increase may be too ambitious. Table 13 below shows the ASSET scores by 1-point increases with the associated likelihoods (odds) of academic success (or course completion). A gain of seven points or more would be associated with approximately twice the likelihood of academic success.
Table 13

*One-point increase in ASSET writing scores with associated likelihood or odds of academic success*

<table>
<thead>
<tr>
<th>Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odds</td>
<td>1.063</td>
<td>1.130</td>
<td>1.201</td>
<td>1.277</td>
<td>1.357</td>
<td>1.443</td>
<td>1.534</td>
<td>1.630</td>
<td>1.733</td>
<td>1.842</td>
</tr>
</tbody>
</table>

Table 14

*Results of the Binary Logistic Regression showing Beta-Weights, Standard Errors, and Adjusted Odds Ratios*

<table>
<thead>
<tr>
<th>Variables</th>
<th>( \beta )</th>
<th>S.E</th>
<th>Wald</th>
<th>df</th>
<th>( p )</th>
<th>( \text{Exp (}\beta\text{)}^* )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placement 1(^a)</td>
<td>.058</td>
<td>.284</td>
<td>.042</td>
<td>1</td>
<td>.838</td>
<td>1.060</td>
</tr>
<tr>
<td>Gender 1(^a)</td>
<td>1.000</td>
<td>.262</td>
<td>14.583</td>
<td>1</td>
<td>.000</td>
<td>2.719</td>
</tr>
<tr>
<td>Age</td>
<td>-.020</td>
<td>.017</td>
<td>1.329</td>
<td>1</td>
<td>.249</td>
<td>.980</td>
</tr>
<tr>
<td>ASSET Writing Score</td>
<td>.063</td>
<td>.023</td>
<td>7.396</td>
<td>1</td>
<td>.007</td>
<td>1.065</td>
</tr>
</tbody>
</table>

Score

<table>
<thead>
<tr>
<th>Placement 1 by Gender 1</th>
<th>-.457</th>
<th>.488</th>
<th>.875</th>
<th>1</th>
<th>.350</th>
<th>.633</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.422</td>
<td>.963</td>
<td>2.178</td>
<td>1</td>
<td>.140</td>
<td>.2414</td>
</tr>
</tbody>
</table>

* The \( \text{Exp (}\beta\text{)} \) are the adjusted odds ratios.

a. The 1 suffixing placement and gender refers to their levels with a code of 1 while the other was coded 0. For placement, English 0054 = 1 and for gender, Female = 1.

Dependent variable was coded with 1= success, 0 = non-successful.
Answers to the Research Hypotheses

Explicit answers to the research hypotheses based on this study’s analyses to be additionally discussed in Chapter Five are the following:

1. For the first research question, the researcher failed to reject the null hypothesis. Age was not predictive of the completion of a higher education developmental English writing course.

2. For the second research question, the researcher rejected the null hypothesis. Gender was found to be statistically significant. Gender was predictive of the completion of a higher education developmental English writing course in this study. That is, when other predictors were held constant, females were almost twice as likely as males to successfully complete the course.

3. For the third research question, the researcher rejected the null hypothesis. ASSET writing placement score was statistically significant. Precollege writing assessment test scores were predictive of the completion of a higher education developmental English course in this study. That is, removing the effects of all other variables, a 10-point increase in the ASSET writing score was almost twice as likely to increase the odds (or likelihood) of academic success in the developmental English course.

4. For the fourth research question, the researcher failed to reject the null hypothesis. English writing class placement was not predictive of the completion of a higher education developmental English writing course.
Summary

In this chapter, study results related to the research questions and the data analyses were presented. The introduction section included the research questions, the four research hypotheses drawn from the research questions, and information on data collection and the power analysis.

Following the introduction, study findings for each of the four predictors, student age, student gender, student ASSET writing score, and student class placement, and the dependent variable (the predicted), course completion, were presented in descriptive statistics. A description of significant testing results, including the categorical and continuous variables, and the logistic regression analyses were then given.

Chapter Five will further discuss the study’s findings and conclusions drawn from results in Chapter Four within the context of the literature presented in Chapters One and Two. Recommendations for future research related to predictors of academic success for developmental English community college students will conclude Chapter Five and the study.
Chapter Five: Summary, Conclusions, and Recommendations

Introduction

This chapter is organized into three different sections. It begins with a summary, providing a brief restatement of the problem, procedures used, and the four generated research questions. The second section includes conclusions and discussion relative to each of the four selected predictors of academic success in two developmental English writing courses at a small, rural Midwestern community college. That is, primary research summary findings are given separately in the second section for each of the four predictor variables—student age, student gender, precollege writing test score, and developmental class placement—as they relate to academic success (course completion)—and the context of the literature. Recommendations for future research, along with reference to limitations and delimitations, are given in the third and final section, concluding this chapter and the study.

