IMPACT OF ADVANCED PLACEMENT STUDENT SELECTION MODELS ON ACADEMIC ACHIEVEMENT AND STAKEHOLDER PERCEPTIONS OF PROGRAM EFFECTIVENESS

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ABSTRACT

This research study was designed to examine the relationship between the use of open and closed student selection systems for the enrollment of students in Advanced Placement (AP) educational services at the high school level and student academic achievement. The quantitative portion of this study examined the relationship between the use of a particular student selection system and stakeholder perceptions of a school’s educational environment, while the qualitative portion examined the stakeholder perceptions of student selection systems.

In order to accomplish these goals student scores on AP examinations from the 2010-2011, 2011-2012, and 2012-2013 academic school years were collected from high schools across the state of Georgia. Based on the analysis of course-level AP examination data, it was determined that there was strong evidence of a statistically significant positive relationship between student academic achievement and the use of a closed enrollment student selection system.

The qualitative portion of the study involved interviews with students, teachers, and AP coordinators. The interviews were examined for information concerning stakeholder perceptions related to the effectiveness of student selection systems and their relationship to a school’s educational environment. After reviewing the qualitative data, it became apparent that the use of a closed student selection system could not explain the totality of a selection system’s possible impact. Four important factors emerged: the need to consider the choice of a student selection system in concert with the basic organizational vision school stakeholders have for the school
and its AP program, a need to involve all organizational stakeholders in the course selection process, the establishment of strong, positive relationships between students and teachers, and a need to make certain that students receive academically rigorous preparation before entering the AP program.

This led to the creation of four recommendations for action aimed at informing school leaders about possible practices that might help increase student academic achievement in AP courses. The four recommendations were to involve all stakeholders in the course-selection process, to establish strong, positive relationships between students and teachers, to insure that students receive academically rigorous preparation, and to create bridging opportunities for academically unprepared students.
DEDICATION

To my wife, Laura. Without your love and support this journey would be meaningless.
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# TABLE OF CONTENTS

ABSTRACT ................................................................................................................................. iv
DEDICATION ............................................................................................................................... vi
ACKNOWLEDGEMENTS ............................................................................................................. vii
LIST OF TABLES ......................................................................................................................... xi
LIST OF FIGURES ....................................................................................................................... xii

CHAPTER

I. INTRODUCTION ...................................................................................................................... 1

  Statement of the Problem ......................................................................................................... 4
  Purpose of the Study ............................................................................................................... 4
  Research Questions .............................................................................................................. 6
  Rationale for the Study ......................................................................................................... 7
  Theoretical/Conceptual Framework ..................................................................................... 8
  Significance/Importance of the Study .................................................................................. 10
  Terms................................................................................................................................... 11
  Methodological Assumptions ............................................................................................. 13
  Delimitations of the Study .................................................................................................... 13
  Limitations of the Study ....................................................................................................... 14

II. LITERATURE REVIEW ......................................................................................................... 16

  The Changing Focus of Curriculum in American High Schools ........................................ 16
  The Development of Advanced Placement and Honors Courses ..................................... 18
  The International Baccalaureate Program ......................................................................... 23
  The History of the Advanced Placement Program ........................................................... 27
    The Evolution of the AP Program ...................................................................................... 32
    The Expansion of the AP Program ................................................................................... 34
    Current Status of the AP Program ................................................................................... 39
    Current Teacher Qualifications for the AP Program ..................................................... 42
    The Dwindling Credibility of the AP Program: Student-Centered Issues .................... 44
    The Dwindling Credibility of the AP Program: Examination-Scoring Issues .............. 45

vii
Research Question 2: ................................................................. 119
Additional Analyses of the AP Examination Data: ......................... 121
Examination of School Size and AP Examination Pass Rates: ........ 122
Examination of School Location and AP Examination Pass Rates: .... 123
Examination of School Socio-Economic Status and AP Examination Pass Rates: 124
Overview of the Qualitative Portion of the Research Study: ............. 126
Description of the Qualitative Sample: ........................................ 127
Analysis of the Interview Data: .................................................. 132
Research Question 3: Students: ................................................... 132
Importance of Teachers: ............................................................. 133
Academically Challenging Environment: ...................................... 134
Student Selection Policies: Open: .............................................. 135
Student Selection Policies: Closed: ............................................ 137
Research Question 4: Teachers: ................................................... 138
Importance of Parent Involvement: .............................................. 138
Student Selection Policies: Open: .............................................. 139
Student Selection Policies: Closed: ............................................ 141
Research Question 5: AP Coordinators: ...................................... 142
Importance of AP Teachers: ...................................................... 142
Importance of AP in the College Admission Process: ...................... 143
Academically Unprepared Students: .......................................... 144
Student Selection Policies: Open: .............................................. 145
Student Selection Policies: Closed: ............................................ 146
Summary: ............................................................................. 146

V. DISCUSSION ........................................................................ 149

Summary: ............................................................................. 149
Interpretation of Findings: .......................................................... 152
Implications of the Analysis of the AP Examination Score Data: .... 153
Implications of the Qualitative Analysis of the Data: ...................... 155
The Relationship Between a School’s Vision for its AP Program and Selection Systems: .................................................. 156
The Importance of Stakeholder Involvement: ................................ 157
The Importance of Academically-Rigorous Student Preparation: ..... 161
The Relationship Between Selection Systems and the Size of a School’s Student Population: .................................................. 163
Implications of the Additional Examinations of AP Examination Data: 164
Summary of the Findings: ............................................................ 166
Limitations of the Research Study: .............................................. 167
Research Sample Limitations: .................................................... 167
Student Participant Limitations: .................................................. 168
Teacher Impact Limitations: ...................................................... 169
Student Background Limitations: .............................................. 169
Recommendations for Action: ..................................................... 170
Recommendation One: Involve All Stakeholders in the Course-Selection Process ................................................................. 170
Recommendation Two: Encourage Positive Student-Teacher Relationships........ 171
Recommendation Three: Insure Students Receive Academically Rigorous Preparation ...................................................................................... 172
Recommendation Four: Prepare for Charges of Elitism ........................................ 173
Recommendations for Additional Research ................................................................................................................................. 174
Conclusion ......................................................................................................................................................................................... 177
REFERENCES ................................................................................................................................................................................................. 180

APPENDIX

A. INSTITUTIONAL REVIEW BOARD FOR HUMAN SUBJECTS ....................... 188
B. AP STUDENT INTERVIEW QUESTIONS .................................................... 190
C. AP TEACHER INTERVIEW QUESTIONS ..................................................... 192
D. AP COORDINATOR INTERVIEW QUESTIONS ........................................... 195
E. PERMISSION TO USE DR. WILLIAMS’ INTERVIEW QUESTIONS ............. 198
F. INVITATION TO PARTICIPATE LETTER - STUDENT ................................ 200
G. INVITATION TO PARTICIPATE LETTER - TEACHER ............................... 203
H. INVITATION TO PARTICIPATE LETTER – AP COORDINATOR ............... 206
I. PARENTAL CONSENT LETTER FOR MINOR STUDENT AND STUDENT’ ASSENT ........................................................................................................ 209
J. SCHOOL SUPERINTENDENT AGREEMENT TO PARTICIPATE LETTER .... 212
K. HIGH SCHOOL PRINCIPAL AGREEMENT TO PARTICIPATE LETTER .... 216

VITA ................................................................................................................................. 219
LIST OF TABLES

4.1 Number of High Schools Using an Open or Closed Enrollment System Grouped by Size of the Schools’ Total Student Population ................................................................. 95

4.2 Number of High Schools Offering Each AP Course ................................................................. 109

4.3 Number of Passing and Non-Passing AP Examinations.......................................................... 111

4.4 Cross-Tabulation of Passing and Non-passing AP Examination Student Scores and Student Selection Models......................................................................................... 113

4.5 Number of High Schools Using an Open or Closed Enrollment System Grouped by Size of the Schools’ Total Student Population ................................................................. 121

4.6 AP Examinations Grouped by Overall High School Student Population and the Number of Examinations Receiving a Passing or Non-Passing Score ................................ 122

4.7 AP Examinations Grouped by School Geographic Location (Rural/Urban) and the Number of Examinations Receiving a Passing or Non-Passing Score ....................... 124

4.8 AP Examinations Grouped by the Number of Students Eligible for the Federal Free and Reduced Lunch Program at Each High School and Numbers of AP Examinations Receiving a Passing and Non-Passing Score ....................... 125

4.9 Statistical Comparison of High School Student Populations in the Qualitative Research Sample ............................................................................................................................. 129
LIST OF FIGURES

4.1 Quantitative Research Study Demographic Information ........................................ 97
4.2 Ethnic Composition of Quantitative Research Sample ........................................ 98
4.3 Chart of High School Descriptive Statistics with an Emphasis on
    High School Socio-Economic Status ..................................................................... 102
4.4 Chart of High School Descriptive Statistics with an Emphasis on the
    School Location (Rural/Urban) of the High School ............................................. 103
4.5 Qualitative Research Study Demographic Information ......................................... 130
4.6 Ethnic Composition of Qualitative Research Sample ........................................... 131
CHAPTER I
INTRODUCTION

The College Board’s Advanced Placement (AP) program was devised shortly after the end of the Second World War with the notion of engaging the nation’s top students in challenging academic coursework. The program’s original intent was to focus only on students at the nation’s most elite high schools and even then only the elite of the elite were meant to engage in this new advanced educational program (Casement, 2003; Sadler, Sonnert, Tai, & Klopfenstein, 2010; Schneider, 2009).

The AP program was designed to offer college-level coursework to students at the high school level. The coursework not only allowed students to engage in a more rigorous curriculum than was normally available at the high school level, but also gave students the opportunity to earn post-secondary credits from participating post-secondary institutions ("AP report to the nation 2012," 2012; Rothschild, 1999; Sadler et al., 2010; Sadler & Tai, 2007a; Schneider, 2009).

The current history of the AP program in the United States is a fascinating story about the struggle between two equally determined factions in the educational world, those who are constantly working to secure equal opportunity for all and those who wish to make certain that qualified students receive high-quality academic instruction. This tension over the purpose of the AP program in American high schools has become the center of a wide-ranging debate within
our nation’s educational system over the course of the last 40 years (Casement, 2003; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hansen et al., 2006; Iatarola, Conger, & Long, 2011).

For the past twenty years the federal government, and to a much greater extent state governments, have been increasing the amount of funding programs targeting the nation’s highest performing students receive each year. This has been achieved in large part through funding directed at increasing the reach of the AP program in our nation’s high schools. Hundreds of millions of dollars have been spent over the last two decades to train teachers, purchase AP materials, and pay fees for student year-end examinations (Schneider, 2009). This continuing massive expenditure of educational dollars has made it clear that educators must work to determine the most effective methods for delivering this high-level, rigorous academic curriculum to the nation’s most academically-talented students (Callahan, Foust, & Hertberg-Davis, 2009; Flores & Gomez, 2011; Geiser & Santelices, 2004; Gewertz, 2008; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Keng & Dodd, 2008; Klopfenstein, 2004a, 2004b; Mathews, 2009; Mattimore, 2008; McNeil, 2007; Posthuma, 2007; Reis, 2003; Rogers, 2002; Rothschild, 1999; Sadler & Tai, 2007b; Schneider, 2009; Thompson & Rust, 2007).

The majority of schools in the United States currently use one of two student selection models when determining enrollment criteria in secondary AP programs, open and closed student selection systems. An open enrollment student selection model allows any student to enroll in AP courses with no or limited prerequisites, while a closed enrollment student selection model is one in which a school or district decides which students are allowed to take part in AP coursework based upon predetermined criteria (Flores & Gomez, 2011; Gewertz, 2008; Hallett & Venegas, 2011). Each of these two approaches to student selection has potential benefits and
potential deficiencies. There has been a significant amount of research on this issue without finding a clear, best approach to the student selection process (Flores & Gomez, 2011; Geiser & Santelices, 2004; Gewertz, 2008; Hallett & Venegas, 2011; Keng & Dodd, 2008; Klopfenstein, 2004b; Mathews, 2009; Mattimore, 2008; McNeil, 2007; Posthuma, 2007; Reis, 2003; Rothschild, 1999).

Determining the best manner in which to deliver AP coursework and the best way to select students for participation in these classes has become increasingly important due to the growing amount of resources being funneled into these types of programs over the last 20 years. One way to help maximize these important educational funding dollars would be to investigate which of the two major AP student selection models (open or closed student selection systems) best serves the needs of our nation’s students and could help to increase and maintain student participation and academic success in high-level coursework (Callahan et al., 2009; Flores & Gomez, 2011; Geiser & Santelices, 2004; Gewertz, 2008; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Keng & Dodd, 2008; Klopfenstein, 2004a, 2004b; Mattimore, 2008; McNeil, 2007; Posthuma, 2007; Reis, 2003; Rogers, 2002; Rothschild, 1999; Sadler & Tai, 2007b; Schneider, 2009; Thompson & Rust, 2007).

This research study examined the use of open and closed student selection systems as they relate to high school AP programs. The goal of the research study was to investigate ways in which high schools select students for inclusion in advanced educational programs and to explore the issue for possible links and relationships between school’s chosen student selection system and student academic achievement. In addition, this research study examined stakeholder perceptions concerning the effectiveness of student selection systems.
Statement of the Problem

Over the last forty years there have been numerous articles and research studies that have focused on the best practices and methods for the delivery of AP educational services to our nation’s high school students. At the time of this study, there was still no consensus concerning the best model for the selection of students to take part in the rigorous academic curriculum offered through the College Board’s AP program. This lack of consensus has often left educators and parents at odds regarding who is allowed in the programs, the level of academic rigor, the expenditure of resources, and the ultimate benefit of participation in the AP program in their schools (Callahan et al., 2009; Flores & Gomez, 2011; Geiser & Santelices, 2004; Gewertz, 2008; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Keng & Dodd, 2008; Klopfenstein, 2004a, 2004b; Mattimore, 2008; McNeil, 2007; Posthuma, 2007; Reis, 2003; Rogers, 2002; Rothschild, 1999; Sadler et al., 2010; Sadler & Tai, 2007b; Schneider, 2009; Thompson & Rust, 2007). In order to do this, both quantitative and qualitative data from select schools across the state of Georgia were collected, examined, and the results analyzed.

Purpose of the Study

The purpose of this study was to determine which of the two major models for the selection of students to receive AP educational services at the secondary level (open and closed student selection systems) best served the needs of students and helped to increase student academic achievement in AP programs. The research study also explored the impact of the two major student selection models on the perceptions of school-level organizational stakeholders concerning the chosen model’s effectiveness and impact on the school, its students, and the
faculty. Both of these issues were important considerations due to the large amounts of educational funding AP programs were receiving across the nation, as well as issues surrounding the need to understand how to better serve students enrolled in AP programs (Callahan et al., 2009; Flores & Gomez, 2011; Geiser & Santelices, 2004; Gewertz, 2008; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Keng & Dodd, 2008; Klopfenstein, 2004a, 2004b; Mattimore, 2008; McNeil, 2007; Posthuma, 2007; Reis, 2003; Rogers, 2002; Rothschild, 1999; Sadler et al., 2010; Sadler & Tai, 2007b; Schneider, 2009; Thompson & Rust, 2007).

Supporters of both student selection systems agreed on the need to provide access to advanced educational opportunities to both male and female students and students from every ethnic and socio-economic group (Burney, 2010; Flores & Gomez, 2011; Hallett & Venegas, 2011; Iatarola et al., 2011; Klopfenstein, 2004a, 2004b; Sadler et al., 2010; Scott, Tolson, & Lee, 2010; VanSciver, 2006). However, the expansion of advanced educational programs, like the College Board’s AP program, faced many barriers to its growth. The literature consistently pointed to two major obstacles to the expansion of advanced educational curricula. First, the lack of quality teachers available for placement in AP classrooms was a major hindrance to the expansion of AP educational services (Callahan et al., 2009; Casement, 2003; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011; McNeil, 2007; Tat, 2013). The College Board recommended that teachers teach a course in a given subject area at the standard level for at least three years before being placed in an AP classroom ("AP report to the nation 2012," 2012). In addition, a little less than 50% of high school AP teachers nationally had at least a master’s degree in the AP subject area they taught. This meant that the majority of high school AP teachers did not meet the basic employment criteria for the
vast majority of teaching positions at postsecondary institutions (Casement, 2003). The second major limiting factor for organizations attempting to expand access to AP programs was the non-alignment or misalignment of elementary and middle school curriculum. The misalignment of educational curriculum could hamper AP expansion by limiting the number of students who came to high school prepared for the rigor and academic challenges of AP coursework (Barnard-Brak, McGaha-Garnett, & Burley, 2011).

The data collected for this research study was used to evaluate the potential relationship between open and closed enrollment student selection systems and student academic achievement, as well as the perspectives of organizational stakeholders regarding the overall effectiveness of the school’s AP program.

**Research Questions**

The purpose of the study was to examine the relationship between open and closed student selection models for high school AP programs and student academic achievement, as well as the perspectives of various organizational stakeholders concerning student selection methods for enrollment in school-based AP programs. The following research questions were used to guide this study.

1. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and academic achievement of students enrolled in AP programs as determined by scores received on year-end AP examinations collected over a three-year period?

2. Is there a connection between the size of a school’s student population and the type of
student selection model used to determine student participation in school wide AP programs?

3. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of students concerning their personal academic achievement and level of educational satisfaction?

4. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of teachers concerning their students’ academic achievement and the educational environment of the school?

5. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of AP coordinators concerning their students’ academic achievement and the educational environment of the school?

**Rationale for the Study**

Limited empirical studies were found that focused on the relationship between the two major student selection systems and student academic success and the perspectives of organizational stakeholders concerning their high school’s AP programs. The proper and appropriate use of massive amounts of educational funding has been an important issue in the world of education. There has been a definite need to understand the relationship between the use of the two major AP student selection systems and student academic achievement and the perspectives of organizational stakeholders concerning the success of their high school’s AP
programs (Adelman, 1999; Barton, 2004; Berkowitz, 2007; Dougherty, Millor, & Jian, 2006; Dounay, 2006; Flores & Gomez, 2011; Geiser & Santelices, 2004; Hallett & Venegas, 2011; Keng & Dodd, 2008; Klopfenstein, 2004b; Reis, 2003). The massive amount of state and federal educational funding dollars that have been poured into AP programs nationwide have made it imperative that research be completed that would help school administrators make the best decisions when considering how to best deliver rigorous AP coursework to academically-talented students.

**Theoretical/Conceptual Framework**

The theoretical framework for this research study was an examination of the conflict between the two main theories in the field of educational research surrounding how to best group students in an educational setting.

The grouping of students was referred to by various names throughout the educational world including tracking, ability grouping, streaming, and phasing. The debate over the use of various forms of student ability grouping had been a central issue in the tug of war over best practices in education for nearly a century (Hallinan, 2005). Like all issues surrounding educational policy, the theories regarding ability grouping had many different layers and facets, however the clash could be broken down into two fundamental groups, those opposed and those in favor of the use of ability grouping in schools.

Those opposed to the use of ability grouping believed that the practice isolates students of different ability levels from each other and could lead to the creation of cliques or a stigmatization of students placed in lower ability groups. There were several research studies that
showed that students in lower ability groups were often assigned less experienced teachers, experienced less engaging lessons, received less exposure to the use of critical-thinking skills, or simply that there were no positive academic effects for students in higher or lower ability groups (Ireson, Hallam, & Hurley, 2005; Slavin, 1990). In addition, many studies stated that ability grouping led to minority students and those from lower socio-economic backgrounds forming the majority of the lower ability groups, while Caucasians and students from higher socio-economic groups tended to form a majority of students selected for the upper ability groups (Hyland, 2006; Jeannie Oakes, 1987).

Proponents of ability grouping were just as vocal as their opponents and the research studies on that side of the issue were just as abundant. Proponents of ability grouping claim that the educational practice allowed teachers to better construct and direct lessons at particular groups of students depending on the students’ academic/cognitive ability, prior experiences, or internal motivation (Kulik & Kulik, 1987; Preckel, Gotz, & Frenzel, 2010; Tieso, 2003, 2005). Rogers (2002) wrote that “research supports the conclusion that ability grouping is beneficial for high ability students and does no harm to other students” (p 102).

However, the main claim made by proponents of ability grouping and the related research supporting its use in schools was its effects on the academic achievement of the highest achieving student groups (Kulik & Kulik, 1987; Preckel et al., 2010; Tieso, 2003, 2005). Kulik and Kulik (1987) found that high-ability students in classes that were grouped by ability showed higher level of academic achievement when compared to similar ability students in non-grouped classrooms.

At the same time, the use of ability grouping was the focus of a major debate within
educational circles, one of the fastest growing uses of ability grouping at the secondary level was the use of the AP curriculum for high achieving and academically motivated students (Hallinan, 2005). This research study examined the relationship between the use of ability grouping (open and closed student selection models) and student academic achievement and the perspectives of organizational stakeholders concerning overall school academic environment at the high school level.

**Significance/Importance of the Study**

This study offers far-reaching implications for secondary educational programs across the nation. The College Board believed that when students were not given the opportunity to fully explore and develop their academic abilities to the fullest extent, then the larger society suffered due to this lack of educational opportunity "AP report to the nation 2012" 2012).

Although state and federal governments had been funneling millions of dollars into AP programs at the high school level across the nation over the two proceeding decades, there was still a limit to the types and numbers of educational opportunities high schools could afford students (Iatarola et al., 2011). Therefore, educational leaders must be able to make good decisions concerning the best method for determining student selection for enrollment in advanced educational curricula, such as the College Board’s AP program (Dounay, 2006; Rothschild, 1999). The goal of this study was to collect data in order to help school administrators and other public officials determine the most appropriate student selection system when determining how to select students for enrollment in a high school AP program. School administrators and government officials across the nation will be able to use this information to
better meet the needs of academically-talented students, while maximizing the impact of national, state, and local educational budgets.

**Terms**

*Academic Achievement.* For the purposes of the research study, the term academic achievement will be defined as student success rates on AP examinations.

*Academic Program.* An academic program is a cohesive arrangement of academic disciplinary courses and experiences designed to accomplish predetermined educational objectives (Rury, 2008).

*Achievement Gap.* The concept that students do not achieve at comparable levels of academic achievement, based on dependent or independent variables (Flores & Gomez, 2011; McIlroy, 2010; VanSciver, 2006).

*Advanced Placement (AP).* The program, as established by the College Board in 1955, was a way to help high school students enroll in rigorous, college-level coursework at the high school level. Students have the opportunity to earn college credit by scoring a three or higher (scale of 1-5) on a national examination (Sadler et al., 2010).

*Closed Enrollment Model.* Any student selection model that places criteria on enrollment in AP courses, such as minimum GPA requirements, taking and passing a pre-course entrance examination, and/or a recommendation by a teacher or guidance counselor (McIlroy, 2010).

*College Board.* The College Board is a not-for-profit membership association, made up of schools, colleges, and other various educational organizations, that attempt to connect students with resources to promote success at the post-secondary level (Sadler et al., 2010).
College Prep Courses. General education courses offered at the high school level designed to meet the general admission requirements of most four-year colleges and universities (Gartner, 2013).

Differentiation. Modification of a student’s curriculum to accommodate his specific needs. This may include changing the content or ability level of the material (Garrison & Ehringhaus, 2007; Pollock, 2007; Tomlinson & Strickland, 2005).


Open Enrollment Model. A system by which all students have the opportunity to enroll in AP courses. Students are encouraged to enroll in AP courses based upon individual student interest in a given subject (McIlroy, 2010).

Postsecondary Education. Learning opportunities available to students upon the completion of a state-certified high school educational program (Rury, 2008).

Stakeholder. A person, group or organization that has an interest or investment in an organization (Flores & Gomez, 2011).

Student Achievement Success. For this research study, student achievement success was determined by student scores on a selection of year-end AP examinations. A student who received a score of 3 or higher on any year-end AP examination was determined to be
academically successful in that particular academic course.

*Student Selection Model.* Process used by an educational institution to determine which members of an organization’s student population will be allowed to enroll in the various course offerings available to the organization’s members (McIlroy, 2010).

**Methodological Assumptions**

For the purposes of this research study, the following assumptions were made:

1. The College Board’s method for certifying the course curriculum for AP courses at the high school level was appropriate and accurate.
2. The student selection model (open or closed) stated as being in use at each school was representative of the student selection model that was actually used on a regular basis.
3. The use of students’ scores on the AP examinations was an accurate measure for determining the students’ academic achievement.
4. The perspectives of organizational stakeholders concerning the environmental effects of the school’s AP program could be accurately determined through the use of interviews and questionnaires.
5. The AP examination data provided by each high school was correct and truthful.

**Delimitations of the Study**

For the purposes of this research study, the following delimitations were considered:

1. This study was delimitated to students and faculty who had been enrolled in or employed by school districts in the state of Georgia.
2. This study was delimitated to schools that offered opportunities for enrollment in at least three different AP courses for three consecutive academic school years.

3. This study was delimitated to the use of students’ scores on AP examinations when determining academic achievement/progress taken by students over a three-year period, from the 2010-2011, 2011-2012, and 2012-2013 academic school years.

4. This study was delimitated to the perspectives of organizational stakeholders concerning their school’s AP programs collected during the spring of 2014.

**Limitations of the Study**

For the purposes of this research study, the following limitations were applied:

1. The results of this study may not be generalizable to other areas of the nation given the specific geographic area from which the sample was chosen.

2. The results of this study did address the relationship between the use of a particular student selection system and student academic achievement, but did not account for students who completed an AP course but did not sit for the corresponding examination.

3. The results of this study were not able to address the relationship between teacher quality and the study’s classification variable.

4. The results of this study were not able to address the relationship between the socio-economic status or ethnic makeup of a school’s student population and the study’s classification variable.

5. The results of this study relied only on student data collected from the 2010-2011, 2011-2012, and 2012-2013 academic school years and did not account for changes made to AP
curriculum and/or testing procedures before or after the years examined in this study.

6. The results of this study relied only on the perspectives of organizational stakeholders collected during a one-time series of interviews and questionnaires.
CHAPTER II
LITERATURE REVIEW

The Changing Focus of Curriculum in American High Schools

Education in the United States has served different purposes across its history. Over the course of the last 150 years, the mission and focus of public education in the United States has undergone several realignments and reinventions. The first schools in the United States were highly differentiated by the socio-economic status of the student. Many of the first American schools were private, religiously-based institutions whose curriculum was rooted in classical notions of preparation for a liberal arts university education. As compulsory student attendance became the law in more and more states, public schools were formed and by the latter part of the 19th century the majority of students found themselves in educational programs that were primarily focused on assimilating the tremendous waves of new immigrants and producing a stable labor force for the growing industrial sector. In this world, the quality of educational institutions was based upon the ability of graduates to work productively in the factories and manufacturing jobs of the day (Rury, 2008).

Over the course of the last century the public’s expectations for K-12 public education have changed dramatically. Public education has been transformed in the American mind from a provider of basic skills and patriotism to a universal civil right that gives all citizens the opportunity for upward social mobility. Couple this change with the ever-increasing educational
requirements of the nation’s technology-based industries and it is easy to see why education has become more important today than at almost any other point in American history (Rury, 2008).

Increasingly, the espoused goal of K-12 education by today’s national policy-makers has been to meet the needs of individual learners in the best manner possible. Over the last twenty years, the idea of differentiation has become part of the bedrock of the American educational system (Garrison & Ehringhaus, 2007; Pollock, 2007; Tomlinson & Strickland, 2005). According to Tomlinson and Strickland (2005), teachers usually differentiate instruction by adjusting one or more of the following: the content (what students learn); the process (how students learn); or the product (how students demonstrate their mastery of the knowledge or skills). Differentiation is considered by some to be essential to the success of students and teachers in the digital age. Differentiation, theoretically, allows teachers to move students through the curriculum at different speeds, while giving the appropriate amount of support to all learners (Garrison & Ehringhaus, 2007; Pollock, 2007; Tomlinson & Strickland, 2005).

Colloquially, differentiation of classroom instruction can be described succinctly by the idea that students in a classroom are “just like snowflakes, no two students are alike” ("Hot topic: Differentiation of curriculum and instruction," 2013).

The focus on the need to differentiate among educational curricula waxed and waned over the course of the last century, but as the proponents of differentiation broadened their numbers over the last twenty years, differentiation has become an all-important buzz word for every teacher and school administrator. Although differentiation can be applied to any level of educational curriculum, much of the early attention on the need for differentiation in education focused on the needs of the nation’s gifted and academically-talented students (Rury, 2008).
The Development of Advanced Placement and Honors Courses

The first effort on a large scale at the national level to differentiate school curriculum came as an unintended consequence of the post-World War II Cold War-era. The tensions brought about by the Cold War and the launch of the Sputnik satellite brought about a revolution in advanced academic curriculum in the United States as American policymakers looked for ways to keep pace with a rising Soviet Union and its seemingly ever-expanding technological prowess. The United States federal government poured millions of dollars into educational research and special programs that focused on providing the nation’s most academically advanced students with a top-quality education, especially in the fields of mathematics and science (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Schneider, 2009; Scott et al., 2010).

As the years progressed the once all-consumbing menace of Cold War-era politics slowly faded from the memories of the public and educational reformers. By 1955, the enrollment rates at secondary schools in the United States were close to 80 percent and a high school education had moved from a privilege enjoyed by a few to an assumed civil right for all Americans (Casement, 2003). The 1960s and the social upheavals of the era refocused the nation’s educational reformers on equality of access to educational services. At this point in the nation’s history, most of the highest quality educational resources and curricula focusing on the needs on gifted and academically-talented students were available only to predominately affluent Caucasian Americans in urban and suburban areas (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Schneider, 2009; Scott et al., 2010).

Educational reformers made slow inroads as they attempted to provide academically-
talented minority and rural Americans with the same access to quality educational services as their more affluent counterparts. This expanded focus on the needs of gifted and academically-talented students from all walks of life slowly moved across the nation (Casement, 2003; McIlroy, 2010; Schneider, 2009). Much of the effort to improve access to high-level educational curriculum came first in the form of the creation of “honors-level” classes in high schools across the nation (de Vise, 2008).

Honors courses were designed to be academic courses that could be taught from the same curriculum and lesson plan as regular high school level courses, but were taught at a faster pace and in greater depth. Honors courses, as part of a student’s academic resume, were designed to show that a student has engaged in what a school district has determined to be more rigorous academic work. According to one study, honors-level courses usually did not provide any extrinsic benefits beyond resume building and fulfillment of basic high school graduation requirements (de Vise, 2008). However, at the same time that honors-level courses were expanding their reach, another program that focused on the needs of the nation’s gifted and academically-talented students and provided expanded educational opportunities was also quietly growing in prestige and importance to the nation’s educational system (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Schneider, 2009; Scott et al., 2010).

The College Board’s Advanced Placement (AP) program, introduced in 1954, experienced an increase in interest during the post 1957, Sputnik-fueled focus on improving educational opportunities for the nation’s most gifted students by a coalition of elite Northeastern high schools and Ivy League universities. The AP program was designed to allow the brightest students at the nation’s best high schools to study college-level materials and obtain college
credits, while still technically in high school (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Schneider, 2009; Scott et al., 2010).

The AP program was a major success, and by its fiftieth anniversary in 2004 the program expanded its student enrollment by close to 500 percent. At the time of this research study, the AP program consisted of 34 courses in a variety of academic subject areas that have a prescribed set of educational standards that must be followed by member schools in order to use the AP designation of student academic transcript. Unlike honors-level courses, the AP program has standardized across the nation and provided students with the opportunity to take College Board created AP examinations, which were intended to be measures of student mastery of AP courses content and related academic skills (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Schneider, 2009; Scott et al., 2010). Scores on these AP examinations have become essential pieces of the college admissions process and accepted by many colleges and universities as a means awarding of institutional academic credits at the college or university (Brady, 2012; Dutkowshy, Evensky, & Edmonds, 2009; Hallett & Venegas, 2011; Iatarola et al., 2011; Klopfenstein, 2004b; McIlroy, 2010; Shaw, Marini, & Mattern, 2012).

The expansion and growing importance of the AP program to the college admission process led many to question the validity of and need for honors-level courses. Concerns about the legitimacy of honors-level courses can be attributed to the fact that the curriculum of honors-level courses varied greater from state to state, district to district, and even from school to school within a given district. The lack of standardization of honors-level courses makes it difficult for colleges and universities to evaluate how to best use these courses as measures of student preparedness for the rigor of post-secondary academic studies (de Vise, 2008). The College
Board offers its understanding of the difference between AP courses and standard high school-level honors classes on its website by stating that “honors classes often offer the same curriculum as regular classes but are tailored for high-achieving students — covering additional topics or some topics in greater depth” ("Honors & AP courses," 2013, p. 1). In addition, the College Board offers the following three major factors that the organization believes sets the AP program and its courses apart from standard honors-level courses.

- Cover the breadth of information, skills and assignments found in corresponding college courses
- Align with the standards and expectations of leading liberal arts and research institutions
- Provides motivated and academically prepared students with the opportunity to study and learn at the college level ("Honors & AP courses," 2013, p. 1).

In general, honors-level courses are seen as “more rigorous than regular courses but not as rigorous as AP” (Gartner, 2013, p. 1). Add to this the fact that the AP program offers students the ability to earn actual post-secondary credits while in high school and it is easy to see why honors-level courses are seen as second class in today’s American high schools (Gartner, 2013; Jaschik, 2012). De Vise (2008) found that “honors classes, once the pinnacle of pre-collegiate study, are gradually being eliminated at some of the region's top high schools, on the theory that the burgeoning AP and International Baccalaureate programs have rendered them obsolete” (p1). In addition, he discovered that “ten to 20 years ago, the best students might have been expected to take one or two AP classes over the course of high school” (p. 1). However, times have changed and today a college-bound student is expected to carry a course load filled with AP or
International Baccalaureate (IB), the AP program’s internationally-based rival program, courses (de Vise, 2008).

The growing notion that honors courses are obsolete and less important than AP or IB courses in the college admissions process seems to have seeped into the general conscience. One has to simply peruse almost any online forum dedicated to the student or parent questions and concerns about the college admission process to discover that standard-level high school honors courses are no longer seen by parents and students as comparable to AP or IB courses ("AP vs honors as per college admin rep ", 2012; "IB vs AP vs gifted/honors ", 2006).

Lastly, college and universities have begun to be quite matter of fact about the advantages of having a high school transcript full of AP or IB courses versus regular or honors-level courses. It was difficult to find a college admissions website that does not contain some mention of the benefits of AP or IB course enrollment in the institution’s admissions process. It had become standard practice at many colleges and universities to recalculate student GPAs based on completion of AP or IB courses in high school ("Advanced credit standing," 2013; "First year admission criteria," 2013; "Frequently asked questions," 2013).

Honors courses at some high school might offer the same rigor as the AP and IB programs, but it is impossible to verify the rigor and curricula of thousands of vastly different interpretations of what constituted an advanced or honors-level courses and curriculum currently in use in high schools across the nation. The ability to somewhat standardize and assess a common curriculum framework is the major advantage of the AP and IB programs over standard honors-level coursework at the high school level. In illustration, the University of Georgia had the following statement concerning student GPA and AP and IB courses on its website, “we raise
by the equivalent of one half-letter grade (0.5) each grade earned in an AP or IB course. Unlike nationally- or internationally-normed AP and IB curricula, there is no standardized methodology for the designation of Honors courses” ("First year admission criteria," 2013, p. 1).

The International Baccalaureate Program

The International Baccalaureate (IB) program was the main competitor for the College Board’s AP program in the United States. The IB program founded in 1968 to provide an educational curriculum that would be “transferable internationally and that would be recognized in the admission process for universities around the world” (Carber & Reis, 2004).

The IB program is described in the organization’s literature as an educational continuum that has standardized educational program at the elementary, middle, and high school levels. Each of the program’s three levels could be implemented in isolation or as part of the K-12 integrated curriculum. The IB organization states that it created the IB continuum with the idea that “teachers, students, and parents will be able to draw confidently on a recognizable common educational framework, a consistent structure of aims and values, and an overarching concept of how to develop international mindedness” (Carber & Reis, 2004, p. 341).

The IB program’s mission statement entitled, *A Continuum of International Education* states that all three piece of the IB program’s educational continuum prescribe to certain six binding commonalities ("A continuum of international education: The primary years programme, the middle years programme, the diploma programme," 2012). Each section of the three programs in the IB continuum:

* requires study across a broad and balanced range of knowledge domains including languages, humanities, science and technology, mathematics and the arts, drawing on content from educational cultures across the world
• gives special emphasis to language acquisition and development provides opportunities for engaging in transdisciplinary learning
• focuses on developing the skills of learning, culminating in a study of the Theory of Knowledge in the Diploma Programme
• includes, to a varying extent, the study of individual subjects and of transdisciplinary areas
• provides students with opportunities for individual and collaborative planning, and research
• includes a community service component requiring action and reflection ("A continuum of international education: The primary years programme, the middle years programme, the diploma programme," 2012, p. 341).

In addition, to the six overarching program commonalities, the IB program had several core principles that make it quite different than the College Board’s AP program. First and foremost among these were the firm connections between all pieces of the IB program at each of the three levels (Byrd, Ellington, Gross, Jago, & Stern, 2007). Where the AP program was a relative hodgepodge of vastly different subject areas, which were only held together as an educational program by their espoused accelerated curriculum and increased academic rigor, the IB program designed as a complete educational package. Proponents of the IB program over the AP program tend to believe that "AP courses are a mile wide and an inch deep" (Byrd et al., 2007, p. 8).

The IB program’s specifically designed as “a thematic, inquiry-based curriculum that spirals around six yearly organizing themes. These organizing themes seek to focus learning on notions relevant to all humans” (Carber & Reis, 2004, p. 341). IB teachers begin each learning unit by providing a guided question to the students. These teacher-provided questions were supposed to be written so that they “drive inquiry and that support exploration into the unit’s central idea” (Carber & Reis, 2004, p. 341). Interconnectedness was the goal of the IB program. The AP program was designed so that students may pick and choose which courses in which
subject areas they wish to enroll in with little attention paid to AP courses that are of no interest to the student or ones that the student’s school simply does not offer its population. The IB program’s curriculum, on the other hand, intentionally designed to accentuate the interconnectedness the organization and its proponents believe was inherent in all aspects of education (Byrd et al., 2007; Carber & Reis, 2004; McIlroy, 2010; Schneider, 2009).

Another major difference between the AP and IB program was the design and use of student summative assessments. Every course in the AP program’s catalog focused on a single, year-end assessment. This one-time assessment of student content mastery was the focus of most AP teachers and students. This year-end examination was the only factor used to determine a student’s ability to possibly earn post-secondary credits. The IB program touts the fact that it moved away from this assessment format (Byrd et al., 2007; Carber & Reis, 2004; McIlroy, 2010; Schneider, 2009). The IB program measures students’ mastery through the “practices of portfolio and self-assessment, with examinations and testing introduced to begin to prepare students for the rigorous DP [Diploma Programme] examinations” (Carber & Reis, 2004, p. 342).

The Diploma Programme also ends each school year with a comprehensive examination. However, unlike the combination of multiple choice questions and written responses use by the AP program, the IB program demands that students demonstrate competency through an entirely unrehearsed written examination (Byrd et al., 2007; Carber & Reis, 2004; McIlroy, 2010; Schneider, 2009).

The differences between the structure of the summative examinations used by the two programs was far from the only difference in the assessment tools used by the two competing
organizations. The IB program’s Diploma Programme website states that “students also complete assessment tasks in the school, which are either initially marked by teachers and then moderated by external moderators or sent directly to external examiners” ("The IB diploma programme," p. 1).

Like the AP program the IB program’s summative assessment was criterion-referenced, which means that individual student performance on the examinations was measured against a set of pre-determined academic criteria. These academic standards based on the objectives of the subject’s curriculum, rather than the performance of other students taking the same examinations (Byrd et al., 2007; Carber & Reis, 2004; Schneider, 2009). The website for the IB program states that the heads of the program believe that this was the best method for assessing its students because “the range of scores that students have attained remains statistically stable, and universities value the rigor and consistency of Diploma Programme assessment practice” ("The IB diploma programme," p. 1).