Summary of the Research

Statement of the Problem

Higher education student developmental numbers alone are alarming. Though the exact percentages of higher education student developmental numbers vary, it has been reported that 75% of students entering community college require remediation. Sadder still is the estimate that 50% of these students do not return to community college for a second year. McCoy and Mejia (2012) referred to the higher education system as “at a crossroads” or a serious “tipping point,” one that requires cooperative efforts from not only secondary and higher education faculty and administrators, but also from
governmental policy makers and others, to better confront and attack the challenging issues (p. 1):

While more and more students are being urged to seek postsecondary education, an alarming number of students are entering colleges and universities ill equipped for the challenges ahead. At colleges across America, these opposing dynamics are putting a considerable strain (financially and otherwise) on these underprepared students and the institutions that support them. One of the greatest challenges that colleges, particularly community colleges, face in their endeavors to increase graduation rates is improving students’ success in developmental, or remedial, education programs---the courses that students without sufficient academic preparation must take before they can enroll in courses carrying college credit (p. 1).

Additionally, President Obama’s National 2020 Goal calls for increasing by at least 50% the number of college graduates nationwide. Thomas Bailey, Director of the Community College Research Center, Columbia University, summed up the higher education challenges related to the underprepared student with the following: “Addressing the needs of developmental students is perhaps the most difficult and most important problem facing community colleges” (Bailey & Cho, 2010, p. 46). Better solutions need to be explored, and continuing research will add to the knowledge base that may guide higher education administrators and faculty to better meet the needs of the academically underprepared college student.

So what does predict community college English developmental class/student academic success? Surprisingly, the literature, though beginning to grow, remains “scant”
in regard to specific predictive factors (Bailey, Jeong, & Cho, 2010, p. 1; Bahr, 2012; Porchea, Allen, Robbins & Phelps, 2010; Kavis, 2011; Perin, 2006). This study explored four predictors of academic success that may be predictive of the completion of a higher education developmental English course. The variables included student age, student gender, precollege ASSET writing test score, and developmental writing course placement.

**Procedures**

Students (488) who completed developmental English writing courses at a Midwestern community college during the 2011 fall quarter were the subjects for this study. Using secondary data, the researcher’s goal was to analyze the relationship in student age, student gender, college pretest writing assessment scores, and developmental English writing class placement as they may predict performance in two developmental English community college courses.

Binary logistic regression analyses and descriptive statistics were used to analyze the data to learn more about how each of the variables may or may not predict student academic success (course completion).

**The Research Questions**

The primary research question for this study was the following: Are selected predictors of academic success predictive as a group of the completion of a higher education developmental English writing course? The four general research questions that specifically emanated from the primary research question and the study findings related to them are as follows:
1. Age was not predictive of the completion of a higher education developmental English writing course.

2. Gender was predictive of the completion of a higher education developmental English writing course in this study. When other predictors were held constant, females were almost twice as likely as males to successfully complete the course.

3. Precollege writing assessment test scores were predictive of the completion of a higher education developmental English course in this study. Removing the effects of all other variables, a 10-point increase in the Asset writing score was almost twice as likely to increase the odds (or likelihood) of academic success in the developmental English course.

4. Developmental English writing class placement was not predictive of the completion of a higher education developmental English writing course. This was perhaps the most surprising finding for the researcher in terms of course completion. A discussion of study findings in regard to each of the specific predictor variables and the dependent variable, course completion (academic success) follows.

**Conclusions and Discussion**

**Student Age as a Predictor of Student Academic Success**

In the fall of 2011, 60% of the research site’s students were younger than 25 years of age. The literature confirmed the majority of college students fall into this age group (Porchea et. al. 2010; Karp & Bork, 2012; Scott-Clayton, 2012; Fike & Fike, 2008; NCES. 2011; NCES 2012; Jaggars & Hodara, 2011). Fike and Fike (2008) stated that
60% of first time in college (FTIC) students aged 25 and older enroll in community colleges. The majority of participants in this study were younger as their mean ages verified. In this study, findings indicated age was not significant as a predictor for the completion of a higher education developmental English writing course, but females in the study, on average, were older than their male counterparts. An independent t-test showed a significant statistical difference between gender with regard to age. That is, females (21.7 years) were statistically significantly older than their male (20.6 years) counterparts in the developmental English writing classes.

In terms of the dependent variable in this study, course completion, and one of the independent variables, age, students in the English 0121 class were older in mean age (21.1) than those enrolled in the English 0054 class in mean age (20.5). When completion between the two classes was compared, more students in the English 0121 course were successful with regard to course completion. The higher student numbers in English 0121 class placement and other factors mentioned in the literature may have explained part of the higher completion percentage for English 0121 students, rather than relationship to the minimal average age difference in mean ages. Fike and Fike (2008) also did not find age predictive of student retention in their much larger study of community college students. Median age for students in their study was 19 years. The Fike and Fike (2008) study findings related to how community college students are different from four-year college students, yet age and gender were not significant in their study.

Interestingly, in class placement at this study’s research site, English 0121 had 234 more students than English 0054. Again, the study analysis showed no statistical significance for age. Students enrolled in both classes are typically very close in age on
average. Other studies (Fike & Fike, 2008; Jaggars & Hodara, 2011; Scott-Clayton, 2012) defined older community college students as more than 25 years of age and cited risk factors, such as family and work responsibilities that may negatively affect degree of academic success. The two student mean ages in this study indicated most were in the younger group with little difference in mean age between the two classes and possibly the younger group still without student risk factors of those older. Because student placement in developmental English at the research site is based on ASSET writing score and a student writing sample, the opportunity for student misplacement could be a risk factor in placement for students of all ages (Bailey, 2008; Bailey & Cho, 2010; Scott-Clayton, 2012), possibly also explaining, in part, the insignificance of age as a study finding.

Student Gender as a Predictor of Student Academic Success

In the fall of 2010 at the research site, male students seeking degrees numbered 2,749, and 717 males were non-degree seeking, for a total of 3,466 males enrolled. For females in fall 2010, the numbers were 2,807 degree seeking and 326 non-degree seeking, for a total of 3,133 females enrolled. Thus, in total research site enrollment, males outnumbered females by 333. More females, however, were seeking degrees. The higher number of males enrolled at this institution was contrary to the trend (of higher female numbers) in the literature. However, the higher number of degree-seeking females rather than males at this institution fell right in line with the literature (NCES, 2011; NCES 2012).

This open-enrollment research site offers more than 50 associate degree programs and several short-term certificates, and is also a geographically convenient higher education institution for Appalachian residents who live and work in the region. The
higher number of male non-degree students attests to the fact that many of them attend school part-time in order to hold down jobs as well, stay local, and support families, characteristics that would also fall in line with the Appalachian research of Guiffrida (2008) and Howley (2009).

The literature supports the study finding that higher numbers of females than males are pursuing higher education degrees (NCES, 2011; NCES, 2012). In fact, *The Condition of Education, 2011* (NCES, 2011) documented a major gender shift since 1975 in a higher number of females (3% more) graduating from high school and earning bachelor’s degrees within six years (8% more) as compared to their male counterparts.

This was not the case, however, in the English 0054 and English 0121 classes. Males outnumbered females in both classes. A total of 191 females were enrolled in both English 0054 and English 0121 class sections during the 2011 fall quarter. A total of 298 males were enrolled in both English 0054 and English 0121 class sections during the same fall quarter. In the English 0054 Beginning Composition with Reading classes, 44 students (35%) were females, and 83 students (65%) were males. Males outnumbered females by 30%. In the English 0121 Beginning Composition class, 147 (41%) females and 215 (59%) males were enrolled. Again, males outnumbered females by 18%.

The logistic regression analysis showed a statistical significance in gender. Gender was predictive of the completion of a higher education developmental English writing course in this study. When other predictors were held constant, females were almost twice as likely as males to successfully complete the course. In spite of the higher numbers of males placed in the developmental English courses, and in terms of gender and total class completion (academic success), 80% of the female students successfully
completed the developmental English class while 20% females did not. For males, 62% successfully completed the English developmental course, and 38% males did not. Approximately 18% more females than males completed the course. What could explain the difference?

A Pearson Chi-Square test indicated no statistically significant association between gender and course/class placement. An independent t-test showed that there was a significant statistical difference in gender with regard to age, but there was no significant statistical difference in gender with respect to ASSET writing score. There was less than a one-point difference in the ASSET writing mean scores of male and female participants, so ASSET writing score alone did not likely explain the gender difference for the higher female completion rates. Findings from other research studies varied on student gender and its relationship to student academic success. Fike and Fike (2008) did not find gender to be predictive in retention in a much larger study of community college students with females (56%) outnumbering males (44%).