Although the two programs were competitors to some degree, both the AP and the IB program trumpet the strength and integrity of their program’s curriculum and assessment strategies. Their confidence was buoyed by several research studies that suggest that students with IB and AP courses on their high school resumes outperform students without these educational experiences (Carber & Reis, 2004; Chajewski, Mattern, & Shaw, 2011; Dutkowsky et al., 2009; Hansen et al., 2006; Hertberg-Davis & Callhan, 2008; McIlroy, 2010; Sadler & Tai, 2007b; Scott et al., 2010; Thompson & Rust, 2007).

Despite the programs’ many similarities, there was one enormous difference between the AP and IB program in the United States - their reach. The IB had undergone a great amount of
growth over the last decade and a half. Since 1997 the IB program in the United States had seen the number of member schools expand tremendously. The number of IB schools in the United States had grown from 227 total member schools in 1997 to 1207 in 2013 ("United states a dynamic presence: Growth and characteristics of ib world schools," 2013). This was an impressive amount of growth in such a short period of time, but still the IB program was miniscule compared to the behemoth that is the College Board’s AP program. In 2012, over two million students took 3.7m College Board-affiliated, year-end AP examinations ("AP report to the nation 2012," 2012).

The History of the Advanced Placement Program

In 1950, the headmaster of Phillips Andover, one of the nation’s most elite high schools, set out to revise, update, and improve the school’s curriculum. The project conducted with major input from the school’s Alumni Educational Policy Committee, which used the expertise of former students and teachers to examine the entirety of Andover’s curriculum. Quickly, the discussion turned from a simple reevaluation of the high school’s curriculum to a much deeper discussion of the educational standards and problems facing all of the region’s elite prep schools. In addition, many believed that the issues seen in the high schools paralleled those of the colleges and universities to which the students later enrolled (Casement, 2003; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

Phillips Andover partnered with two other high-profile elite Northeastern private high schools, Exeter and Lawrenceville, as well as Harvard, Yale, and Princeton Universities to begin work on a totally new approach to the problem. This small group of elite high schools and
universities found a corporate partner in the Ford Foundation’s Fund for the Advancement of Education (FAE). The FAE created to support educational reform efforts and primarily focused on improving educational services for the nation’s gifted and talented students (Sadler et al., 2010; Schneider, 2009).

This developing awareness of the need to improve the curriculum at elite high schools dovetailed perfectly with the new sensibilities of Cold War Era American politicians and policy makers. The Cold War hostilities between the United States and the Soviet Union provided the perfect background for a reevaluation of high-level educational curriculum and coursework. This was due to the fact that the Cold War launched an all-out competition between these two nations for world dominance and both sides became convinced that a key aspect in achieving the upper hand in this struggle lay in cultivating their nation’s best resources, its people (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

The United States and its policy makers obsessed with the notion of identifying and training its so-called “best and brightest” during the 1950s and 60s and the educational ideas being discussed by the FAE and its educational partners fit nicely into this new politically-driven focus on education. The Cold War educational agenda highlighted the need to groom the nation’s most promising youth for important careers in fields such as politics, science, and mathematics. Training the top students for these types of careers began to be seen as a major national security issue. National leaders came to believe that the struggle against Communism could not be won unless the United States had the best-educated and best-trained thinkers (Casement, 2003; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

Many educators believed that one way to make sure the nation grabbed and maintained
the lead in education was to streamline the flow of elite students from the nation’s best high
schools to the best universities (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Sadler et
al., 2010; Schneider, 2009; Scott et al., 2010). Once again, the work being done by the FAE and
its educational partners corresponded perfectly to the perceived national educational needs of the
moment (Sadler et al., 2010; Schneider, 2009). Many top educational reformers of the period
began to believe that the problem lay in “the gap between knowledge locked up in the university
library or the scholar’s mind and the fare being taught in the schools” (Schneider, 2009, p. 815).
Many believed that the goal of educational reform should be to provide schools with a teacher-
proof curriculum that even a less than perfect teacher could use to the students’ fullest advantage.
The nation’s most important educational reform movements soon began to revolve around this
notion of ensuring a more challenging curriculum for the nation’s most gifted and academically-
talented students (Casement, 2003; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

In 1952, the newly created School and College Study of Admission with Advanced
Standing, the name given to the project started by the FAE and the original group of reform-
minded elite high schools and universities, published an announcement stating that group was
beginning work on a plan to “offer an opportunity and a challenge to…the strongest and most
ambitious boys and girls”’’ (Schneider, 2009, p. 816). This effort would eventually lead to the
creation in 1954 of the AP Program, which gave its first placement examinations that year
(Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Sadler et al., 2010; Schneider, 2009; Scott
et al., 2010).

The first set of placement examinations given to 532 students from 18 of the most elite
public and private high schools in the nation (Sadler et al., 2010; Schneider, 2009). These
examinations graded and used to determine whether or not the tested students were eligible to receive college credit at participating colleges and universities, mostly the Ivy League colleges and universities. The AP program soon placed under the direction of the College Board, the organization that already administrated the nation’s chief college entrance examination the Scholastic Aptitude Tests (Casement, 2003; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

David A. Dudley, the second director of the AP Program in 1957-1958, summed up the guiding philosophy of the AP program when he stated that the “basic assumption of the AP Program is simply that all students are not created equal” (Dudley, 1958, p. 1). This direct statement about the purpose of AP may shock some educators today, but at the time it was a simple, concise statement about the original intent of the program.

During its first several years in operation, the AP program worked as its partner high schools, colleges, and educators had originally intended. This was largely due to the fact that the AP program was crafted with a firm set of three basic assumptions by its creators. First, the focus of the program was to provide the best and most talented American students with a more challenging and rigorous high school curriculum, one that would enable students to move swiftly through the gauntlet of post-secondary work and into prominent professional fields. At the time, this meant that the AP program only needed to be offered at the nation’s elite public and private high schools and then still only to the elite of this perceived elite set of students had access to the AP curriculum (Casement, 2003; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

Secondly, the program intended to make it possible for the brightest and hardest working students to study advanced material in high school and take the accompanying placement
examinations to determine whether college credit would be awarded. Then with these credits, and similar diligence during college summer semesters, students were able to earn a bachelor’s degree in only three years. Again, this dovetailed with the Cold War Era desire to move the best minds into important fields as quickly as possible (Casement, 2003; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

Lastly, the program was not designed to be a mark or measure of academic distinction. It was not intended to signal to colleges that a student had achieved a higher level of academic prestige or was more worthy than other students of college admittance. It was intended to allow top academic students the ability to move on to college-level work while still in high school. Of course, enrollment in AP courses and the scores students received on AP exams quickly became an integral part of the college admissions process; however the creators of the AP program failed to foresee this now common use of the program. This failure to forecast the use of AP courses and the corresponding exams as student-sorting devices during the college admissions process was due mostly to the fact that admission to the nation’s elite colleges and universities was a forgone conclusion for almost every graduating student of the nation’s elite private high schools before 1950 (Casement, 2003; McIlroy, 2010; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

However, despite the original intent of its creators, the AP program soon developed into a nationally recognized curriculum of academic excellence and would soon begin to play a major role in the college admissions process. This unforeseen evolution of the AP program marked the beginning of a long national debate about the nature, merits, and meaning of the AP curriculum and its accompanying examinations (Casement, 2003; McIlroy, 2010; Sadler et al., 2010;
Schneider, 2009; Scott et al., 2010).

The Evolution of the AP Program

At first the AP program operated as its creator had envisioned, students from the top high schools who were already bound for Ivy League educations used the AP curriculum and year-end examinations to earn one or two college credits during their senior years before their matriculation to the elite college or university of their choice. However, the implementation of the AP program also led to an unplanned, and some believed negative effect on the member high schools and universities (Casement, 2003; Sadler et al., 2010; Schneider, 2009).

Over the course of the 1950s student applications to the nation’s best colleges and universities skyrocketed, especially at the Ivy League colleges. This surge in interest in college-going could be linked to the post-World War II baby boom and the passage of the Servicemen's Readjustment Act of 1944, or the G.I. Bill, which provided money for soldiers returning from military service to attend post-secondary educational institutions. This new flood of college applicants led to an increasing unease about the growing shortage of student slots, especially among those desiring an Ivy League education (Casement, 2003; Sadler et al., 2010; Schneider, 2009).

No longer could a graduating senior from the nation’s elite private high schools guaranteed a spot at the Ivy League school of his or her choosing. This caused affected parents and students to search out new ways to remain competitive and to stand out in the newly crowded college admissions arena. Into this opening stepped the ever-growing AP program, which saw the opportunity to increase its national profile and influence. Universities and colleges
began to use a student’s history in AP courses and scores received on AP exams as a yardstick when making determinations about student admission (Sadler et al., 2010; Schneider, 2009).

Many educators were hesitant to except the idea that enrollment in an AP course was being used to elevate some students over others in the college admissions’ process as they did not believe the AP program was to be originally designed for this purpose (Casement, 2003; Sadler et al., 2010; Schneider, 2009). Even the College Board published an article in its own College Board Review arguing, “founding AP schools had intended the program to challenge and track the brightest and most capable students. They had not, however, intended it to provide prestige and privilege for those students” (Schneider, 2009, p. 818).

Despite these objections the AP program only continued to grow in size, scope, and its level of importance in the college admission process. The greatest growth in the AP program was not among students at the nation’s elite high schools, like Andover and Exeter, but at high schools in the newly expanding affluent suburbs. Educators, parents, and students at these “second-tier” high schools began to see the AP program as a way to prove their intellectual equality with students who traditionally applied and attended the nation’s elite colleges and universities after attending the nation’s top tier, legacy-based high schools (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

By the early 1960s, the AP program had begun to stray from its creators’ original intention. The greatest reason for students to enroll in AP courses had ceased to be a desire for academic rigor and quick advancement through college toward a promising professional career or a graduate degree (Sadler et al., 2010; Schneider, 2009). Many students now sought out AP programs in an effort to gain an “edge in the college admission process” (Schneider, 2009, p.
819). In addition, socio-economic elites and affluent suburbanites started to lose their edge in admission to the best schools. A burgeoning cottage industry started to develop around the notion of how-to-get-into-college and soon AP became the symbol for many parents, students, and college admissions directors of increased academic rigor and an impressive resume (Sadler et al., 2010; Schneider, 2009).

Regardless, by 1969 only 14% of American high schools offered AP courses to their student bodies. AP courses were only consistently available to students at the nation’s “wealthiest independent schools and the high schools in affluent suburbia” (Schneider, 2009, p. 819). The disproportionate enrollment of Caucasian, upper and middle class students in AP courses across the nation soon drew the attention of educational reformers, civil rights enthusiasts, and champions of rural and lower socio-economic students. This wave of attention would start the second phase in the evolution of the AP program and what many would claim was its most damning and ill-advised transformation (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Sadler et al., 2010; Schneider, 2009; Scott et al., 2010).

The Expansion of the AP Program

When the AP program began in the mid-1950s, the focus of education thinkers and reformers in the United States was heavily concentrated on the needs of a post-World War II, Cold War world. This world was one in which the future would be controlled by the nation that could best harness its human resources. However, by 1970 the focus on educational reformers in the United States had shifted dramatically. No longer was the top priority preparing the nation’s elite students for careers in science- and mathematics-related fields. The domestic turmoil and
civil rights movements of the 1960s sent shock waves through every political and social institution in the United States and the realm of education was not immune to the era’s shifting beliefs (Casement, 2003; Hansen et al., 2006; McIlroy, 2010; Sadler et al., 2010; Schneider, 2009).

The new focus of educational reformers in the early 1970s became the plight of students in the nation’s disadvantaged inner city and rural schools. The problems facing these two constituencies of educators, parents, and students were staggering, however, many educational reformers believed that a central problem connected the two groups, the lack of access to quality educational opportunities. Advocates for minority, rural, and lower socio-economic students begun to discuss the seeming institutional racism of the College Board and its AP program. The success of AP programs in helping affluent students from suburban high schools enter the race for admission into the nation’s elite colleges and universities with the nation’s traditionally elite students, led many to believe that the program could have a similar effect on the fortunes of gifted and academically talented students in the nation’s less affluent rural and urban high schools (Flores & Gomez, 2011; Sadler et al., 2010; Schneider, 2009).

The failures of the American educational system to meet the needs of all of the nation’s gifted and academically-talented students soon came to the attention of politicians at the upper reaches of power and influence. In 1970, the United States Congress called for a report on the state of the nation’s gifted education programs (Marland, 1972). The resulting report presented by Sidney P. Marland, Jr., described the state of gifted education and outlined ten recommendations for positive change. The study reported that over twenty states had legislation requiring school systems to offer special programs for students labeled exceptional, but in reality
most of the systems had not implemented any type of program. The Commissioner of Education called gifted students “our most neglected and potentially productive group of students” (Marland, 1972, p. 5). In his report Marland (1972) also presented the first federal definition of “gifted and talented”. The report defined gifted and talented students as those recognized by professionally qualified individuals as having outstanding abilities and being capable of a high level of performance. The researchers believed these students needed differentiated educational programs beyond those customarily offered by the regular school program in order to reach their full potential.

*The Marland Report* (1972) outlined the components of programs appropriate for gifted and talented students. These three components included a differentiated curriculum, which uses higher mental concepts and processes should be used in gifted classrooms; instructional techniques that matched the learning styles of the gifted student; and special grouping which include a variety of educational procedures appropriate for certain students, i.e. special classes, honors classes, seminars, etc.

*The Marland Report* (1972) also concluded that the United States’ gifted education programs provided services to only a small percentage of the nation’s total number of gifted and talented students. The report made a point of outlining grossly underrepresented gifted and minority populations. The report also stated that exceptionally talented children cannot ordinarily excel without additional services and special assistance. The report described all gifted students as “deprived and can suffer psychological damage and permanent impairment of their abilities to function well which is equal to or greater than the similar deprivation suffered by any other population of special needs served by the Office of Education” (Marland, 1972, p. 11). Marland
Jr. believed that at the national, state, and local levels, gifted education was seen as a low priority (Marland, 1972).

After the release of *The Marland Report*, many educational reformers began to argue for the expansion of the AP program as “an effective instrument for serving gifted but socially disadvantaged students” (Schneider, 2009, p. 820). By 1976, almost 4,000 schools offered at least one AP course and more than 75,000 students were involved in the AP program. However, much of the AP program’s expansion was taking place in private and suburban high schools. Some of this inability to effectively expand access to AP courses in non-traditional high schools was due to barriers such as insufficient academic preparation of prospective AP students, a lack of properly trained and experienced teachers, and limited monetary funds to support the smaller class sizes often associated with AP courses (Sadler et al., 2010; Schneider, 2009).

By the mid-to-late 1980s, the AP program was in full expansion mode (Sadler et al., 2010; Schneider, 2009). In 1986, 7,201 high schools offered at least one AP course and just over 230,000 students took part in the program nationwide. Although the AP program was expanding greatly every year, it was still only available to a small fraction of the nation’s total student population. However, access for traditionally underrepresented groups increased during the decade. In 1988 minority students accounted for 19.5% of all students taking at least one AP examination; this was twice the number of students who had participated in the program a mere five years previous. By 1994, AP programs were in place in 11,500 high schools with over 458,945 total participants and amazingly the number of minority students taking at least one AP examination rose to 26.3% of all test takers that year (Schneider, 2009).

On the surface the reformers’ dreams of using AP as a means of leveling the educational
playing field for high school students in non-elite and non-affluent suburban areas seemed to be a massive success story. In fact, AP programs became so ubiquitous in American high schools that it became increasingly difficult to find a high school without at least one AP course in its course catalog. Much of the growth in the AP program came from a new belief among teachers, principals, and parents that AP was a benchmark program for any school wishing to be taken seriously as a place for students wishing to enter a post-secondary institution of any merit (Hansen et al., 2006; Sadler et al., 2010; Schneider, 2009).

However, the growth of the AP program was not entirely without external backing. As the AP program spread throughout the nation’s high schools, state governments began to see the program’s curriculum as a way to improve schools without the hard work of developing, testing, and implementing their own new educational programs (Iatarola et al., 2011; Klopfenstein, 2004b; Sadler et al., 2010; Schneider, 2009). By this point in its history AP had won a measure of respect from most members of the educational community and its ever-increasing importance in the college admissions process quieted any critics (Brady, 2012; Hallett & Venegas, 2011; Iatarola et al., 2011; Klopfenstein, 2004b; Shaw et al., 2012).

All around the nation during the mid-1990s states began to institute financial aid programs aimed at increasing the number of high schools offering AP courses to their students, the number of students taking the end-of-the-year AP examinations, and the number of minority students participating in both AP courses and the accompanying AP examinations. In West Virginia, South Carolina, and Arkansas laws were passed that made it mandatory for all public high schools to establish an AP program. In California, Georgia, and numerous other states financial aid programs were created with an eye toward expanding access to AP programs.
through on site and online programs (Schneider, 2009). Finally, even the College Board got into the act when it started a very popular policy of providing nearly 50% fee reductions on all AP Examinations taken in a given school year for any students who qualified for the Federal Free or Reduced Price Lunch Program ("AP report to the nation 2012," 2012).

In addition to state-based financial aid, the United States federal government soon entered the game of pushing AP programs as a key piece of the nation’s educational reform initiatives (Iatarola et al., 2011; Klopfenstein, 2004b; Sadler et al., 2010; Schneider, 2009). During the 1998-1999 school year alone the United States federal government “spent 2.7 million subsidizing AP examinations fees for low-income students and professional development for AP teachers from low-income districts” (Schneider, 2009, p. 821). All of this money had the desired effect on AP access and AP participation as the number of high schools offering at least one AP course jumped by 40% from 1990-2000 (Sadler et al., 2010; Schneider, 2009).

Current Status of the AP Program

As the AP program continued to move away from its original purpose of providing advanced academic coursework to the nation’s best, brightest, and most affluent students, another unintended consequence of the AP program’s evolution has continued. The AP program, once the darling of elite high schools, Ivy League universities, and eventually any college-minded student in the United States, has begun to see a reversal in its educational standing and might be in danger of losing its standing as the nation’s premium advanced academic curriculum (Sadler et al., 2010; Schneider, 2009).

Strangely, the credibility of the AP program was first challenged where it was conceived,
in the upper echelons of the American high school educational system. The expansion of access to post-secondary educational opportunities and the evolution of the AP program from an elites-only program into a benchmark for admission into most colleges and universities helped start a movement away from AP programs at the nation’s best high schools (Casement, 2003; Dutkowshy et al., 2009; Hansen et al., 2006; Sadler et al., 2010; Schneider, 2009).

Many of the nation’s educational researchers began to publish papers suggesting that the AP program was no longer an elite program worthy of its high status in the college admission process. These researchers believed that the massive influx of new schools, teachers, and students joining the ranks of the AP program was lowering the program’s once high bar for success or that the officials at the College Board were simply lowering the program’s standards to maintain its image of as a successful and meaningful program (Schneider, 2009).

This newfound and growing skepticism concerning the credibility and strength of the AP program has been partially based upon a concern about the ability of our nation’s educational system to legitimately teach college-level courses at the high school level to over 1.25 million students. There were several different reasons for the growing lack of confidence in the ability of the AP program to meet its professed goals including unqualified teachers, underprepared students, and questions surrounding how the College Board had scored and reported data concerning its all-important, year-end examinations, which have determined whether or not most students received college credit (Callahan et al., 2009; Casement, 2003; Dutkowshy et al., 2009; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hansen et al., 2006; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011; Sadler & Tai, 2007a, 2007b; Schneider, 2009).

It became increasingly difficult to argue with the idea that having AP courses on one’s
resume was a powerful factor in the college admissions process. Most educators did not questioned this statement or the fact that an AP course had provided major benefits to academically prepared students who had engaged in these rigorous college-level courses (Casement, 2003; Sadler et al., 2010). However, many educators pointed out the inability of the College Board to guarantee the homogeneity of academic rigor and course quality of the AP courses offered in every high school throughout the nation. The review system being used by the College Board at the time of this research study to determine AP course quality across its member high schools has been described as inadequate by some and many have even claimed that individual course quality was simply impossible to verify without massive resource expenditures (Callahan et al., 2009; Casement, 2003; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; "Hot topic: Differentiation of curriculum and instruction," 2013). The College Board, the organization that has overseen the national AP program since its inception, has specifically mandated each of the AP program’s 34 different course curricula, but has had no methodology and had allotted few staff or resources to verify that schools and teachers followed the prescribed curricula (Sadler et al., 2010; Schneider, 2009).