In a study by Porchea et. al. (2010) researchers found higher student achievement test scores as positively predictive, and females (60%) outnumbered males (40%) in that study. An interesting finding in Porchea et. al (2010) was that females tended to stay in school longer and were more likely to transfer than males. Males were more likely to stay in school for shorter periods of time than females in vocational technical schools, possibly to enter into the workforce more hastily after earning certificates or two-year degrees. This is a trend observed at the study research site with males expressing their desires to get training quickly in order to get back into the workforce.
In the Karp and Bork (2012) study, females (55%) outnumbered males in a smaller study (less than 200 participants) and with a focus more on student readiness and student roles in higher education. The researchers noted that students are individuals and concluded that personal student academic readiness is not always measured or reflected accurately by assessment test scores. Test scores are only a part of the total student picture. Jaggars and Hodara, (2011) pointed to student deficiencies in college-level critical thinking and complex reasoning skills as possible reasons for academic non-success for both males and females.

Additionally, Fike and Fike, (2008) suggested community college students are often different from traditional university students in that community college students are more likely to attend college part-time due to work and family obligations; community college students are more likely to be academically underprepared, and minority and low income students are more likely to attend community colleges. The research site’s students are community college students who could be affected by a number of the above risk factors, which could have explained, in part, the gender difference in course completion. Also, as stated previously in the NCES reports, more female students than males are completing a bachelor’s degree within six years. Future research studies further exploring the higher education academic gender gap may find more specific reasons for higher female academic success numbers.

**Precollege Writing Test Score as a Predictor of Student Academic Success**

ASSET writing scores were found to be statistically significant in this study. The ASSET precollege writing assessment test score was predictive of the completion of a higher education developmental English writing course in this study. Removing the
effects of all other variables, a 10-point increase in the ASSET score was almost twice as likely to increase the odds (or likelihood) of academic success in the developmental English writing course. Karp and Bork (2012), on the other hand, found the relationships of placement tests and course outcomes to be weak.

Scott-Clayton (2012) studied the predictive value of the COMPASS using the data of 42,000 students from a large, urban community college system. Study findings indicated the test was “more predictive in math than in English and more predictive of those who do well in college-level coursework than those who are likely to fail” (p. 32). In other words, it is one indicator, and as a result of findings the researchers advocated for the need for multiple measures of student assessment, including high school GPA, for best placing students in appropriate higher education classrooms.

The range of ASSET writing scores for placement into the two courses studied at the research site (37-40) is narrow (See Appendix A.) when compared to the actual score ranges of students who took the test. For example, the lowest ASSET writing score for the English 0054 class was 6; the highest score was 50. The mean score was 34.7. The lowest ASSET writing test score for the English 0121 class was 12; the highest score was 60. The mean score was 38.1. English 0121 students has a 3.36 higher mean score than the English 0054 students, with a greater range of scores overall. Because the students placed in English 0121 must have higher ASSET writing scores for the purpose of class placement, this finding would be an expected one. Interestingly, too, the difference in mean ASSET scores between the English 0054 and English 0121 developmental English classes was not that large, a 3.4-point higher difference in mean score for English 0121 students. Such a finding points to the need for multiple measures (Scott-Clayton, 2012;
Jaggars & Hodara, 2011; Bailey & Cho, 2010) in terms of class placement and assessment testing.

Obviously, the student range of scores indicates that some students were misplaced, based on placement scores alone, in both classes. Various reasons may have accounted for student misplacement or the appearance of student misplacement based on ASSET writing score alone (Please see Limitations and Delimitations of the Study.). The research site, aware of the placement concerns, continues to take measures to improve student placement accuracy, including the recent adoption of the ACCUPLACER writing test, with a wider range of scores for placement purposes. Currently, too, faculty are more consistently using student writing samples as an additional tool to find the best starting points for student instruction and placement. Research site findings pointed to the need for multiple measures (Scott-Clayton, 2012; Jaggars & Hodara, 2011; Bailey & Cho, 2010) in terms of class placement and assessment testing. Why so? When assessments are administered under the best of circumstances, with few testing distractions, the proper amount of time allotted, and with the student understanding the importance of giving the exam his/her best, the resulting test score is still, just one measure of that student’s abilities. It may or may not be an accurate starting point for instruction, which is the primary goal of the placement testing.

The literature also pointed to many problems with precollege placement assessment testing (Bailey & Cho, 2010; Jaggars & Hodara, 2011; Porchea et. al. 2010; Karp & Bork, 2012; Collins, 2008). More than 70% of the study research site’s students require some form of remediation at college entry based upon required placement testing.
results. The numbers alone are alarming for students whose test scores indicate the need for higher education remediation (Bailey, 2008; Bailey & Cho 2010; Collins, 2008).

Bailey and Cho (2010) also documented that many students have a variety of risk factors that may affect their test taking skills yet remain undetected in a lone test score. For example, students who have been out of school for an extended time may be rusty in skills and in need of some basic skills review before assessment testing. A lack of computer skills and language issues are other risk factors (Bailey & Cho, 2010).

Jaggars and Hodara (2011) stated students in many cases do not understand the importance of the placement testing, so they do not give the testing their best efforts. Some students say stress, test anxiety, or fatigue affect their test scores. Test scores alone do not necessarily place students correctly in classes. Students at the research site have mentioned some/all of the factors above, often saying they are not good at taking tests, or they were pressed for time during the precollege testing and did not have time to finish testing. The limitations and delimitations of this study listed other factors that may play a role in relationship to assessment placement testing. It seems that more than one assessment measure, providing additional insights for student instructional starting points, makes sense.

But what about the 10-point difference in ASSET writing score? Because of the narrow range of the distribution of the scores, a 10-point increase may be too ambitious. Table 13 showed that a gain of seven points or more would be associated with approximately twice the likelihood of academic success. The table does show clearly that with each one-point increase in ASSET score, the likelihood or odds of completing the
course grew. The narrow range of the ASSET scores for placement was, in part, why the research site considered another test, ACCUPLACER, which is now being used.

Plot graphs (See Appendices C, D, E, and F.) for the continuous predictor variables of ASSET writing score and student age by completion (both for the two classes separately and for the two classes combined/successful/non-successful) show some interesting findings. Most striking is the fact that many students in both classes were misplaced based on the ASSET score alone. A few students who scored above the cutoff scores still did not complete the class, possibly a class attendance issue at the research site that could not be addressed in this study, but is an issue at the research site that should be considered in relationship to course completion. Future studies should be conducted to address that possible connection to course completion and the other predictor variables.

The graphs confirmed that the majority of students in both classes, aged 20 years and younger, had higher ASSET writing scores than their nontraditional student counterparts and completed the courses in higher numbers. The higher number of students enrolled in ENGL 0121 also accounted for the greater number of nontraditional students in that class. All students, but especially nontraditional students, who are more likely than not to have been away from academia for a period of time, could benefit from “boot camps” or other opportunities intended to help them review skills before testing. One would speculate student scores would be higher after such opportunities, and class placement testing would indicate more accurate instructional starting points for these students as a result.
Interestingly too, and as noted previously, the distribution in placement scores between the two classes was not that wide; about 30 students in the ENGL 0054 class with reading, based on that one ASSET writing score alone, scored in the same testing range as their ENGL 0121 counterparts, leading to questions regarding their initial course placement. Having said that, some students prefer to have the additional semester hour to review in ENGL 0054 and elect to be enrolled in that class. Faculty also may recommend that students be placed in one class or the other, based on their work with students, so placement at the research site has some concerning, convoluted issues for all involved. The significance of the 10-point difference, however certainly reinforces the need for valid, reliable, field-tested assessment tools and multiple testing measures for more precise placement for all students. Additionally, opportunities for students to have time to do some directed review of test-taking strategies before placement testing could prove beneficial. Certainly, too, students should understand the importance of placement testing and what the test results may bode for their academic futures in terms of classes, effort, time, and money.

**Writing Class Placement as a Predictor of Student Academic Success**

Bailey, Jeong, and Cho (2010) studied the exit points of students in their referred sequences of remedial courses using data from the Achieving the Dream Community Colleges Count Initiative. Part of the study sample included approximately 250,000 students from 57 colleges in seven states. In terms of class placement, this study had surprising, important implications for higher education and the importance of getting students where they can most benefit from instruction. One of the major findings from this 2010 study was that 45% of students, ignoring advisors or placement instructions,
skipped their originally assigned developmental reading sequence and enrolled directly into gatekeeper courses. Of those who did so, approximately 72% went on to pass the gatekeeper course. But only 27% of the students who followed through as assigned with their remediation sequence eventually completed the gatekeeper course. Bailey, Jeong, and Cho (2010) speculated that either developmental sequences are too long and create “obstacle courses for students that outweigh benefits” or students know more about their academic skills than do their student advisors (p. 261). Such findings indicate that student placements based on assessments still have much room for revision and refinement in getting students where they need to be; the system is far from perfect.