In response to critiques concerning the consistent quality of AP courses and programs across the nation, “the College Board has responded by tightening standards, asking schools to include specific elements in their AP syllabi” (Schneider, 2009, p. 824). However, the only real check on course quality that the College Board prescribed for every teacher of an AP course has been submission of a teacher-created course syllabus that was reviewed by freelance educational professionals, such as college professors or long-time AP teachers at the high school level, under the quasi-direction of the College Board. However, there have been no regulations or mandates
for classroom observations, course textbooks, outside readings, or even a review of changes made to a course’s syllabus after initial approval was received from the College Board ("AP report to the nation 2012," 2012). It has been possible for an AP teacher to submit a syllabus, have it approved, and teach the course with College Board approval for five to ten years without any further requirements or conditions being stipulated by the College Board (Sadler et al., 2010; Schneider, 2009).

**Current Teacher Qualifications for the AP Program**

Many educational research studies pointed to access to a high-quality classroom teacher as one of the most important factors in creating successful, meaningful, and worthwhile educational programs (Flores & Gomez, 2011; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011). This educational maxim was no different at the upper levels of the educational system, such as the AP program. The various AP course curricula required AP teachers to maintain a deeper level of content mastery than regular program high school teachers. AP courses also required students to acquire a far greater breadth of content mastery than almost any other currently used high school-level curriculum. This could be seen through a simple examination of the content guidelines provided for AP teachers and students by the College Board compared to more standard educational content guidelines, such as the new Common Core national educational standards (Callahan et al., 2009; Casement, 2003; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011). Some proponents of closed enrollment stated that it was impossible for there to be enough highly qualified teachers as was demanded by the ever-growing number of high school AP programs across the nation. Many
also cited the fact that almost all of our nation’s colleges and universities, even less well-regarded two-year post-secondary educational institutions, required their faculty members to have at least a master’s degree. At the time, most top schools required no less than an in-field doctorate degree. Casement (2003) reported that only 50% of AP teachers held at least an in-field master’s degree, while another 20% possessed a master’s degree of some sort. Given the fact that students who received a passing score on an AP examination could possibly earn credit at a top-flight college or university, many educational researchers and people at the collegiate level began to think that such low teacher standards could be a detriment to these students overall educational experiences and that “college-level courses require the efforts of college-level faculty” (Sadler & Tai, 2007b, p. 2).

This belief in the need for more highly qualified teachers was also seen in some of the educational research related to the AP program (Callahan et al., 2009; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011). Several educational researchers completed studies aimed at determining the value of AP courses to students once they enter a post-secondary institution and found that there is a “considerable range of opinion concerning the value of AP courses” (Sadler & Tai, 2007b, p. 2). Many experts stated that teacher quality and course quality were integral factors that helped to determine the overall academic meaningfulness of AP courses or AP programs to high school students. Once again the often undertrained, and some said undereducated, high school teacher was the focus of this type of critique of the AP program (Callahan et al., 2009; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011). In addition, teachers of AP courses, at the time of this study, had not been required to attend an initial training before
being approved to teach an AP course, and there were no requirements for continuing professional development, although the College Board provided such opportunities regularly to teachers who voluntarily decided to attend training sessions (Sadler et al., 2010; Schneider, 2009).

The Dwindling Credibility of the AP Program: Student-Centered Issues

The belief that a great number of the AP program’s teachers were under-qualified was not the only problem damaging the credibility of the AP program. Many proponents of closed enrollment systems also stated that many of the high school students who were enrolled in AP courses throughout the nation were either unprepared for the rigor of a true college-level curriculum or were simply too young to legitimately be taking any type of college-level course regardless of any other concern (Casement, 2003; Downey, 2012).

It was true that over the course of its lifetime the AP program underwent a remarkable expansion in not only the sheer number of students participating in the program nationwide, but also in the range of high school students enrolling in AP courses. No longer was the AP program limited to a high school’s gifted or most academically talented students. As previously discussed, the AP program began to be seen as a sort of silver bullet by educational reformers who believed that the program could raise the bar for underperforming high schools, as well as underperforming and traditionally marginalized high school students across the nation (Flores & Gomez, 2011; Iatarola et al., 2011; McIlroy, 2010; VanSciver, 2006). These proponents of AP expansion also began to believe that all students exposed to the AP program gained “much more knowledge than they would have in a college preparatory class and [have] positioned themselves
to do better in future AP and college courses” (Flores & Gomez, 2011, p. 67).

One of the major drawbacks related to what many saw as an overexpansion of high school AP programs was a growing feeling that large numbers of students were not being best served by enrollment in college-level academic courses (Casement, 2003; Downey, 2012; Dutkowshy et al., 2009; Schneider, 2009). Klopfenstein (2004b), a leading researcher in the field of AP program effectiveness, wrote, “participation in advanced courses depends first and foremost on a student’s prior academic experience” (p. 2).

In 2013, the College Board offered 34 different AP courses and this vast array of courses made it impossible for high schools to fill all of the nation’s AP courses with only senior students, as was the original intention of the creators of the AP program (Schneider, 2009). The most popular AP course overseen by the College Board in 2013 was AP United States History ("AP report to the nation 2012," 2012). For the fifteen years prior to 2013, mainly junior students populated the AP United States History course, while a half of all students enrolled in AP European History during that time frame were sophomore students. At the same time, the College Board’s AP World History course consisted of nearly 75 percent sophomore students, while the fast-growing AP course from 2000 to 2013, Human Geography, had 191,773 enrollees in 2012 with the majority of those students being high school freshmen (Schneider, 2009).

The Dwindling Credibility of the AP Program: Examination-Scoring Issues

In 2013, the College Board offered AP courses in 34 academic subject areas as diverse as calculus, environmental science, human geography, Chinese language/culture, and even one course entitled Studio Art: 3-D Design. Those AP courses had been theoretically designed by the
College Board to replicate the core general education classes (e.g. calculus) that most colleges and universities required students to take during their freshman or sophomore years at the time. Additionally, there were AP courses that could serve as elective courses (e.g. art history), which could satisfy non-general education requirements at the high school and post-secondary level ("AP report to the nation 2012," 2012).

Since the AP program’s inception, students had the opportunity to earn college credit, based upon their performance on subject-specific, year-end examinations authored and scored by the College Board. In fact, there was never any stipulation that a student had to be enrolled in or complete an AP-approved high school-level course in order to sign up for the corresponding AP examination. While the College Board may not have required students to take a subject-specific class prior to taking a particular AP examination, students could only obtain AP high school course credit if they enrolled in and completed a course sanctioned by the College Board ("AP report to the nation 2012," 2012; Nolan, 2013). In 2012, over two million students took 3.7 million College Board-affiliated, year-end AP examinations ("AP report to the nation 2012," 2012).

All AP examinations have traditionally been given during the first half of May by high school level AP facilitators across the nation. The high school-level AP facilitator has traditionally been one of the high school’s assistant principals or guidance counselors. These AP facilitators received no formal training on test administration, save a standardized booklet sent with test materials by the College Board ("AP report to the nation 2012," 2012).

In 2013, the year-end examinations for almost all AP courses followed a basic structure; art and foreign language examinations were the exceptions. At the time, the basic structure of
most AP examinations consisted of a two-section format: a series of multiple-choice questions and a set of "free-response" essay questions/writing prompts. The free-response portion of the examination required test takers to compose timed, impromptu essays/written prompts. Students were given 50-60 minutes to complete the standard multiple-choice section (which counts for 45-50 percent of the total exam grade) and between 75-130 minutes to complete three unrehearsed essays (between 50-55 percent of the total exam grade) depending on the examination ("AP report to the nation 2012," 2012; Emmerling, 2001; Sadler & Tai, 2007a).

As of 2013, the College Board, at multiple sites around the nation, graded and scored the AP examinations during the month of June. The College Board selected, trained, and offered remuneration to large groups of college professors, subject areas experts, and veteran high school AP teachers. Three years or better experience teaching the AP course that a high school teacher graded for was recommended though not required by the College Board. The multiple choice section of the AP examinations were graded by machine for decades, however the free response section were graded over the years through the use of a rubric developed at the beginning of each grading session. The head graders, called chief readers by the College Board, randomly selected and read a small sample of student responses, or what the College Board called "rangefinders", for each of the writing prompts given on each AP examination. After reading and making notes the chief readers then would meet to collectively create the scoring rubrics, which were used by the general mass of AP readers to score student responses. This manner of rubric creation opened the College Board up to charges of grade inflation. This was because the free response grading standards changed from year to year and even from essay to essay within the same examination ("AP report to the nation 2012," 2012; Emmerling, 2001; Sadler & Tai, 2007a).
After the majority of AP readers completed a training session to ensure that the scoring process would be as reliable as possible, the accuracy of the scoring process was checked by a random selection essays that was scored again, or back read, by experienced AP readers and by a periodic norming of the readers using pre-scored practice essays. After the student free responses had been scored, the resulting raw scores on the multiple choice section and the free response section were used to create a composite score, which was then converted to a five-point scale using a predetermined distribution ("AP report to the nation 2012," 2012; Emmerling, 2001; Sadler & Tai, 2007a).

By 2013, the conversion process was a major issue for many on both sides of the enrollment debate because the predetermined distribution for converting the raw scores collected from the multiple choice and free response portions of the examination had remained unchanged for years, so even though the College Board described its AP examinations as being criterion-referenced, or being scored in relation to a list of pre-specified subject matter, this occurred only at the first step of the College Board's AP examination scoring process. In truth, the scoring process used for scoring AP examinations could be described as a hybrid between a criterion and a norm-referenced assessment. Even more troublesome to many of both sides of the debate was the fact that the computation of the scoring distribution was a formula known to only a few elite members of the College Board's staff (Emmerling, 2001; Sadler & Tai, 2007a).

Because the formula the College Board used to calculate the composite AP scores students received on AP examinations was unknown to the general public or educational researchers, it was difficult for the individuals on either side of the enrollment debate to accept the College Board's assertion that examination scores were truly criterion-referenced. It was
difficult for the College Board to deny that some measure of norm-referencing played a role in the scoring process. Due to this ongoing uncertainty about how AP examinations were scored a growing number of colleges and universities were becoming increasingly hesitant about awarding college credit to students (Sadler & Tai, 2007a).

AP Examination Scores as a Means of Earning College Credit

In 2013, each college and university independently determined what score a prospective student needed to obtain on each AP examination in order to receive course credit from that particular educational institution. This meant that students were not guaranteed to receive course credit from every post-secondary institution based upon a certain score earned on the College Board’s various AP examinations ("AP report to the nation 2012," 2012; Dutkowshy et al., 2009; Mattimore, 2008). The College Board converted a student’s work on an AP examination to a score which ranged from a high of “5,” to a low of “1”. Most colleges and universities accepted exam scores of three or higher, when awarding college credit to incoming freshmen students ("AP report to the nation 2012," 2012; Dutkowshy et al., 2009; Mattimore, 2008). However, more and more of the nation’s elite post-secondary institutions, such as Vanderbilt University, began to only grant college credit for students who received a score of “4” or “5” ("AP credit policy info: Vanderbilt university," 2012). Some elite schools, like Harvard University, went even further and began to grant no college course credit regardless of the score a student received on an AP examination ("AP credit policy info: Harvard university," 2012).

Although many proponents of closed enrollment had been critical of the program’s rapid expansion over the last two decades and stated issues concerning to whom and by whom the
various AP courses were delivered, many educational thinkers also questioned the reliability and validity of the AP examinations. Much of the debate about the reliability and validity of the various AP examinations was focused on two major issues - the lack of connection between the content assessed on AP examinations and the content and skills delivered in the corresponding college-level courses, as well as concerns about how AP examinations were being scored by the College Board (Casement, 2003; Hansen et al., 2006; Sadler & Tai, 2007a).

Many proponents of closed enrollment systems began to believe that the College Board was either decreasing the rigor of its AP examinations or that the College Board’s exam scoring procedures were intentionally skewing the results in order to maintain an air of program success. On the surface, the College Board’s own data seemed to substantiate these critiques of the AP program. Since 1960, the percentage of students receiving a passing score of 3 or higher on the total number of year-end AP examinations given across the nation had remained basically unchanged even as the program grew by more than 500%. Those concerned with the rapid expansion of the AP program had a difficult time accepting that student scores remained unchanged despite the growth of the AP program over the last 50 years (Casement, 2003; Hansen et al., 2006; Sadler & Tai, 2007a).

The College Board contested these allegations by periodically releasing research studies that purported to measure the relationship between AP courses/examinations and the corresponding college-level courses (Schneider, 2009). Keng and Dodd (2008) were two of the most prominent researchers in the field of AP course/examination relevance. In their paper entitled, A Comparison of College Performances of AP and Non-AP Student Groups in 10 Subject Areas, the research duo concluded that the “study”’s findings support previous research
that showed that AP students performed as well if not better than non-AP students on most college outcome measures. Thus, these results implied that the findings in these previous studies applied even considering the rapid expansion of the AP Program” (p. 19).

Scott, Tolson, and Lee (2010) conducted another research study examining the academic success of college freshmen during their first semester in relationship to their high school success as determined by scores received on AP examinations and found that “for students with similar high school rank or SAT scores, those with AP credit significantly outperformed their peers with no AP credit” (p. 30).

In total, 71,673 students sat for an AP examination during their freshmen year in high school in 2011 with AP Human Geography being the most popular course for this group of students. However, 42 percent of freshmen who took the AP Human Geography year-end examination earned a score of 1, which was the equivalent of a failing score (Downey, 2012). The growing number of freshmen AP students had become a rallying cry for those concerned by the rapid growth of the AP program. Many post-secondary educators found it extremely difficult to believe that 14-16 year old students were enrolled in any type of college-level course, regardless of innate ability or prior academic preparation (Casement, 2003; Downey, 2012).

However, some educational researchers disagreed with these supportive findings (Casement, 2003; Hansen et al., 2006; Schneider, 2009). Casement (2003) wrote that the College Board “works hard, it says, to maintain the integrity of its standards” (p. 17). Casement went on to detail the multiple research studies released by the College Board or its surrogates that claimed to confirm the credibility of the AP program and the positive relationship between AP examinations and academic content in corresponding college courses. Casement was scathing in...
his discussion of the College Board research studies and their methodology. For example, he
described how the College Board’s released longitudinal studies concerning the AP program in
1982, 1986, 1993, and 2002; but that the four studies were independent of each other and did not
attempt to measure the same variables and therefore could not be used to show a coherent picture
of success and relevance over time (Casement, 2003).

Casement (2003) used the 2002 research study released by the College Board as an
element of the problems with the organization’s research methodologies. The 2002 research
study completed with data gathered from 1996-1998, a period when the AP program was a less
than half of its present size. In addition to the use of old data or data that did not conform to the
current size and scope of the AP program, the study pulled all of its subjects from one institution,
the University of Texas at Austin. The fact that the College Board had attempted to make
generalizable statements about the integrity of the AP program from such a flawed set of studies
was another major issue for many of those concerned by the rapid growth of the AP program.

Casement (2003) also stated that the other major institution that had released research
studies concerning the validity of the AP model was the Educational Testing Service (ETS),
which the College Board called a partner organization. In fact, the ETS was an organization that
had received contracts from the College Board to arrange the AP examination scoring sessions
each year. Casement claimed that the limited nature of research concerning the AP program and
the fact that almost all of the quantitative studies available had been completed by groups that
were very much aligned with the College Board made it hard to not question the validity of the
research studies and the AP program’s testing regiment. This made it difficult for even the most
devoted disciples of the AP program to mount an unassailable defense of the organization.
Past Measures of AP Program Success

A wide range of data points related to student academic achievement has been discovered in the relevant literature. A survey of literature related to how previous researchers have measured the academic achievement for students participating in AP program helped to guide this study and its examination of AP student academic achievement. The most frequently used data points for examining the success of an AP program or AP program student selection model have often been related to either the scores students received from the College Board on a particular AP examination or student academic achievement in post-secondary academic settings as determined by college grade point average or individual course grade (Callahan et al., 2009; Chajewski et al., 2011; Dutkowshy et al., 2009; Hansen et al., 2006; Hertberg-Davis & Callhan, 2008; McIlroy, 2010; Sadler & Tai, 2007a, 2007b; Scott et al., 2010; Shaw et al., 2012; Thompson & Rust, 2007).

Scott, Tolson and Lee (2010) completed a study that examined student academic success during students’ first post-high school academic semester. Their research used AP examination scores and college-level course grade as the indictor of academic success. Shaw, Marini, and Mattern (2012) also completed a study focused on the role student enrollment in AP courses had on the college admissions process and subsequent student academic performance during the first year of post-secondary enrollment. Their research found that passing AP examinations was more important than simply being enrolled in AP coursework. This focus led their research to be concerned with college grade point average, but also allowed them to include data concerning student academic achievement as measured by scores received on AP examinations.
Hansen et al (2006) completed a similar research study focusing on the relationship between student AP examination scores in English language and arts (ELA) courses and academic outcomes in first-year freshmen composition courses at the college level. In the end, the research found that students who took one of the two available AP ELA courses (AP English Language and Composition or AP English Literature and Composition), as well as a college-level composition or ELA course received better course grades than students who only completed a high school-level AP ELA courses or only a college-level composition or ELA course. The marker of academic achievement in this research study was limited to AP examination scores and course grades awarded to students by the college-level course instructor.

Measuring the success of AP programs or AP program student selection models using student academic success in college or university courses that directly correspond to the AP course(s) that students enrolled in at the high school level has been used in the past, but not with a high frequency. For instance, Sadler and Tai (2007a) completed a research study that focused on student AP examination scores in biology, chemistry, and physics courses at the high school level and their relationship to student grades in the same entry-level college-level science course. The research duo found that students with “an AP exam score of 1 earned college science grades no better than did those students who entered the college course after having taken a regular course and a score of 2 did no better than students in previous honors courses” (p. 13). The indicator of academic achievement in this research study was limited to AP examination scores and course grades awarded to students by the college-level course instructor.

Another academic benchmark used for determining the success of AP program and AP students’ selection models has been student rates of enrollment in a four-year, post-secondary
educational institution, as well as student rates of bachelor’s degree completion after enrollment. Chajewski, Mattern & Shaw (2011) completed a research study that focused on the relationship between enrolling in a high-school level AP course and student rates of enrollment in a four-year, post-secondary educational institution. Their research findings indicated that the “odds of attending a 4-year postsecondary institution increased by at least 171% for all their AP participation groups” (p. 16).

The success of an AP program or AP program student selection model has often been tied to the makeup of the student population enrolled in the program as it relates to the overall demographic makeup of the individual school offering the advanced program. As previously mentioned, much of the debate concerning the expansion of the AP program over the last several decades has involved a perceived need to provide access to advanced educational coursework to traditionally underserved student populations. Traditionally, AP programs have not been readily available to minority and lower socio-economic student populations. The focus on the percentage of certain student groups enrollment numbers in high school AP programs can be attributed to the large portion of the relevant literature that cites limited access as a major factor in AP program expansion and a corresponding increase in the use of open enrollment systems across the nation (Burney, 2010; Flores & Gomez, 2011; Hallett & Venegas, 2011; Iatarola et al., 2011; Klopfenstein, 2004b; Scott et al., 2010; VanSciver, 2006).

Flores and Gomez (2011) wrote an in-depth review of strategies being implemented across the nation in an effort to increase AP program access for underrepresented student populations. Their review found that a lack of quality teachers and poor middle school preparation were factors undercutting the academic success involved by underrepresented
students in newly available AP programs. In their study the researchers used AP examination scores as the measure of student academic achievement.

**Methods for Delivering AP Educational Services**

The ongoing debate concerning the dependability of the AP program as a means of meeting the educational needs of gifted and academically talented students, as well as the program’s reliability and validity as a method for awarding post-secondary academic credits will most likely not be settled anytime in the near future. However, in the first decade of the new century the program had another major problem that divided even its most ardent supporters. The most debated educational issue concerning the AP program during this period has been how to best deliver the AP program’s services to the nation’s students (Gewertz, 2008; Hallett & Venegas, 2011; Mathews, 2009; McNeil, 2007).