The most surprising finding to the researcher in this study, however, was developmental English writing class placement in regard to course completion. One would expect that the English 0054 course with the extra hours of reading instruction would have the higher student completion rate. However, this study did not find that to be the case. Class placement was not statistically significant. Unlike this study, Fike and Fike (2008) did find developmental reading and writing classes as positive correlates for retention. However, more than half of the students in the 2008 study still did not return for their second fall semester, attesting to short-lived retention.

A couple of reasons may be behind class placement not being significant at the research site of this study. A total of 488 students were enrolled in 36 sections of two developmental English writing classes during the fall of 2011. English 0054, Beginning Composition with Reading is a six-hour developmental writing course with reading instruction and had 127 students enrolled in 9 class sections. Interestingly, student-teacher ratio for all sections of both classes averaged one teacher for 14 students in each
section. The lower student numbers per section would afford teachers in all sections more one-on-one or small-group instructional time with all students, which could explain less difference among the classes in terms of class placement alone.

English 0121, Beginning Composition, is a four-hour developmental writing course with no reading instruction and had 361 students enrolled in 27 class sections. Students in the 0121 classes had a higher student course completion by 6.8%. The student completion success rate for the English 0054 class was 63.8%; the student completion success rate for the English 0121 class was 70.6%. Students in the English 0121 course have higher ASSET writing scores than students placed in English 0054. Because ASSET writing score did prove a significant predictor in this study, the higher student success rate in English 0121 would also make sense.

A total of 152 (31%) students from all sections of both classes were unsuccessful in completing the course. A total of 336 (69%) students from all sections of both classes were successful in completing the course. Students who successfully complete either of these two classes go next to the English gatekeeper course, the first college credit one at the research site. The close to 70% total completion rate for both classes is relatively high when compared to the retention numbers reflected in the research literature (Bailey, 2008; Bailey, 2009; Bailey & Cho, 2010; Bahr, 2012; Collins, 2008; Jenkins, 2008; Gonzalez, 2010) and has increased dramatically in the last five years at the research site with the hiring of a reading and writing developmental coordinator, working with a dedicated developmental faculty. A new institutional research office at the site will hopefully begin to better track students and provide growing data for course and program completion rates.
Perhaps very interesting, too, is the finding that even with the much larger number of students enrolled in the English 0121 class, students whose ASSET writing test scores were originally higher in terms of class placement, the difference between total percentages of those completing English 0054 (64%) with those completing English 0121 (70%) is not that large (6%). The closeness in those completion percentage rates may indicate that the students enrolled in the two classes were not vastly different in terms of their academic abilities, in spite of test scores that placed them in one class or the other. Or, instruction was excellent for meeting most student academic needs and/or the smaller class sizes proved beneficial to course completion. Or perhaps placement test scores were not accurate or truly indicative of some students’ abilities/starting point for reasons previously addressed in this study.

Recommendations

**Course Completion (Academic Success)—How Do Students Get There?**

Good news for the research site is that the 69% completion rate for enrolled students in both developmental English classes looks promising when large numbers of students, more than 70% of students entering this community college research site, need some type(s) of academic remediation. *The Condition of Education 2011* report by the National Center for Education Statistics (NCES) documented in 2010 that only 27% of males and 35% females, aged 25 to 34 years, earned bachelor’s degrees within six years. Jenkins (2008) reported that students who are able to stay in school for two full semesters (referred to as the “tipping point”) are more likely to be successful than those who are unable to stay in school for two full semesters. Further future research would follow these research site students, in addition to others like them nationally, to see how many
successfully pass the tipping point and continue to be academically successful, hopefully through graduation and beyond.

Collins (2008) advocated for states and higher education institutions to set more consistent entrance standards and cutoff scores, part of the mission of the Achieving the Dream States’ initiative. Ohio is part of that initiative. The Ohio College Readiness Advisory Council is currently working to set consistent statewide standards in cutoff scores and to better define remediation efforts. Keeping in mind that multiple measures are best, more consistent standards across the state would take some of the guesswork away from institutions of higher education regarding assessment scores and developmental course placement as well as provide more consistent data for future research. Doing so, it seems, would ring true for all states across the nation, a first step at getting everyone on the same page in terms of recognizing and addressing directly the challenging issues that surround higher education developmental education.

Students would benefit because developmental testing guidelines and cutoff scores would match up, limiting the number of students labeled as “developmental” at one institution and possibly not, at another nearby institution. Student transfers from institution to institution can become convoluted for all involved because of the different credit/noncredit courses offered in varying curricular sequences among different institutions. Some institutions have longer “developmental pipelines” than others. As it stands now, everyone appears to be “reinventing the developmental wheel,” so to speak, costing states and higher education institutions across the country time, money, and duplications of efforts, rather than unity of efforts to zero in on programs and methods that work best for all.
Achieving the Dream is a national initiative whose goal, in part, is to bridge some of the gaps in developmental education practices and data collection among the states, which looks promising, having the support of the Bill and Melinda Gates Foundation, The Lumina Foundation, and others.

As models for better meeting the needs of the academically underprepared continue to refine practices and work to improve higher education developmental education, research revolving around such models continues. Two such models now garnering some national attention are Contextualized Learning Interventions and Accelerated Learning Programs.

Delores Perin (2006) has conducted some contextualized instruction research studies and suggested it shows potential for improving student literacy skills. The premise behind contextualized instruction is that students learn more when they have a vested interest in what is being taught. For example, Fire Science students enrolled in a developmental English course could be encouraged to sharpen their writing skills by writing about firefighting in the English class, using a high interest topic directly related to their vocational technical training. There are many ways to contextualize instruction to varying degrees that are likely to maintain student interest (Perin et. al. 2011). The research site currently has an English/Fire Science pilot project using contextualized instruction with promising results and increasing student retention rates. Data results for the last four years indicate that for students who attend both the technical and the English class consistently, 92% of them will be successful in passing the developmental English course. (Unlike the data used for this study, that 92% success rate excludes students who stopped attending, withdrew, or were no-show students. When student attendance,
student withdrawals, and no-shows are taken into account, the success rate hovers around 70%. Results and positive student feedback continue to encourage expansion of contextualized instruction at this higher education institution.

Likewise, Davis Jenkins et. al. (2010) examined the Community College of Baltimore County’s Accelerated Learning Program (ALP). Accelerated Learning has many variations, but the one in this study mainstreamed developmental students into an English gatekeeper course (first college-credit course) and provided an additional ALP class of support instruction for these students. Improved retention in that gatekeeper English course was a study finding, but the relationship to further student persistence and long-term retention was not evident. However, ALP instruction was found to be cost effective. With the current emphasis on shortening developmental course pipelines and the shrinking funding for developmental programs, ALP holds promise with future research.

Future research in developmental education will continue to educate faculty, higher education administrators, and state leaders about how to better address the challenges of developmental higher education. The researcher has openly acknowledged the limitations and delimitations of this study. Because the results of this study are from only one community college, caution should be advised when generalizing conclusions to other institutions. The research site and others may benefit from the “local generalizability” Brooks (2011) addressed. Also, this study did not account for non-academic factors that may affect course completion, so external validity additionally remained a concern. However, the research findings did add to the body of current research studies meant to address and discover more about what predicts the academic
success of community college students enrolled in developmental reading and writing courses. Conclusions were addressed as related specifically to each of this study’s four independent variables including student age, student gender, precollege writing test score and developmental English course placement, and their relationship (or not) to the dependent variable, course completion.

Two predictors of the four in this study proved significant: student gender and student ASSET writing score. Through this study, the researcher affirmed the importance of learning more about the predictive variables of student academic success. However, keeping the importance of that research in mind, it must also be remembered that predictive variables are only a part of the total student picture. Students are human beings, each individual unique and subject to his/her own academic strengths and challenges. Therein, is the crux of many of the problems associated with educating students in general, but the challenges, as this study has elaborated, are especially complicated in developmental higher education. As educators, it is our job, whenever feasible, to meet students where they are academically on the first day they enter our classrooms, and then lead them as far as we possibly can, closer to their academic goals. Sometimes as developmental educators, we walk baby steps beside them, and sometimes they take giant leaps beside us. This study, admittedly on a small scale, explored how complex and challenging the walk can be.
References


Concordant ACT Assessment and ASSET Scores (Rep.). (1999). Iowa City, IA: ACT.


Rutschow, E., Schneider, E., & MDRC. (2011). *Unlocking the gate: What we know about improving developmental education* (Rep.).


doi: 10.1080/10668920903385806


U.S. Department of Education. (2011, March 18). *Meeting the nation's 2020 goal: State targets for increasing the number and percentage of college graduates with degrees*. 