There have been two main systems that high school administrators, guidance counselors, and teachers have used to select students for inclusion in AP courses: open and closed student selection systems. Typically, high schools have used an open enrollment system for most advanced and general education course offerings. Open enrollment systems allowed parents and students to select the courses the student would take during an academic school year. Open enrollment systems also allowed students to enroll in courses with no or limited prerequisites. Often schools with open enrollment systems still had predetermined course sequences in core academic subjects, and many had requirements that students enroll in lower-level courses before entering upper-level courses in elective subjects like health occupations, art, or drafting. Open enrollment systems gave the student the ability to decide upon the level or rigor of the courses he
chose to enroll in during his educational career. A school using an open enrollment would allow any and all students to enroll in any offered AP course or might have only had requirements for certain AP offerings such as advanced mathematics and science courses (Gewertz, 2008; Hallett & Venegas, 2011; Mathews, 2009; McNeil, 2007).

While many school systems have recently moved toward open enrollment systems, the predominant selection method used over the course of College Board’s 69 year history has been the closed enrollment system. Closed or selective enrollment systems employed the use of student test scores, prior academic performance in lower-level courses, and teacher recommendations to select the students who were allowed to enroll in the school’s AP courses. Closed enrollment systems were used for a variety of reasons. Many schools tried to limit the size of AP courses because of the demands of the more rigorous curriculum, and attempting to predetermine which students will be most successful helped to ensure the most appropriate use of school resources (Gewertz, 2008; Hallett & Venegas, 2011; Mathews, 2009; No Child Left Behind Act of 2001: Improving the Academic Achievement of the Disadvantaged, 20 U.S.C. §6301 2002).

The Advantages and Disadvantages of Open and Closed Enrollment Systems

In 2013, the intense discussion surrounding the use of open and closed enrollment student selection systems for AP programs across the nation could be boiled down to an “ongoing debate in the field about maintaining the ostensible purity of the AP program versus diluting it with program expansion” (Flores & Gomez, 2011, p. 65). People on both sides of this debate valued the AP program as a means of delivering rigorous, high-level educational curriculum to high
school students; however the two sides were in disagreement concerning the appropriate size and reach of the program in our nation’s high schools (Callahan et al., 2009; Flores & Gomez, 2011; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011; VanSciver, 2006).

Supporters of open enrollment student selection systems believed that the AP program was one of the best ways the modern American educational system could use to close the so-called achievement gap between low and high achieving students and school districts (Flores & Gomez, 2011; Iatarola et al., 2011; McIlroy, 2010; VanSciver, 2006). The National Education Association described the achievement gap as the difference between the test scores of minority and/or low-income students and the test scores of their Caucasian and high/middle-income peers ("Students affected by achievement gaps," 2013).

Proponents of closed student selection systems for high school AP programs disagreed that the AP program was a reliable means of closing the achievement gap. Closed enrollment supporters tended to lean heavily on the notion that the AP program was created as, and was still best used as, a method for offering advanced academic curriculum to the nation’s gifted and academically-talented students. Supporters of the closed enrollment system tended to believe that students must enter AP courses with a certain amount of academic preparation. Without the appropriate background knowledge and academic skill set, closed system supporters were unsure if AP coursework was not more of a hindrance than a help to some students (Casement, 2003; Downey, 2012; Flores & Gomez, 2011; McNeil, 2007; Tat, 2013).

**Advantages and Disadvantages of Open Enrollment Systems**

Many proponents of open enrollment have supported the expansion of the AP program
because they believe it to be an effective means of closing the achievement gap for students in schools that serve predominately minority and low-income student population. The use of the AP program as a means of closing the achievement gap has been an issue many supporters of open enrollment have used since the late 1960’s to prompt AP program expansion. This notion that the AP program might have a hand to play in closing the achievement gap had slowly moved from a fringe idea to mainstream educational thought (Flores & Gomez, 2011; Iatarola et al., 2011; McIlroy, 2010; VanSciver, 2006). In 2011, the Secretary of the United States Department of Education, Arne Duncan, stated that “in an effort for districts and schools to promote rigorous standards, increasing student participation in advanced courses such as AP would be important” (Chajewski et al., 2011, p. 16).

Supporters of the expansion of the AP program and the use of the open enrollment system championed educational research that demonstrated a link between enrollment in AP courses and academic success in post-secondary institutions. There were numerous educational research studies related to the AP program that consistently revealed a link between student participation in the AP program and academic success at the collegiate level (Chajewski et al., 2011; Hargrove, Godin, & Dodd, 2008; Keng & Dodd, 2008; Mattern, Shaw, & Xiong, 2009).

Chajewski, Mattern, and Shaw (2011) completed a meta-analysis of educational research related to the AP program and wrote that the research “consistently demonstrated a systematic link between AP participation and college success” (p. 16). McIlroy (2010) completed a case study on the effects of open enrollment systems on students of color in New Mexico high schools and wrote that “for students of color, AP participation has been found to increase bachelor’s degree completion by as much as 28% for African-Americans and 28% for Latino/as” (p. 8).
Flores and Gomez (2011) wrote that students who engaged in AP coursework “positioned themselves to do better in future AP and college courses as they gained important study skills and higher levels of confidence” (p. 67).

The College Board’s Equity and Access Statement demonstrated how the organization was firmly behind increasing access to the AP program in schools with large numbers of minority students and/or low-income students (“Equity policy statement," 2013). The statement encouraged “elimination of barriers that restrict access to AP courses for students from ethnic, racial, and socioeconomic groups that have been traditionally underrepresented in the AP Program” (Klopfenstein, 2004b, p. 2). The statement read as follows:

The College Board and the AP Program encourage teachers, AP Coordinators, and school administrators to make equitable access a guiding principle for their AP programs. The College Board is committed to the principle that all students deserve an opportunity to participate in rigorous and academically challenging courses and programs. All students who are willing to accept the challenge of a rigorous academic curriculum should be considered for admission to AP courses. The Board encourages the elimination of barriers that restrict access to AP courses for students from ethnic, racial, and socioeconomic groups that have been traditionally under-represented in the AP Program. Schools should make every effort to ensure that their AP classes reflect the diversity of their student population (“Equity policy statement," 2013, p. 2).

Support for expansion of the AP program began slowly in the late 1960s when educational reformers started to notice a severe lack of access to AP programs and AP coursework in schools located in the nation’s inner cities, rural areas, and schools with large numbers of minority students and/or low-income students. The literature abounds with evidence supporting the existence of a gap in access to the AP program for schools serving predominantly minority and/or low-income students (Burney, 2010; Flores & Gomez, 2011; Hallett & Venegas, 2011; Iatarola et al., 2011; Klopfenstein, 2004a; Scott et al., 2010; VanSciver, 2006). In particular, Hallett and Venegas (2011) found that “schools serving low-income students offer
significantly fewer AP courses than their counterparts in more affluent communities “(p. 468).

Another major concern for supporters of AP expansion and open enrollment systems was the fear that the gap in student access to AP coursework between the nation’s affluent and non-affluent schools perpetuated “a two-tiered educational system” (Sadler & Tai, 2007b, p. 9). Supporters of AP expansion believed not only that these student populations were at a disadvantage in the college admissions process but also that these underserved student populations were not as prepared academically for the move to post-secondary educational institutions (Burney, 2010; Flores & Gomez, 2011; Hallett & Venegas, 2011; Iatarola et al., 2011; Klopfenstein, 2004a, 2004b; Scott et al., 2010; VanSciver, 2006).

Proponents of AP program expansion pointed to the multitude of educational research studies that have shown a link between access to AP programs at the high school level and success in post-secondary education (Chajewski et al., 2011; Dutkowsky et al., 2009; Hansen et al., 2006; McIlroy, 2010; Sadler & Tai, 2007b; Scott et al., 2010; Thompson & Rust, 2007). In their research study, Dutkowsky, Evensky, and Edmonds (2009) found that “educators almost universally agree that offering academically challenging high school courses plays a significant role in the development and academic preparedness of students” (p. 264). Sadler and Tai (2007a) completed a research study that found that “students taking AP science courses perform better in college-level science courses. Also there is evidence of value in AP math and English courses” (p. 26)

As a result of this supposed link between access to advanced academic high school programs and post-secondary academic success, governments across the nation began to look for ways to increase access to programs like the College Board’s AP program (Iatarola et al., 2011;
Klopfenstein, 2004b). Support for this trend toward AP expansion could be found in the work of Hertberg-Davis & Callhan (2008). The researchers stated that much of the growth of both the AP and IB programs in the United States that started in the 1990s could be attributed to four major factors: government support, recommendations and commendations of program experts, the increased use of such courses to gauge overall school quality by regional and national rating systems, and positive regard by colleges and universities for the program as a gauge of student academic ability in the college admission process.

Many on both sides of the debate disagreed with the idea that access to AP coursework generated more positive educational outcomes for all students; however it became difficult for even the most ardent proponents of closed enrollment to deny that having AP courses on a resume did not, at the very least, help to increase a student’s odds of acceptance to the college of his or her choice (Dutkowshy et al., 2009; Hallett & Venegas, 2011; Shaw et al., 2012). The fact that many post-secondary institutions still relied heavily on AP coursework as a mark of academic distinction at the high school level made it very difficult for those concerned by rapid AP expansion and the use of open enrollment systems to argue for the limiting of access to this important piece of the college admissions puzzle, especially considering that open enrollment systems were often aimed at underserved minority and lower socioeconomic groups (Brady, 2012; Dutkowshy et al., 2009; Flores & Gomez, 2011; Hallett & Venegas, 2011; Klopfenstein, 2004a, 2004b; Shaw et al., 2012; VanSciver, 2006).

**Advantages and Disadvantages of Closed Enrollment Systems**

On the surface open enrollment sounded like a positive educational policy to reformers
interested in increased opportunities for students who had traditionally been unable to access prestigious advanced educational programs. However, those concerned by the growing use of open enrollment student selection systems came to believe that simply increasing access to advanced educational programs, like the College Board’s AP program, could not solve the real problem at the heart of the educational achievement gap (Hallett & Venegas, 2011; Shaw et al., 2012). Closed enrollment system supporters came to believe that the issues facing the nation’s traditionally underserved minority and lower socio-economic students were much deeper than a simple lack of access to advanced coursework. Proponents of closed enrollment, and others who feared the overexpansion of the AP program, tended to believe that the achievement gap and limited access to advanced coursework for traditionally underserved student populations could be better addressed by a renewed focus on academic rigor in standard high school courses or by better preparing students for AP coursework at the high school level through better alignment of middle school standards and educational practices (Callahan et al., 2009; Casement, 2003; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011; McNeil, 2007; Shaw et al., 2012; Tat, 2013).

Those concerned by the rapid expansion of the AP program cited studies, like the one conducted by Sadler and Tai (2007a), which found pushing inadequately prepared students into rigorous AP courses could actually weaken their academic progress and only serve to enlarge the achievement gap. Sadler and Tai wrote that many educational professionals believed that students who were enrolled in AP courses, but scored only a “1” on the corresponding year-end examination may have wasted a year that could have been better spent in a more academically appropriate lower-level course improving the skills needed to be successful at the post-secondary
Sadler and Tai (2007a) also corroborated previous research studies concerning the link between access to AP coursework in high school and success in post-secondary institutions. The study found that “when demographics and prior academic achievement are accounted for, the apparent advantage held by students with AP experience in high school are roughly cut in half” (p. 12). These findings matched a similar study completed by Dougherty, Mellor, and Jian (2006) which also found a “reduction in the modeled outcome variable, college graduation rate, from 39% to 26% for students passing an AP exam” (Sadler & Tai, 2007a, p. 13). In addition, Willingham and Miller (1986) also found that at least half of the advantage a student supposedly obtained by enrolling in an AP course and passing the year-end examination could be explained by the student’s prior academic ability and socioeconomic background.

Hertberg-Davis and Callhan (2008) completed research that focused on the perceptions of students who enrolled in advanced educational program, such as the AP program. The pair found that students were often quite aware of their ill-preparedness and believed that enrollment in advanced coursework did not always meet their educational needs. The authors also wrote that “students who identified themselves as coming to AP and IB courses without requisite background skills believed that they were never given an opportunity to catch up to the other students in the class and were expected to use skills that they had never been taught” (p. 206). In addition, “interviews with AP and IB teachers confirmed that students who struggled most in these courses were not incapable intellectually but rather were those students who came to the courses without the appropriate time management and study skills” (p. 206).

These research findings supported the belief held by proponents of AP closed enrollment level.
that simply increasing access did not improve student educational outcomes (Hallett & Venegas, 2011; Shaw et al., 2012). However, disproving the link between AP access at the high school level and greater success in college and universities studies was not the only focus of proponents of closed enrollment student selection systems. There was also concern that school, district, and state-level officials might have been pushing for AP program expansion for reasons other than simply increasing access for traditionally underserved student populations (Iatarola et al., 2011).

Iatarola, Conger, and Long (2011) completed research that focused on the determinants of high school academic advanced course offerings and found information that pointed toward less than purely educational reasons for the expansion of AP programs in certain high schools around the nation. The research study concluded that “there is some evidence, for instance, that schools with a growing share of minorities are more likely to create separate curricular tracks for high- and low- achieving students” (p. 344). This research study posited that to some extent AP expansion could have been an effort to offer a more segregated educational experience for students and parents in transitional communities that were not entirely comfortable with changing ethnic and socio-economic realities.

This motive for AP expansion might have resulted from efforts by school officials to “enhance their advanced courses in an effort to prevent the high-ability students from exiting the school in search of learning environments with more similar peers” (Iatarola et al., 2011, p. 343). Indeed, there was a large section of the relevant literature concerning ability grouping or tracking in schools that suggested a link between the creation of advanced academic program in high schools and a desire by school administrators to satisfy the demands of a community’s highest performing students (Burns & Mason, 1998; Finley, 1984; Iatarola et al., 2011; J. Oakes &
Guiton, 1995).

Proponents of closed enrollment student selection systems have also cited research studies that show a link between ability grouping or student tracking and improvement in learning situations and classroom climates for gifted and academically-talented students (Callahan et al., 2009; Perrone, Wright, Ksiazak, Crane, & Vannatter, 2010; Rogers, 2002). Callahan, Foust and Hertberg-Davis (2009) stated that “despite the possible disadvantages of ability grouping, the most common ways American high schools support the unique learning needs of advanced students is by offering AP and International Baccalaureate courses” (p. 290). The study also found that “the academic homogeneity of AP and IB classroom environments seemed to increase students’ comfort while learning” (p. 299).

Supporters of closed enrollment have also worried that an expansion of the advanced programs could mean a loss of focus on the needs of the truly gifted and academically-prepared students. The fear was that an AP program, filled with academically unprepared students, forced classroom teachers to teach to the middle ability level and focus on making sure the unprepared students met basic state educational standards for content knowledge and skill mastery (Thompson & Rust, 2007). Rogers (2002) concurred with this view and wrote that “when states assess a school’s performance, they typically look at what percentage of its students meet minimum competency standards, not whether gifted students are achieving at levels appropriate for them” (p. 102). Rogers believed that often schools are enlarging AP programs at the expense of effectively meeting the educational needs of their best and brightest students.
Minority and Lower Socio-Economic Status Students in AP Programs

In 2013, open enrollment systems were in the majority in the United States, but the use of closed enrollment systems was still widespread. In 2009 the College Board’s annual questionnaire for AP coordinators surveyed the 12,437 schools that offer AP courses nationwide. The College Board reported that 54 percent of respondents claimed that their schools used an open enrollment system for AP courses (Mathews, 2009). However, the growing use of open enrollment systems did not correct the issue of underrepresentation of minority students and students from lower socio-economic households in AP courses ("AP report to the nation 2012," 2012; King & Servais, 2010).

During the 2010-2011 school year, 903,630 high school students took at least one AP examination and 333,205 of these students were minority students. This data showed that minority students accounted for 36.8 percent of the total number of U.S. students taking AP examinations that year. On the surface this was good news, but when one dug a little deeper into the data, the results were not as reassuring for minority students. When one examined the total number of AP examinations given during the same time period, one could see that minority students were still vastly underrepresented. Minority students only accounted for 9 percent of the 3.7 million AP examinations given during the 2010-2011 school year ("AP report to the nation 2012," 2012). This meant that while minority students were taking AP examinations; they were not taking them at the same pace as Caucasian students and this put minority students at a disadvantage when applying to and preparing for post-secondary educational institutions (Burdman, 2000; Posthuma, 2007; Smith, 2012).
Minority students were underrepresented and the same was true for students from lower socio-economic households. These students accounted for only 16.7% of the total number of AP examinations taken in 2011. The virtues of AP courses commonly put forward by the College Board have centered on the additional rigor offered by AP courses and the program’s ability to better prepare students for academic work at the post-secondary level. This opportunity gap would seem to have negatively affected the students that were most in need of additional academic rigor in order to be successful at the post-secondary level (Barton, 2004; Berkowitz, 2007; Gewertz, 2009; Smith, 2012).

Many educational experts have espoused open enrollment policies as the key to correcting this educational opportunity gap. Many proponents of open enrollment policies have claimed that schools with closed enrollment systems have kept out able minority students (Gewertz, 2008; Klopfenstein, 2004a). However, there seemed to be other issues at play. The College Board’s 2012 Report to the Nation indicated that 80 percent of African-American high school graduates “whose PSAT scores suggested they could have succeeded in an AP courses never enrolled in the classes” ("AP report to the nation 2012," 2012, p. 17). While this rate did drop to under 40 percent for students of Asian descent and 60 percent for Caucasian students, these were still significant numbers of students choosing not to engage in more academically-rigorous courses. This data suggested that many minority and non-minority students who were academically prepared and capable of undertaking the academic rigor of AP courses were choosing not to enroll in these types of programs despite the increasing popularity of open enrollment policies (Posthuma, 2007; Smith, 2012).

Many of those concerned by the AP program’s rapid growth have stated the funds that
were being used to further expand high school AP programs could have been better used to help minority students and students from lower socio-economics households more thoroughly prepare academically for post-secondary educational opportunities. These educational experts also claimed that simply providing access to more rigorous courses was meaningless if students were not prepared to take the advanced courses. Data showed that these two groups of students produced more non-passing scores on AP examinations than other groups of students. Some proponents of close enrollment systems believed that educational funds could have been better used to train teachers and fund courses at the middle school level that would have helped to prepare students for the rigor of AP courses. This approach would have allowed students to better use the open access to AP courses being presented to them at the high school level. Many thought that simply presenting students with more difficult coursework, without the appropriate educational background needed to succeed in more rigorous courses, did not increase educational outcomes for this group of students (Gewertz, 2009; Klopfenstein, 2004a; Mattimore, 2008).

The Heart of the Disagreement

In the end, an examination of the relevant literature that concerned open and closed AP enrollment student selection systems did not show as wide a gap in the educational philosophies of supporters on each side of the topic as one might initially think. Tat (2013) stated that “at the heart of the debate is the issue of equitable access compared with students’ actual preparedness to take on the challenge” (p. 1). This simple statement buttressed the main arguments and points made by both sides in this intensely heated debate.

The literature reviewed for this study pointed toward one common question that neither
side seemed able or prepared to answer conclusively. Does open access to AP programs better the educational outcomes of participants or do students do well in AP programs because they have been well-prepared academically for the challenge? This was the central disagreement between the two sides of this educational debate (Flores & Gomez, 2011; Hallett & Venegas, 2011; Schneider, 2009; Shaw et al., 2012; VanSciver, 2006).

Proponents of open enrollment and AP program expansion believed that the rigor of AP courses could level the playing field for traditionally underserved student populations. They also believed that the majority of standard classroom curricula do not prepare students for the academic rigor of modern day colleges and universities. They tended to believe that simply enrolling in an AP course could improve student outcomes regardless of the scores students received on year-end AP examinations (Flores & Gomez, 2011; Iatarola et al., 2011; McIlroy, 2010; VanSciver, 2006). In fact, research showed that each year one-third of students who were enrolled in AP courses throughout the nation do not sit for the year-end examination (Dutkowsky et al., 2009; Schneider, 2009).

Supporters of closed enrollment student selection systems disagreed with the idea that students were helped by simply enrollment in an AP course. Supporters tended to believe that the overexpansion of AP programs was eroding the confidence colleges and universities once had in the program and hurting the students who could reap the benefit of advanced educational programs, like the AP (Casement, 2003; Dutkowsky et al., 2009; Hansen et al., 2006). Supporters of closed enrollment were often not arguing for an elites-only program, as open enrollment supporters sometimes claimed, but simply believed that the AP program was not the proper vehicle for correcting flaws or deficiencies in a school’s regular curriculum (Flores &
Supporters of closed enrollment systems have often claimed that open enrollment proponents should focus their energies on increasing rigor in standard high school course curricula. They believed that an educational philosophy that espoused advanced coursework for all did not help students who were either incapable or unprepared for such advanced programs (Flores & Gomez, 2011; Hallett & Venegas, 2011; McNeil, 2007; Shaw et al., 2012; Tat, 2013). They pointed to data that concerned the large percentage of students who did not attempt year-end AP examinations as a mark that students were being pushed into courses that they were not prepared for and in some cases may have harmed their academic progress (Sadler & Tai, 2007a).

Closed enrollment supporters alleged that expansion of programs like AP or IB should have taken place only after our education system had spent time seeking ways to better prepare students for the challenges of advanced academic courses. They claimed that a focus on aligning middle schools curricula to the rigor of AP, IB, or even college/university level work would have done more good than simply expanding AP programs to students without the necessary academic training (Flores & Gomez, 2011; McNeil, 2007; Tat, 2013).

Both sides saw the barriers that slow the proper expansion of AP programs. Supporters on both sides of the issue agreed that often students were placed in AP courses with teachers who were unable or unprepared to guide students toward advanced learning objectives. However, while closed systems proponents saw this as a problem that must be corrected before expansion, open enrollment supporters saw it as an excuse that should be worked on while expansion took place and students were allowed to enrollment in the program (Callahan et al., 2009; Casement, 2003; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008;
Iatarola et al., 2011).

Both sides agreed that advanced educational programs, like the College Board’s AP program, were useful methods for providing advanced curriculum to high school students and an important part of most college applications; however neither side agreed on the fundamental purpose of the AP program nor the type of students who should have been allowed to enter the program (Flores & Gomez, 2011; Klopfenstein, 2004b).

As of 2013, the two sides seem unlikely to resolve their differences any time in the near future and both factions also live to see their prophecies become realities. The AP program continues to grow every year with more and more students taking more and more AP courses and AP examinations (Hansen et al., 2006). At the same time, the once pristine reputation of the College Board’s AP program continues to fade in the eyes of elite high schools, colleges, and universities throughout the nation (Casement, 2003; Dutkowshy et al., 2009; Hansen et al., 2006). The answer seems to lie somewhere in the middle of the two warring camps with no easy solution in sight.
CHAPTER III

METHODOLOGY

Introduction

For the purposes of this study, the Convergent Design model was chosen as the primary research design model (Creswell & Plano-Clark, 2007). The Convergent Design model for mixed methods research is a variant of the Triangulation Design model and allowed for the concurrent use of both quantitative and qualitative data sets concurrently in an attempt to investigate the study’s research questions. Creswell and Plano-Clark (2007) described the Convergent Design model as one in which "the researcher collects and analyzes quantitative and qualitative data separately on the same phenomenon and then the different results are converged during the interpretation" (p. 64). The authors also stated that the purpose of the design approach was to “end up with valid and well-substantiated conclusions about a single phenomenon” (p. 65). The ability to collect and analyze separate quantitative and qualitative data sets and the resulting merging of the findings made it easier to obtain a more holistic view of the data. This ability to merge the quantitative and qualitative findings made the Convergent Design model the most appropriate design for this study. The design was also appropriate because this research study focused on the collection of quantitative data from a large number of high schools concerning student AP examination results, but this quantitative data alone did not provide enough information to adequately investigate all of the research questions posed by this study. In order to
answer Research Questions Three, Four, and Five, all of which were concerned with stakeholders’ perceptions, this study included an interview data collection aspect (Creswell, 2009; Creswell & Plano-Clark, 2007). This study was designed to include interviews with a range of stakeholders in at least two high schools (one that used each of the two dominate student selection systems) from each of a set of regions.

The research design for this study was in line with the intent of the Convergent Design model because it featured the collection of a primary quantitative data set and the collection of a secondary qualitative data set. The collection of interview data helped to further illuminate the possible connections between student academic achievement and the use of a particular student selection system in high school AP programs. The qualitative data collected during the interviews focused on stakeholder perceptions as opposed to the strictly numerical focus of the quantitative data results. This allowed the study to examine both the possible relationship between the use of a particular of student selection systems and student academic achievement, as well as school stakeholder perceptions of the selection systems' impact and effectiveness within the same research study (Creswell, 2009; Creswell & Plano-Clark, 2007).

This research study primarily employed a quantitative research approach to answer Research Questions One and Two. The most common measures of student academic achievement related to AP programs and AP program student selection systems were student scores on AP examinations, student enrollment in a four-year post-secondary institution, and student academic success in college-level courses related to the AP coursework completed at the high school level. Tracking a large number of students over a long period of time would have required a time span beyond the scope of this study. That being the case, the study relied heavily
upon student scores on AP examinations as the main quantitative benchmark for determining student academic achievement in AP programs using either an open or closed student selection systems (Callahan et al., 2009; Chajewski et al., 2011; Mattern et al., 2009).

The study also collected and analyzed qualitative data in order to help create a more detailed overview of the relationship between the use of open and closed student selection systems for enrollment in school-level AP coursework across the state of Georgia and student academic achievement. The open-ended questions used during the structured interview addressed the perspectives of organizational stakeholders concerning the relationship between the implementation of an open or a closed student selection system for enrollment in school-level AP coursework and student academic achievement. The structured interview questions were based upon previous research completed by Frederick Williams (2013).

Williams’ (2013) research study entitled, *Perceptions of Ability Grouping and its Possible Contribution to the Achievement Gap*, was designed to “explore the perceptions of ability grouping and its possible contribution to the achievement gap within the high school” (p. iv). Williams’ study focused on the connection between the criteria used to place students in standard academic-level ability groups, honors-level ability groups, and AP-level academic ability groups and the criteria’s connection to the academic achievement gap found between different student ethnic populations. Williams’ study focused on data collected from organizational stakeholder interviews in an effort to determine stakeholder perceptions about the relationship between the criteria used to create student ability groups and the academic achievement gap found between different student ethnic populations. Williams’ research study’s findings were based upon the analysis of qualitative data collected through the administration of
school-level stakeholders interviews and focus groups and focused on the following research questions:

(1) What are the specific beliefs, roles, and influences of teachers, administrators, counselors, students, and parents when determining ability level placement in school?
(2) What key factors shape teacher’s perceptions of students relative to academic achievement and placement?
(3) Does a course placement criterion contribute to the achievement gap? (p. 11).

This research study is related to the previous research conducted by Williams (2013) due to the fact that both Williams’ work and this study focused on the perceptions of organizational stakeholders as they related to the impact and the effectiveness of different student selection systems on the academic performance of high school students. This connection made the use of an altered form of Williams’ structured interview questions appropriate for this research study.

**Identification of Variables**

The classification variable for this research study was the model used to select students for enrollment in AP educational services (open or closed).

The dependent variables for this research study were academic achievement as measured by student scores on yearly AP examinations and the perceptions of organizational stakeholders concerning the effectiveness of the student selection systems in use at the school during the time this study was conducted.

**Description of the Population and Sample**

In an effort to better align the quantitative and qualitative data sets and to help improve the study’s ability to make more generalizable comments about the relationship between student
selection systems and student academic achievement in the state of Georgia, it was decided that a set of regions would be used for the collection of both of the quantitative and qualitative data sets. The regions intended for use in the study were the state’s federal congressional districts, which were created using information collected during the 2010 federal census (Wilson & DiIulio, 2007). This process was intended to make the results of the investigation more representative of the state and thus more generalizable for educational planning procedures.

Because federal congressional districts were specifically designed to include roughly equal populations regardless of geographic area they were chosen as the intended regions for this study (Wilson & DiIulio, 2007). The fact that the federal congressional districts had equal populations meant they would help to ensure that each geographic region in the state of Georgia was sampled with both its geographic location and its overall population taken into account. If no high schools from a particular congressional district agreed to participate in the study, then no high school from that congressional district was included in the quantitative or qualitative data collection aspects of the research study.

All school districts in the state of Georgia were included in the initial school district contact phase of this research study. If a congressional district had more than four high schools that agreed to participate in the study, then the intention was to collect quantitative data from all available high schools and then select four at random after an evaluation of the school AP courses. Data were collected from as many high schools as possible because of the need to match AP examination data from similar courses across high schools in the sample. Collecting data from as many high schools as possible in each congressional district was intended to help to ensure that an adequate number of high schools that had taught the same AP courses during the
2010-2011, 2011-2012, and 2012-2013 academic school years could be located for the quantitative data collection aspect of this research study. In the end, any congressional district with more than four viable high schools had four high schools selected at random for inclusion in the study's sample. In addition, student stakeholders were chosen at random for participation in the qualitative data collection aspect of the study.

**Quantitative Population and Sampling Procedure**

The population for the quantitative data collection aspect of this research study consisted of high schools that were located in the state of Georgia that had offered AP courses for at least the last three academic years. The goal of the quantitative data collection aspect of this research study was to sample a minimum of 56 high schools, four from each congressional district that had offered at least three AP courses each year during the 2010-2011, 2011-2012, and 2012-2013 school years. The goal was for these 56 high schools to consist of two groupings, one set of 28 schools that employed a closed enrollment student selection system and one set of 28 schools that employed an open enrollment student selection system during the three academic years identified for this study. In addition, the goal was to collect quantitative data from four high schools in each of the state’s 14 congressional district, two high schools that used a closed enrollment student selection system and two high schools that used an open enrollment student selection system. In most instances the high schools participating in the qualitative data collection aspect of the study were the same high schools that provided the quantitative data. It was necessary to expand this approach but, in general, the study concentrated on the same four high schools in each congressional district. When fewer than four high schools or no high
schools existed in a particular congressional district that met the study’s parameters, no high school was from that district was included in the study.

A second sampling parameter was used to determine which schools’ AP data sets were included in the study. This second sampling parameter focused on the specific AP courses offered at each school over the course of the past three academic school years. Due to the fact that the College Board offered 34 different AP courses at the time of this study and that each AP course had a completely different set of content requirements and associated testing procedures associated with it, there was a need to make sure that the data sets used in the study contained data from the same AP courses. It would not have been appropriate to compare student academic achievement using different AP courses due to the differences in course content and College Board testing procedures. For example, a comparison of student scores on the AP Calculus and the AP European History examinations would not have been a valid measure for making generalizations about the possible relationship between the use of a particular student selection models and student academic achievement. This second data collection parameter made it necessary to collect AP examination data before determining which AP examinations were used in the data analysis portion of the study. The goal was to include AP examination data from at least three distinct AP courses; however in the end nine courses met the study’s parameters.

The research study had an additional criterion concerning the minimum number of AP courses that must be offered in order for a school to be included in the study. This additional AP course parameter stated that each particular AP course had been offered at each school for all three academic years being examined by this study. This additional information concerning the research study's AP course criterion was collected through direct contact with each school’s AP
coordinator after it was determined that the school met the study’s student demographic parameters.

**Qualitative Population and Sampling Procedure**

The population for the qualitative portion of this research study consisted of educators and students employed by or enrolled in high schools in the state of Georgia during the time period this study was conducted. The sample for this study consisted of high school AP coordinators, AP teachers, and students from high schools that fell within the parameters used in the quantitative data collection aspect of the research study. Structured interviews were conducted based on the previous work of Fredrick Williams (2013) with each of the selected school’s AP program coordinators, one or two AP teachers, and one or two students enrolled in AP coursework at the high school at the time this study was conducted. This range of interview subjects provided a general overview of school-wide stakeholder perspectives concerning the connection between student academic achievement and the use of a particular student selection model in relation to AP coursework at each school.

The goal for the qualitative data collection aspect of the research study was to collect interview data from a minimum of 28 high schools that took part in the quantitative data collection aspect of the research study. The goal was for these 28 high schools to consist of two groupings, one set of 14 schools that used a closed enrollment student selection system and one set of 14 schools that used an open enrollment student selection system during the three academic years (2010-2011, 2011-2012, and 2012-2013) from which data were collected for this study.
In the event that information could not be collected from both a high school that employed an open and a closed student selection system during the three academic school years being examined in this research study, then no high school or only a high school that employed one of the two major student selection systems from that congressional district participated in the qualitative data collection aspect of the research study.

Instrumentation

The Quantitative Data: AP Examinations

The quantitative instruments that were used to study the research questions in this study were the 34 AP examinations developed and assessed by the College Board. As previously mentioned, the exact titles of the AP examinations that were to be used in this study could not be determined until the data collection process had begun due to the need to use data from the same AP examinations at each of the participant high schools. It could not be accurately determined which AP courses were offered at which Georgia high schools until direct contact had been made with high schools in each region.

At the time of this research, the College Board’s various AP examinations were criterion-referenced achievement examinations, which meant that the items on each test were aligned with a predetermined set of standards developed by the College Board. This allowed schools, teachers, and students the ability to access all possible information covered on any of the AP examinations. The validity and reliability of AP examinations scores had been repeatedly examined and tested by the College Board in the years leading up to this study (Keng & Dodd, 2008; Schneider, 2009).
The student AP examination scores that were used in this research study were collected from AP examinations given and scored from May 2011 to June 2013. As mentioned in the previous chapter’s review of relevant literature, the formula for determining the scoring distributions on all AP examinations was known to only a few elite members of the College Board's infrastructure (Emmerling, 2001; Sadler & Tai, 2007a). However, the distribution of student examination scores had consistently stayed within a normal curve according to the data on AP examinations released by the College Board. In fact, since 1960 the percentage of student examinations that had received a passing score of 3 or higher on the various AP examinations had remained basically unchanged (Casement, 2003; Hansen et al., 2006; Sadler & Tai, 2007a).

Each AP examination score is a weighted combination of the student's scores on a multiple-choice section and a free-response section. The College Board grades all student examinations and assigns each a final score that is reported on a five-point scale. This five-point scale is designed to inform post-secondary institutions of the student's potential ability to success in a similar college-level course. The scale used by the College Board is "5" = extremely well qualified, "4" = well qualified, "3" = qualified, "2" = possibly qualified, and "1" = no recommendation. For the purposes of this study the AP examination data was dichotomized into passing and non-passing scores; passing scores were those receiving a score of "3", "4", or "5" and non-passing scores were those receiving "1" or "2". Those definitions of passing and non-passing scores were used because no college or university rewards a student with academic credit for a score of "1" or "2" ("AP report to the nation 2012," 2012).
The Qualitative Data: The Interview

For the interview data collection aspect of this study, a set of interview questions were used that were developed through an examination of a similar research study conducted by Frederick Williams (2013). The interview questions (See Appendix B for students, Appendix C for teachers, & Appendix D for AP coordinators) for this research study were a structured interview format. This format allowed for the use of specific, focused questions that were directly related to the study’s research questions. These interview questions were derived from Williams’ previous work and the information gleaned from the review of the related literature previously discussed in Chapter II. Dr. Williams was contacted and provided written permission allowing altered versions of his research study’s interview questions to be used in this study (see Appendix E).

Williams’ (2013) interview questions were slightly altered for use in this research study due to their excessive length, focus on sample populations not addressed in this study, and basic differences in the research questions examined in that study and this research study. Another important piece in the alteration of Williams’ interview questions was a critical review of research literature related to contemporary and past research in the field of the AP program and student ability grouping. The review of relevant literature on these related topics aided in making needed changes, subtractions, and additions to Williams’ interview instrument.

Williams (2013) divided the sampled organizational stakeholders in his study into three groups: students, teachers, and school-level support staff. The interview questions used in Williams’ study were similar across the three stakeholder groups, but did have several differences due to differences in each stakeholder groups’ relationship to the development and
implementation of the criteria used to determine student ability groupings, as well as the stakeholders’ role in the organization. Likewise, this research study focused on three individual stakeholder groups: students, teachers, and school-level AP coordinators. Like Williams’ study, this research study used three different sets of interview questions. Each of the three sets of interview questions used in this study were altered with differences in stakeholder roles taken into consideration.

**Procedures**

The process for implementation included the following steps:

1. Permission was obtained from the University of Tennessee at Chattanooga’s Institutional Research Review Board (IRB) to conduct research through the collection of student AP examination scores and by conducting interviews with designated organizational stakeholders.

2. AP coordinators at each school that met the selection parameters were contacted in order to obtain the needed AP examination data sets.

3. The appropriate school administration official in each school district were contacted in order to obtain permission to conduct interviews with designated school stakeholders.

4. School-level administration officials were contacted in order to set up dates and times to conduct designated stakeholder interviews.

5. Signed consent forms were obtained from the participants in order to use the results of the stakeholder interviews.

6. Stakeholder interviews were conducted.
7. The interview responses were collected, coded, and analyzed.

8. The data from the interviews was analyzed to determine what, if any, relationship existed between the various factors analyzed in the research study.

9. Data analysis was used to examine stakeholder perceptions. No cause or effect was determined. Perceptions were described in the form of a written narrative.

**Data Collection**

**The Quantitative Data: AP Examinations**

The quantitative data for this proposed research study was intended to consist exclusively of AP examination data collected from approximately 56 high schools (four from each region) within the state of Georgia that met the previously stated parameters. The data were collected from each high school’s current AP coordinator.

**The Qualitative Data: The Interview**

A pilot study was conducted prior to the qualitative data collection portion of the research study in order to determine the validity of the interview instrument. Pilot interviews were conducted with members of each of the three stakeholder groups. After the pilot study was completed and the interview instruments were determined to be sound, school districts across the state of Georgia were contacted and asked to participate in the study. Central office personnel were contacted in each school district to inquire about the need for IRB or administrative approval from the school district before collecting any data. Once a school district’s central office personnel had agreed to allow the district to participate, a list of potential interview
subjects was obtained from each high school’s AP coordinator. Letters of invitation (see Appendix F for students, Appendix G for teachers, & Appendix H for AP coordinators) were e-mailed to the identified potential study participants. In addition, the legal guardians of all student participants under the age of 18 were required to complete a release in order to participate in the research study (see Appendix I). All communication with school district superintendents and study participants took place only after formal approval had been received from the University of Tennessee at Chattanooga Institutional Review Board (IRB) in February of 2014 (See Appendix A). E-mails, telephone calls, or the help of the school’s AP coordinator were used to schedule the individual stakeholder interviews after approval had been received from all necessary entities.

Telephone interview sessions were scheduled with each of the participants who agreed to take part in the research study. The purpose of the study was explained to each participant in detail and each participant was informed that at any time during the interview he had the freedom to withdraw from participation in the research study. Participants were also told that the study would include the use of pseudonyms in place of participant names and that each high school used in the study would also be given a pseudonym to ensure participant and organizational anonymity. Each invitee had an opportunity to review the letter of invitation detailing the purpose and processes of the research study. If the participant maintained interest in continuing participation in the study, he was asked to sign an informed consent form indicating his willingness to participate in the study (see Appendix F for students, Appendix G for teachers, & Appendix H for AP coordinators). A signed consent letter was secured before any stakeholder interviews were conducted. During the question and answer portion of the stakeholder telephone interviews, a prescribed pattern was used when collecting data from all interviewees. After the
initial explanatory portion of the interview process, each stakeholder interview was conducted in the following three-step manner. Each interview question was read aloud to the participant and then the interviewees’ answer was recorded using a digital recorder. Lastly, each of the interviewee’s answers was restated (conversationally) to help make certain that the data collected was as accurate as possible. After each interview the digital recording was transcribed for later analysis.