### Appendix A: Student Class Placement Chart

#### Placement Test Interpretation

<table>
<thead>
<tr>
<th>Reading</th>
<th>Course #</th>
<th>ACCUPLACER</th>
<th>ASSET</th>
<th>COMPASS</th>
<th>ACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ABLE Program&quot;</td>
<td></td>
<td>0-31</td>
<td>32-33</td>
<td>0-55</td>
<td>0-12</td>
</tr>
<tr>
<td>Fundamental Composition with Reading</td>
<td>ENGL 0044</td>
<td>32-52</td>
<td>34-35</td>
<td>56-69</td>
<td>13-14</td>
</tr>
<tr>
<td>Beginning Composition with Reading</td>
<td>ENGL 0054</td>
<td>53-70</td>
<td>36-39</td>
<td>70-84</td>
<td>15-20</td>
</tr>
<tr>
<td>No Reading Needed</td>
<td></td>
<td>71/above</td>
<td>40-50</td>
<td>85-100</td>
<td>21/above</td>
</tr>
</tbody>
</table>

- Any student who is in the above assessment reading score range must be placed in either the "ABLE Program or ENGL 0044 or ENGL 0054. However, the writing assessment score (below) determines which class ("ABLE, 0044 or 0054) the student should be placed in.
- If a student tests out of reading but not "ABLE, ENGL 0044 or ENGL 0054 for writing, they should be placed in ENGL 0121.

<table>
<thead>
<tr>
<th>Writing</th>
<th>Course #</th>
<th>ACCUPLACER</th>
<th>ASSET</th>
<th>COMPASS</th>
<th>ACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ABLE Program&quot;</td>
<td></td>
<td>0-40</td>
<td>0-63</td>
<td>0-14</td>
<td>0-10</td>
</tr>
<tr>
<td>Fundamental Composition with Reading</td>
<td>ENGL 0044</td>
<td>41-52</td>
<td>34-36</td>
<td>15-23</td>
<td>11</td>
</tr>
<tr>
<td>Beginning Composition with Reading</td>
<td>ENGL 0054</td>
<td>53-71</td>
<td>37-38</td>
<td>24-45</td>
<td>12-14</td>
</tr>
<tr>
<td>Beginning Composition</td>
<td>ENGL 0121</td>
<td>W1</td>
<td>72-84</td>
<td>39-40</td>
<td>46-60</td>
</tr>
<tr>
<td>Composition I</td>
<td>ENGL 1122</td>
<td>W2</td>
<td>85-120</td>
<td>41/above</td>
<td>61/above</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Math</th>
<th>Course #</th>
<th>ACCUPLACER</th>
<th>ASSET</th>
<th>COMPASS</th>
<th>ACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;ABLE Program&quot;</td>
<td></td>
<td>26/below</td>
<td>26/below</td>
<td>26/below</td>
<td>0-14</td>
</tr>
<tr>
<td>Basic Math</td>
<td>MATH 0044</td>
<td>M0</td>
<td>24-55</td>
<td>26-38</td>
<td>27-40</td>
</tr>
<tr>
<td>Elementary Algebra</td>
<td>MATH 0054</td>
<td>M1</td>
<td>56-63</td>
<td>59-40</td>
<td>41-60</td>
</tr>
<tr>
<td>Intermediate Algebra</td>
<td>MATH 1108</td>
<td>M2</td>
<td>64/above</td>
<td>41/above</td>
<td>61/above</td>
</tr>
</tbody>
</table>

- At this time, the "ABLE Program is optional. Students should be carefully advised as to why this program would be beneficial to them. Financial Aid is not available for students who opt to go through this program (because they are not charged for this).  

*Unformatted 3/14/12*
Appendix B: Ohio University IRB Approval

A determination has been made that the following research study is exempt from IRB review because it involves:

Category 1. research conducted in established or commonly accepted educational settings, involving normal educational practices

Project Title: Variables that May Predict Student Success in a Community College Communications 1 Course

Primary Investigator: Kathy Lynne Pittman

Co-Investigator(s):

Advisor: James Salzman
(if applicable)

Department: Teacher Education

Robin Stack, CIP, Human Subjects Research Coordinator Date: Oct. 19, 2011
Appendix C: Scatter Plot Graph for ENGL 0054, ASSET Writing Score by Age for Completion
Appendix D: Scatter Plot Graph for ENGL 0121, ASSET by Age for Completion

![Scatter Plot Graph](image-url)

**Placement: ENGL 0121**

**Completion**
- Unsuccessful
- Successful

**Axes:**
- **ASSET Writing Score**
- **Age (Yrs)**

The graph shows a scatter plot with two categories: unsuccessful and successful completions, plotted against age and ASSET writing score.
Appendix E: Scatter Plot Graph for Successful Completers for Both Classes
Appendix F: Scatter Plot Graph for Non-Completers for Both Classes