Data Analysis

The Quantitative Data: AP Examinations

For the quantitative data consisted of a collection of AP examination results, appropriate descriptive statistics were applied to identify patterns that were present in the quantitative data set. The student scores from AP examinations were examined to investigate possible connections between student academic achievement, as determined through student results on AP examinations, and the use of a particular student selection system for enrollment in AP coursework at the high school level. This was done through a comparison of student results from the same AP examination (e.g. a comparison of student results on the AP Calculus examination or the AP World History examination). It was not possible to collect class-level student AP examination (i.e. results from a single, specific AP examination) so descriptive statistics were employed to investigate possible connections between student academic achievement through an examination of overall student AP examination results at the whole-school level.

The statistical analysis of the quantitative data set allowed for direct comparisons between student academic achievement, as determined through student results on AP
examinations, and the student selection systems used to determine enrollment in high school AP coursework. The direct comparison of student results, using the chi square ($\chi^2$) test of independence, allowed the study to draw preliminary conclusions about the relationship between student selection models and student academic achievement through an examination of the significant differences between the means of the student AP examinations results, be they single courses or whole-school results (Hinkle, Wiersma, & Jurs, 2003).

The Qualitative Data: The Interview

For the analysis of the qualitative data obtained through stakeholder interviews, the collected information was coded to reveal common themes. The coding process involved organizing the collected qualitative data into smaller segments of text.

According to Saldaña (2009) a code is “most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (Saldaña, p. 1). The coding of the qualitative data obtained from the stakeholder interviews allowed patterns to be detected in the 31 stakeholder interviews that were conducted during this research study. When using longer interview instruments, like the one was used in this research study, Saldaña (2009) stated that “the same codes will be used repeatedly throughout” (p. 5). In fact the use of the same code should be “deliberate because one of the coder’s primary goals is to find these repetitive patterns of action and consistencies in human affairs as documented in the data” (p. 5). When coding the interview data, it was important to consider the belief structures and prejudice naturally found when examining the world. Coding data are almost always effected by the researcher’s and
participants’ gender, age, race/ethnicity, etc (Creswell, 2009; Saldaña, 2009).

Miller and Crabtree (1999) identified a three step process for use when examining and coding qualitative data sets. This three step process helped examine the data on both a literal and a deeper interpretative level. The three step process described by Miller and Crabtree included a literal reading of the data that focuses on its literal content, a reflexively reading of the data that focuses on how personal biases shape interpretations of the data, and finally an interpretive reading of the data that focuses on the coder’s own interpretation of the data’s meaning.

The coding process was described by Yin (2003) as the best manner to analyze data obtained from interviews and the best method for examining such data in an effort to find patterns of meaning. In his book, Yin cites the work of Miles and Huberman (1994) and described the best structure or methodology to follow when attempting to code data. The author described the following six major steps in the coding process:

1. Putting information into different arrays
2. Making a matrix of categories and placing the evidence within such categories
3. Creating data displays—flowcharts and other graphics—for examining the data
4. Tabulating the frequency of different events
5. Examining the complexity of such tabulations and their relationships calculating second-order numbers such as means and variances
6. Putting information in chronological order or using some temporal scheme (Yin, 2003, p. 111).

The categories were developed for the coding process from two sources: the interview data and the information collected during the review of the relevant literature. Since this was not the first research study to examine ability grouping at the high school level a deductive coding scheme was used to examine the data set. In research studies where no previous guiding theories were available, coding categories were created inductively from the data set. Since there were
previous guiding theories, the deductive coding scheme allowed an initial list of coding
categories to be generated, as well as the development of new categories during the data analysis

Unlike quantitative data analysis techniques, qualitative data analysis techniques allowed
more than one category to be assigned to any given piece of information. To ensure the
consistency of the coding process, a coding manual was created and maintained throughout the
course of the coding process (Miles & Huberman, 1994; Weber, 1990). Weber (1990) stated that
a coding manual usually contains the category names, rules for assigning of codes, and samples
of the coding process.

In order to test the validity and reliability of the specific coding process developed for use
during this research study, the initial set of category names and rules for assigning of codes were
used to code a sample of the collected data. After this first sample was coded, the coding
consistency was checked by a colleague (Miles & Huberman, 1994; Weber, 1990).

During the coding process, the designated meaning of each coding categories was
reviewed during the data analysis process in order to maintain a consistent approach to the data
coding process. After coding the entire data set, the coded data was rechecked to ensure

After the coding process was completed, the data were used to create a written narrative
of the qualitative findings. The coded data served as a platform from which the data collected
during the interview process could be examined in a more organized and structured manner. The
structure provided by data coding allowed themes to be identified and data sets to be viewed in a
more multilayered fashion. In particular, Research Questions Three, Four, and Five were
explored exclusively through the stakeholder interviews and the subsequent written narrative (Miles & Huberman, 1994; Weber, 1990).

CHAPTER IV
RESULTS

Purpose of the Study

The purpose of this research study was to examine the relationship between open and closed student selection models for high school AP programs as these related to student academic achievement. Additionally, the perspectives of various organizational stakeholders concerning student selection methods for enrollment in school-based AP programs were examined through one-on-one interviews conducted with three groups of school-level organizational stakeholders.

The five research questions guiding this study were as follows:

1. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and academic achievement of students enrolled in AP programs as determined by scores received on year-end AP examinations collected over a three-year period?

2. Is there a connection between the size of a school’s student population and the type of student selection model used to determine student participation in school wide AP programs?

3. Is there a connection between the models employed for the selection of students to participate
in AP programs at the high school level and the perspectives of students concerning their personal academic achievement and level of educational satisfaction?

4. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of teachers concerning their students’ academic achievement and the educational environment of the school?

5. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of AP coordinators concerning their students’ academic achievement and the educational environment of the school?

The quantitative portion of the data collection process served as the primary source of information to examine the first and second research questions. The qualitative data gathered during one-on-one telephone interviews with AP students, AP teachers, and school-level AP coordinators were collected to help in the examination of research questions three, four, and five.

**Overview of the Quantitative Portion of the Research Study**

The first step of the quantitative data collection aspect of this research study was to contact public school district superintendents throughout the state of Georgia and secure their permission to allow stakeholders at high schools within their districts to participate in the research study. Electronic contact information was obtained for all public school district superintendents throughout the state of Georgia and 177 separate introductory emails were sent to Georgia public school superintendents. Over the course of the four months that followed the initial set of email contacts, the introductory email was resent on four separate occasions to all school superintendents who did not reply to the email and its request for permission to conduct
research within the school district (see Appendix J for superintendents and Appendix K for principals). This was done in an attempt to make certain all efforts were made to secure the greatest amount of school district participation in the research study. In the end, personnel from sixty school districts replied to the email requesting voluntary participation in the research study. Out of the sixty replies to the research request, 13 required the submission of a separate school district-level IRB document, 22 declined the opportunity to participate in the research study outright, 14 granted immediate permission for stakeholders at their high schools to participate in the research study, and 11 responded initially to the research request, but failed to respond to future attempted communications. In all, personnel from 26 school districts agreed to allow stakeholders at their high schools to participate in the research study; however approval at the school district level did not guarantee agreement from individual school-level administrators. In all, personnel from 29 high schools in 20 different school districts agreed to participant in the quantitative portion of the research study.

Efforts made to secure the participation of high schools during this initial phase of the data collection process fell short of the desired research sample outlined in Chapter III. The desired goal of this research study was to collect quantitative data from 56 Georgia high schools that consisted of two groups, one set of 28 schools that employed a closed enrollment student selection system and one set of 28 schools that employed an open enrollment student selection system during the three academic years 2010-2011, 2011-2012, and 2012-2013. In addition, the goal was to collect quantitative data from four high schools in each of the state’s 14 federal congressional districts, two high schools that used a closed enrollment student selection system and two high schools that used an open enrollment student selection system. This approach was
taken to attempt to make the research study’s sample parallel the overall state demographic data as closely as possible. In the end, only ten of the state’s 14 congressional districts were represented in the research sample and only five congressional districts provided data from more than one high school. Only two congressional districts were represented by the prescribed number and type of high schools.

**Description of the Quantitative Sample**

As previously detailed, lack of participation from high schools across the state of Georgia caused the final research sample to depart somewhat from the planned congressional district-based sample. Due to this lack of participation from the desired number and type of high schools from across the state of Georgia and its congressional districts, an effort was made to compare the research sample to the entire population of 448 high schools in Georgia as of the 2013-2014 academic year. In order to compare the research sample to the overall population, data were gathered from a random sample of 10% of the high schools in each of the state of Georgia’s 14 federal congressional districts. This was accomplished by review of self-reported online information from the United States Census Bureau ("State & County Quickfacts,").

The demographic data collected from each high school in the random sample of Georgia high schools included the high schools’ total student population, the number of students who were eligible for the Federal Free and Reduced Lunch Program as of March 2013, and the geographic location of the high schools. The physical location of the high schools was categorized as north Georgia or south Georgia and rural or urban. In addition to the demographic data that were collected from each of the high schools in the random sample, additional data
were collected concerning the ethnic makeup of each high school’s student population. These data included the number of Caucasian, Black, Hispanic, and Asian students enrolled at each high school in the random sample. Table 4.1, Figure 4.1, and Figure 4.2 detail the results of the comparison between high schools in the research sample and those high schools in the random sample and demonstrate the level of departure between the research sample and the planned sample as outlined in Chapter III.

Table 4.1 demonstrates the first of the sample departures involving the size of high school student populations. Table 4.1 is a comparison of the two samples in terms of the size of the high schools’ student population.

<table>
<thead>
<tr>
<th>School Size</th>
<th>Employs an Open Enrollment Student Selection System</th>
<th>Employs an Closed Enrollment Student Selection System</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Schools with a Student Population &lt; 1,131</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>High Schools with a Student Population &gt; 1,131</td>
<td>6</td>
<td>11</td>
</tr>
</tbody>
</table>

Note: The median high school student population, as determined by a random sample of all Georgia high schools, was used to high school placement in this sample.

When examining Table 4.1, it should be noted that the research sample did not contain the same percentage of smaller populated high schools when compared to the random sample of Georgia high schools. There also appears to be a large difference between the two samples in terms of the number of high schools with large student populations. This can be seen in Table 4.1 through an examination of the end points for Quartile 3 and the maximum student population in
each sample. However, a closer examination of the data gathered concerning the random population sample shows that the data were skewed by two high schools with populations over 3,000 students. No other school in the random sample had more than 2,377 students. Hence, the differences between the two samples in the fourth quartile are created by outliers in the random sample and do not demonstrate a larger pattern of difference between the two samples. Despite these differences, the median student population and the mean student population of the high schools in the research sample are approximately the same as those of the planned congressional district-based sample. Given these facts it seems that the overall student population of the high schools in both samples can be considered similar.

Figure 4.1 demonstrates sample departures in terms of several important demographic factors including the number of students who were eligible for the Federal Free and Reduced Lunch Program as of March 2013, and the physical location of the high schools. When examining Figure 4.1 it should be noted that the research sample contained nearly opposite percentages of urban and rural schools when compared to the random sample of Georgia high schools. There is a major difference between the research sample and the planned congressional district-based sample, a difference that is noted when considering the generalizability of the research study’s overall findings. Another area of sample departure can be seen in the number of students eligible for the Federal Free and Reduced Lunch Program. The research sample has 7% fewer student eligible for the Federal Free and Reduced Lunch Program when compared to the random sample. However, a comparison of the two samples based on the number of schools in north Georgia versus the number of schools in south Georgia shows little differences between the two samples. There were slightly more northern Georgia schools included in the research sample
than the planned congressional district-based sample.

Figure 4.1. Quantitative Research Study Demographic Information.

Figure 4.2 demonstrates sampling departures involving the ethnic makeup of the samples’ student populations. The samples are similar in terms of the overall number of Hispanic and Asian students represented in each sample. However, there is a large difference in the numbers of Caucasian and Black students represented in the two samples. Overall, the research sample over represents the number of Caucasian students and under represents Black students when compared to the planned congressional district-based sample. Again, this difference is noted when considering the generalizability of the research study’s overall findings.
Overall, when examining Table 4.1, Figure 4.1, and Figure 4.2 it can be concluded that the research sample reasonably approximated the planned congressional district-based sample in terms of high school geographic location (north/south Georgia), the overall size of high school student populations, the number of students eligible for the Federal Free and Reduced Lunch Program as of March 2013, and the number of Hispanic and Asian students represented in the research sample. However, the research sample departed somewhat more completely in terms of the number of high schools located in urban versus rural areas of the state and the number of Caucasian and Black students represented in the research sample. In interpreting the results in this study, readers need to keep in mind that the sample is generally representative, but may be considered slightly over representative of high schools with Caucasian students and urban-based
Categorical Examination of the Quantitative Sample

To better understand the makeup of the quantitative research sample a categorical examination of the participating high schools was conducted with a focus on one of the most important factors many researchers believe greatly affects student academic achievement in high school AP programs: student socio-economic status (Hallett & Venegas, 2011; Klopfenstein, 2004a, 2004b). In addition to a community-based examination of student socio-economic status, the research sample was also examined with a focus on the geographic location of each of the high schools. In this case, the high schools in the research sample were divided into two geographic categories, rural high schools and urban high schools. The review of the related literature also pointed to another significant factor impacting high school AP programs, total school student population. However, this factor was not examined during this portion of the research study due to the fact that total school student population is the focus of the second research question and would be examined in greater detail separate from this categorical examination of the participating high schools (Iatarola et al., 2011).

Figures 4.3 and 4.4 are flow charts that represent the information taken into account during the categorical examination of the high schools in the research sample. Both of the flow charts start with a breakdown of the research sample into the two major groups that were the focus of this research study, high schools that used an open or a closed student selection system to determine student participation in high school-level AP programs. Student enrollment systems serve as the first column of the categorical examination of the research sample due to the primacy of these groupings in the context of this research study.
The second column of the flow chart in Figure 4.3 separates both the open and closed enrollment high schools into two additional categories related to the percentage of each high school’s students that are eligible for the Federal Free and Reduced Lunch Program as of March 2013. The percentage of students eligible for the Federal Free and Reduced Lunch Program is used in this flow chart as indicator of each high school’s socio-economic status. The high schools in the research sample were divided into two socio-economic categories, high percentage Free and Reduced Lunch and low percentage Free and Reduced Lunch. The median percentage of students eligible for the Federal Free and Reduced Lunch Program for the random sample of Georgia high schools, which was 54.3% was used as the dividing line between high schools in the two socio-economic-based categories. Although the use of the median percentage of student eligible for the Federal Free and Reduced Lunch Program may not be an ideal measure for determining the socio-economic status of all of the high schools in the research sample, it was used to assure that all high schools were included in the categorical examination of the research sample.

The third column of the flow chart in Figure 4.3 separates each of the groupings of high schools in column two into two more additional categories related to each high school’s geographic location (rural or urban). Each high school’s geographic location (rural/urban) was determined through an examination of the 2013 community designations assigned by the United States Department of Agriculture. Figure 4.4 follows the same general pattern as Figure 4.3 with the first column being a break out of the research sample into high schools that used an open or a closed student selection system to determine student participation in high school-level AP programs. However, the
second and third columns of Figure 4.4 are the reverse of the second and third columns of Figure 4.3. In Figure 4.4, the second column is a categorization of the schools according to geographic location (rural/urban) and the third column of Figure 4.4 is a further categorization of the high schools according to the percentage of students in each high school that are eligible for the Federal Free and Reduced Lunch Program.

Each box in Figures 4.3 and 4.4 includes same set of basic information for all of the high schools in that category. The information included in each box consists of the categories’ title, the total number of high schools in that category, the total number of AP examinations given by the high schools in that category during the academic years examined during this research study (2010-2011, 2011-2012, and 2012-2013), as well as the overall AP examination pass rate of the high schools in that category.
Figure 4.3. Chart of High School Descriptive Statistics with an Emphasis on High School Socio-Economic Status.
Figure 4.4. Chart of High School Descriptive Statistics with an Emphasis on the School Location (Rural/Urban) of the High School.
An examination of Figure 4.3 reveals several interesting details about the high schools in the research sample. First, when examining the second column it is indicated that high schools with a lower percentage of student eligible for the Federal Free and Reduced Lunch Program gave far more AP examinations over the three academic years being examined for this research study and had an overall AP examination pass rate higher than schools with a higher percentage of students eligible for the Federal Free and Reduced Lunch Program. In fact, high schools with a below average percentage of students eligible for the Federal Free and Reduced Lunch Program gave almost five times more AP examinations as high schools with an above average percentage of students eligible for the Federal Free and Reduced Lunch Program.

Another examination of Figure 4.3’s third column uncovers one major difference between high schools that use an open enrollment student selection system. The research sample included no high schools that used an open enrollment student selection system and were both urban-based and had an above average percentage of students eligible for the Federal Free and Reduced Lunch Program. An examination of high schools using a closed student selection model shows two major differences between rural and urban high schools. Figure 4.3 shows large differences in the total number of AP examinations given, as well as a difference in the overall AP examination pass rate when comparing rural and urban high schools. Both subsequent categories of urban high schools in the closed enrollment portion of Figure 4.3 gave a greater number of AP examinations. In fact, the urban-based high schools in the closed enrollment portion of the flow chart gave more than ten times the numbers of AP examinations when compared to the rural-based high schools. However, the two categories of urban-based high schools had much different AP examination pass rates. The urban-based, higher socio-economic
high schools had a total student AP examination pass rate 27.7% higher than the comparable rural-based high schools. However, the urban-based, lower socio-economic high schools had a total student AP examination pass rate 16.5% lower than the comparable rural-based high schools.

Much like Figure 4.3, an examination of Figure 4.4 also reveals several details about the high schools in the research sample. First, an examination of the high schools using an open enrollment student selection model shows that the rural-based high schools gave almost twice as many AP examinations when compared to the urban-based high schools using an open enrollment student selection system. While the rural-based, open enrollment schools did give twice as many AP examinations; an examination of the overall AP examination pass rates in both categories reveals little difference. When the open enrollment high schools were grouped again into higher and lower socio-economic groupings in the third column of Figure 4.4 it was discovered that all of the urban-based, open enrollment high schools also had a below average socio-economic status. However the rural-based high schools had differences in the number of AP examinations given by the higher and lower socio-economic categories of high schools during the three-year period of the research study. The high schools with a higher socio-economic level gave three times as many AP examinations as the rural-based high schools with an overall lower socio-economic status with a 1.9% difference in the overall AP examination pass rates.

An examination of the closed enrollment portion of Figure 4.4 also provided more differences between the high schools in the research sample. More than twice as many high schools in the closed enrollment portion of the research sample were urban-based as opposed to
rural. The flow chart also revealed that the urban-based high schools gave just over 10,000 more AP examinations when compared to the rural-based closed enrollment high schools. In addition, the overall AP examination pass rate of closed enrollment, urban-based high schools was 18.2% higher than the rural-based, closed enrollment high schools.

When examining the third column on the closed enrollment portion of Figure 4.4, more differences between the high schools in the research sample were revealed. High schools in the closed enrollment portion of the research sample were subdivided again into categories based upon the overall percentage of student eligible for the Federal Free and Reduced Lunch Program at each school. In both cases the closed enrollment high schools with a lower percentage of student eligible for the Federal Free and Reduced Lunch Program gave far more AP examination over the three years period being examined for this research study. However, a major difference can be seen in the overall AP examination pass rate of the four categories. The urban-based, higher socio-economic high schools had a 24.3% higher AP examination pass rate than urban-based, lower socio-economic schools, however the opposite was true of rural-based, higher socio-economic high schools. While rural-based, higher socio-economic high schools gave three times more AP examinations much like their urban-based, higher socio-economic counterparts, the overall AP examination pass rate was 19.9% higher in rural-based, lower socio-economic high schools. This is the only example of a category of lower socio-economic high schools having a higher overall AP examination pass rate than a corresponding category of higher socio-economic high schools.
Presentation of the AP Examination Data

In order to examine this research study’s first and second research questions multiple chi-square (χ²) tests of independence were performed using the AP examination data presented in Tables 4.2, 4.3, 4.4, and 4.5. However, before the χ² tests could be performed, the AP examination data had to be vetted against the methodological considerations outlined in Chapter III and the proper use of the χ² test as outlined by Field (2009). The first requirement for the inclusion of AP course’s examination data in the research study was that the AP course must have been offered at the high school in question for at least the three required academic years (2010-2011, 2011-2012, and 2012-2013) as outlined in Chapter III. Secondly, Field (2009) states that a statistically-meaningful χ² test cannot be completed without data from at least five subjects present in each of the analyzed groups. The second requirement for the inclusion of AP examination data followed Field’s assertion that at least five member high schools were needed to run a statistically-meaningful χ² test. At a result of Field’s assertion, no AP course that was offered at fewer than five high schools during the three academic years examined in this research study was included in the data pool in any capacity.

Table 4.2 is a summary of the number of high schools in the research sample that offered each AP course for the three required academic years (2010-2011, 2011-2012, and 2012-2013) outlined in Chapter III. An examination of Table 4.2 shows that not all of the 29 high schools that participated in the research study offered all of the AP courses that were to be analyzed through the use of the χ² test of independence. Two of the AP courses, AP Environmental Science and AP Psychology, were not offered in at least five open enrollment high schools during the three required academic year. Due to this fact, AP Environmental Science and AP
Psychology could not be included in the $\chi^2$ tests of independence used to examine the first research question. However, the AP examination data from these two courses was used in all other parts of the research study.
Table 4.2 Number of High Schools Offering Each AP Course.

<table>
<thead>
<tr>
<th>AP Course Title</th>
<th>Total Number of Open Enrollment High Schools Offering Each AP Course</th>
<th>Total Number of Closed Enrollment High Schools Offering Each AP Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP Biology</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>AP Calculus AB</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>AP English Language and Composition</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>AP English Literature and Composition</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>AP Environmental Science</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>AP Human Geography</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>AP Psychology</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>AP Statistics</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>AP U.S. Government and Politics</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>AP United States History</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>AP World History</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

Note: No AP course offered by fewer than five high schools was included.
Table 4.3 depicts the total number of the AP examinations grouped in three different ways. First, the AP examination data were sorted by AP course, second the data were arranged into two categories based on the student selection model used by the high schools that provided the AP examination data (open or closed), then the data were subdivided once more into two categories based upon the score the examination received when graded by the College Board (a passing score or a non-passing score).

The last subcategorization of the AP examination data into groups of passing and non-passing scores was accomplished by dividing the student AP examination data into two groupings, non-passing scores (those receiving a score "1" or "2") and passing scores (those receiving a score "3", "4", or "5"). Each AP examination score is a weighted combination of the student's scores on a multiple-choice section and a free-response section. The College Board grades all student examinations and assigns each a final score that is reported on a five-point scale. This five-point scale is designed to inform post-secondary institutions of the student's potential ability to success in a similar college-level course. The scale used by the College Board is "5" = extremely well qualified, "4" = well qualified, "3" = qualified, "2" = possibly qualified, and "1" = no recommendation. The groupings of passing and non-passing scores for this study were used because no college or university rewards a student with academic credit for a score of "1" or "2" ("AP report to the nation 2012," 2012).
Table 4.3 Number of Passing and Non-Passing AP Examinations.

<table>
<thead>
<tr>
<th>AP Course Title</th>
<th>Total Number of Passing AP Examinations at all Open Enrollment High Schools</th>
<th>Total Number of Non-passing AP Examinations at all Open Enrollment High Schools</th>
<th>Total Number of Passing AP Examinations at all Closed Enrollment High Schools</th>
<th>Total Number of Non-passing AP Examinations at all Closed Enrollment High Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP Biology</td>
<td>69</td>
<td>177</td>
<td>260</td>
<td>360</td>
</tr>
<tr>
<td>AP Calculus AB</td>
<td>138</td>
<td>151</td>
<td>282</td>
<td>587</td>
</tr>
<tr>
<td>AP English Language and Composition</td>
<td>419</td>
<td>427</td>
<td>1,219</td>
<td>871</td>
</tr>
<tr>
<td>AP English Literature and Composition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP Environmental Science</td>
<td>76</td>
<td>163</td>
<td>395</td>
<td>487</td>
</tr>
<tr>
<td>AP Human Geography</td>
<td>225</td>
<td>417</td>
<td>644</td>
<td>217</td>
</tr>
<tr>
<td>AP Psychology</td>
<td>211</td>
<td>162</td>
<td>678</td>
<td>492</td>
</tr>
<tr>
<td>AP Statistics</td>
<td>149</td>
<td>249</td>
<td>256</td>
<td>382</td>
</tr>
<tr>
<td>AP U.S. Government and Politics</td>
<td>281</td>
<td>443</td>
<td>679</td>
<td>644</td>
</tr>
<tr>
<td>AP United States History</td>
<td>368</td>
<td>633</td>
<td>934</td>
<td>728</td>
</tr>
<tr>
<td>AP World History</td>
<td>189</td>
<td>432</td>
<td>822</td>
<td>530</td>
</tr>
</tbody>
</table>

Note: No AP course offered by fewer than five high schools was included.
Analysis of the AP Examination Data

The AP examination data presented in Table 4.3 were used to perform nine individual $\chi^2$ tests of independence; data from the AP Environmental Science and AP Psychology courses was not examined using the $\chi^2$ test for reasons previously stated in this chapter. The nine $\chi^2$ tests of independence were used to examine the study’s first research question.

Research Question 1

The first research question in this research study was: Is there a significant difference in the success rates of students on AP examinations in AP programs using a closed student selection system versus an open student selection system over a three-year period (2010-2011, 2011-2012, and 2012-2013)? The null hypothesis was stated as follows: There is no statistically significant relationship between the model employed for the selection of students to participate in AP programs at the high school level and academic achievement of students enrolled in AP programs as determined by scores received on year-end AP examinations collected over a three-year period.

To test this null hypothesis, a $\chi^2$ test of independence was performed to examine the relationship between the student selection model and student academic achievement. Nine separate $\chi^2$ tests of independence were performed. Each $\chi^2$ test focused on one of the nine sets of AP examination data that met both the requirements of this research study and the subject participation requirements for statistically meaningful $\chi^2$ tests outlined by Field (2009).
Table 4.4 Cross-tabulation of Passing and Non-passing AP Examination Student Scores and Student Selection Models.

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Student Selection Model</th>
<th>Performance Level</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pass n (Column %)</td>
<td>Non-passing n (Column %)</td>
<td>Row Total</td>
<td></td>
</tr>
<tr>
<td>AP Biology</td>
<td>Closed</td>
<td>260 (79.0%)</td>
<td>360 (67.0%)</td>
<td>620</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>69 (21.0%)</td>
<td>177 (33.0%)</td>
<td>246</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column Total</td>
<td>329</td>
<td>537</td>
<td>866</td>
<td></td>
</tr>
<tr>
<td>AP Calculus AB</td>
<td>Closed</td>
<td>282 (67.1%)</td>
<td>587 (79.5%)</td>
<td>869</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>138 (32.8%)</td>
<td>151 (20.5%)</td>
<td>289</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column Total</td>
<td>420</td>
<td>738</td>
<td>1,158</td>
<td></td>
</tr>
<tr>
<td>AP English Language and</td>
<td>Closed</td>
<td>1,219 (74.4%)</td>
<td>871 (67.1%)</td>
<td>2,090</td>
<td></td>
</tr>
<tr>
<td>Composition</td>
<td>Open</td>
<td>419 (25.6%)</td>
<td>427 (32.8%)</td>
<td>846</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column Total</td>
<td>1,638</td>
<td>1,298</td>
<td>2,936</td>
<td></td>
</tr>
<tr>
<td>AP English Literature and</td>
<td>Closed</td>
<td>667 (60.9%)</td>
<td>553 (53.4%)</td>
<td>1,220</td>
<td></td>
</tr>
<tr>
<td>Composition</td>
<td>Open</td>
<td>429 (39.1%)</td>
<td>483 (46.6%)</td>
<td>912</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column Total</td>
<td>1,096</td>
<td>1,036</td>
<td>2,132</td>
<td></td>
</tr>
<tr>
<td>AP Human Geography</td>
<td>Closed</td>
<td>644 (74.1%)</td>
<td>217 (34.2%)</td>
<td>861</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>225 (25.9%)</td>
<td>417 (65.8%)</td>
<td>642</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column Total</td>
<td>869</td>
<td>634</td>
<td>1,503</td>
<td></td>
</tr>
<tr>
<td>AP Statistics</td>
<td>Closed</td>
<td>256 (63.2%)</td>
<td>382 (60.5%)</td>
<td>638</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>149 (36.8%)</td>
<td>249 (39.5%)</td>
<td>398</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column Total</td>
<td>405</td>
<td>631</td>
<td>1,036</td>
<td></td>
</tr>
<tr>
<td>AP United States Government</td>
<td>Closed</td>
<td>679 (70.7%)</td>
<td>644 (59.2%)</td>
<td>1,323</td>
<td></td>
</tr>
<tr>
<td>and Politics</td>
<td>Open</td>
<td>281 (29.3%)</td>
<td>443 (40.8%)</td>
<td>724</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column Total</td>
<td>960</td>
<td>1,087</td>
<td>2,047</td>
<td></td>
</tr>
<tr>
<td>AP United States History</td>
<td>Closed</td>
<td>934 (71.7%)</td>
<td>728 (53.5%)</td>
<td>1,662</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>368 (28.3%)</td>
<td>633 (46.5%)</td>
<td>1,001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column Total</td>
<td>1,302</td>
<td>1,361</td>
<td>2,663</td>
<td></td>
</tr>
<tr>
<td>AP World History</td>
<td>Closed</td>
<td>822 (81.3%)</td>
<td>530 (55.1%)</td>
<td>1,352</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>189 (18.7%)</td>
<td>432 (44.9%)</td>
<td>621</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column Total</td>
<td>1,011</td>
<td>962</td>
<td>1,973</td>
<td></td>
</tr>
</tbody>
</table>
AP Biology

Inspection of Table 4.4 showed that there was a significant difference in the pass rates of students in a closed enrollment (79.0%) versus an open enrollment (21.0%) for the AP Biology examination. The computed value of $\chi^2$ (14.42) exceeded the value for $p< 0.05$ at df= 1 ($\chi^2$= 3.84), indicating that there was very strong evidence of a relationship between the model employed for the selection of students and student academic achievement on the AP Biology examination. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.13) was examined and it was determined that there was a weak positive association between the two factors. In addition, an odds ratio test was conducted to further examine the data. This examination of the data set revealed that a student from a closed enrollment high school was 1.85 times more likely to pass an AP Biology examination than a student from a open enrollment high school.

AP Calculus AB

Inspection of Table 4.4 showed that there was a significant difference in the pass rates of students in a closed enrollment (67.1%) versus an open enrollment (32.8%) for the AP Calculus AB examination. The computed value of $\chi^2$ (21.96) exceeded the value for $p< 0.05$ at df= 1 ($\chi^2$= 3.84), indicating that there was very strong evidence of a relationship between the model employed for the selection of students and student academic achievement on the AP Calculus AB examination. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.14) was examined and it was determined that there was a weak positive association between the two factors. In addition, an odds ratio test was conducted to
further examine the data. This examination of the data set revealed that a student from an open enrollment high school was 1.90 times more likely to pass the AP Calculus AB examination than a student from a closed enrollment high school.

*AP English Language and Composition*

Inspection of Table 4.4 showed that there was a significant difference in the pass rates of students in a closed enrollment (74.4%) versus an open enrollment (25.6%) for the AP English Language and Composition examination. The computed value of $\chi^2$ (18.90) exceeded the value for $p< 0.05$ at $df= 1$ ($\chi^2= 3.84$), indicating that there was very strong evidence of a relationship between the model employed for the selection of students and student academic achievement on the AP English Language and Composition examination. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.08) was examined and it was determined that there was a weak positive association between the two factors. In addition, an odds ratio test was conducted to further examine the data. This examination of the data set revealed that a student from a closed enrollment high school was 1.43 times more likely to pass an AP Language and Composition examination than a student from an open enrollment high school.

*AP English Literature and Composition*

Inspection of Table 4.4 showed that there was a significant difference in the pass rates of students in a closed enrollment (60.9%) versus an open enrollment (39.1%) for the AP English Literature and Composition examination. The computed value of $\chi^2$ (12.17) exceeded the value for $p< 0.05$ at $df= 1$ ($\chi^2= 3.84$), indicating that there was very strong evidence of a relationship
between the model employed for the selection of students and student academic achievement on the AP English Literature and Composition examination. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.75) was examined and it was determined that there was a strong positive association between the two factors. In addition, an odds ratio test was conducted to further examine the data. This examination of the data set revealed that a student from a closed enrollment high school was 1.357 times more likely to pass an AP Literature and Composition examination than a student from an open enrollment high school.

*AP Human Geography*

Inspection of Table 4.4 showed that there was a significant difference in the pass rates of students in a closed enrollment (74.1%) versus an open enrollment (25.9%) for the AP Human Geography examination. The computed value of $\chi^2$ (238.27) exceeded the value for $p < 0.05$ at $df = 1$ ($\chi^2 = 3.84$), indicating that there was very strong evidence of a relationship between the model employed for the selection of students and student academic achievement on the AP Human Geography examination. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.37) was examined and it was determined that there was a weak positive association between the two factors. In addition, an odds ratio test was conducted to further examine the data. This examination of the data set revealed that a student from a closed enrollment high school was 5.499 times more likely to pass an AP Human Geography examination than a student from an open enrollment high school.
**AP Statistics**

Inspection of Table 4.4 showed that there was a significant difference in the pass rates of students in a closed enrollment (63.2%) versus an open enrollment (36.8%) for the AP Statistics examination. The computed value of $\chi^2$ (0.74) did not exceed the value for $p < 0.05$ at df= 1 ($\chi^2 = 3.84$), indicating that there was no evidence of a relationship between the model employed for the selection of students and student academic achievement on the AP Statistics examination.

**AP United States Government and Politics**

Inspection of Table 4.4 showed that there was a significant difference in the pass rates of students in a closed enrollment (70.7%) versus an open enrollment (29.3%) for the AP United States Government and Politics examination. The computed value of $\chi^2$ (29.41) exceeded the value for $p < 0.05$ at df= 1 ($\chi^2 = 3.84$), indicating that there was very strong evidence of a relationship between the model employed for the selection of students and student academic achievement on the AP United States Government and Politics examination. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.12) was examined and it was determined that there was a weak positive association between the two factors. In addition, an odds ratio test was conducted to further examine the data. This examination of the data set revealed that a student from a closed enrollment high school was 1.662 times more likely to pass an AP United States Government and Politics examination than a student from an open enrollment high school.
**AP United States History**

Inspection of Table 4.4 showed that there was a significant difference in the pass rates of students in a closed enrollment (71.7%) versus an open enrollment (28.3%) for the AP United States History examination. The computed value of $\chi^2$ (94.43) exceeded the value for $p < 0.05$ at df = 1 ($\chi^2 = 3.84$), indicating that there was very strong evidence of a relationship between the model employed for the selection of students and student academic achievement on the AP United States History examination. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.19) was examined and it was determined that there was a weak positive association between the two factors. In addition, an odds ratio test was conducted to further examine the data. This examination of the data set revealed that a student from a closed enrollment high school was 2.206 times more likely to pass an AP United States History examination than a student from an open enrollment high school.

**AP World History**

Inspection of Table 4.4 showed that there was a significant difference in the pass rates of students in a closed enrollment (81.3%) versus an open enrollment (18.7%) for the AP World History examination. The computed value of $\chi^2$ (157.03) exceeded the value for $p < 0.05$ at df = 1 ($\chi^2 = 3.84$), indicating that there was very strong evidence of a relationship between the model employed for the selection of students and student academic achievement on the AP World History examination. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.27) was examined and it was determined that there was a weak positive association between the two factors. In addition, an odds ratio test was conducted to
further examine the data. This examination of the data set revealed that a student from a closed enrollment high school was 3.545 times more likely to pass an AP World History examination than a student from an open enrollment high school.

Based on these results on the previous nine $\chi^2$ tests of independence, the null hypothesis was rejected on eight on the nine comparison of AP examination completed for this research study. The results of the $\chi^2$ tests of independence led to the conclusion that there was strong evidence of a connection between the models employed for the selection of students to participate in AP programs at the high school level and academic achievement of students enrolled in AP programs as determined by scores received on year-end AP examinations. Seven of the eight comparisons that showed a statistically significant relationship between the use of a particular student selection system and student academic achievement also showed that students in the closed enrollment student selection system scored better on AP examination with the two outliers being AP Calculus AB and AP Statistics.

**Research Question 2**

The second research question in this research study was: Is there a connection between the size of a school’s student population and the type of student selection model used to determine student participation in school wide AP programs? The null hypothesis was stated as follows: There is no connection between the size of a school’s student population and the type of student selection model used to determine student participation in school wide AP programs.

It must be noted that specific information concerning the number of high school students who were enrolled in AP courses, as opposed to sitting for the AP examination, at each high
school was not obtained for this research study. The collection of this school-level student data would have required the participating schools to use manpower that all but a handful of participating high schools found to be highly undesirable. Insisting on school-level student enrollment would have greatly reduced high school participation in this research study. Hence for the purposes of this research study the number of students sitting for AP examinations in each subject area was used to determine AP participation rates. Thus the discussion of school-level AP examination data are a proxy for the number of students enrolled in AP courses at each high school and may not be an exact indicator of the number students who were enrolled in a given AP course.

Table 4.5 divides the high schools in the research sample into two different groupings, high schools with small student populations and high schools with large student populations. The high schools were divided into the two categories according to the median size of high school student populations in the state of Georgia. This median size (1,131 students) of high school student populations in the state of Georgia was determined according to the results of the random sample of all Georgia high schools conducted for this research study. All high schools in the research sample where included in this examination of data regardless of their student population’s proximity to the median. This was done in an effort to include all high schools in the examination of the data.
Table 4.5 Number of High Schools Using an Open or Closed Enrollment System Grouped by Size of the Schools’ Total Student Population.

<table>
<thead>
<tr>
<th>Student Selection Model</th>
<th>School Size &lt; 1,131 n (Column %)</th>
<th>School Size &gt; 1,131 n (Column %)</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>5 (41.6%)</td>
<td>11 (64.7%)</td>
<td>16</td>
</tr>
<tr>
<td>Open</td>
<td>7 (58.3%)</td>
<td>6 (35.2%)</td>
<td>13</td>
</tr>
<tr>
<td>Column Total</td>
<td>12</td>
<td>17</td>
<td>29</td>
</tr>
</tbody>
</table>

Note: The median high school student population, as determined by a random sample of all Georgia high schools, was used to high school placement in this sample.

To test this null hypothesis related to the second research question, a $\chi^2$ test of independence was performed using the high school student population classification presented in Table 4.5 to examine the relationship between the size of a school’s student population and the type of selection model used to determine student participation in school wide AP programs. The computed value of $\chi^2$ (1.51) did not exceed the value for p< 0.05 at df= 1 ($\chi^2$= 3.84), indicating that there is no evidence of a relationship between the size of a school’s student population and the type of selection model used. Based on these results on the $\chi^2$ tests of independence, the null hypothesis was accepted.

**Additional Analyses of the AP Examination Data**

In an effort to gain further insight into the AP examination data collected for this research study, three additional analyses were conducted. The number of AP examinations receiving a passing or non-passing scores were divided into three groupings. These three grouping were: high schools with large and small student populations, school location (rural or urban), and high schools with high and low numbers of student eligible for the Federal Free and Reduced Lunch
Examination of School Size and AP Examination Pass Rates

The AP examination data presented in Table 4.6 were used to perform a $\chi^2$ tests of independence. This test was based on a grouping on high schools according to the overall size of their student populations. In order to eliminate high schools that were close to the median student population size, only the top and bottom third of the research sample were included in this examination.

Table 4.6 AP Examinations Grouped by Overall High School Student Population and the Number of Examinations Receiving a Passing or Non-Passing Score.

<table>
<thead>
<tr>
<th>School Student Population</th>
<th>Number of Passing AP Examination Scores $n$ (Column %)</th>
<th>Number of Non-passing AP Examination Scores $n$ (Column %)</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Schools with a Student Population &lt; 1,131</td>
<td>1,190 (29.7%)</td>
<td>2,816 (70.3%)</td>
<td>4,006</td>
</tr>
<tr>
<td>High Schools with a Student Population &gt; 1,131</td>
<td>6,574 (58.1%)</td>
<td>4,737 (41.9%)</td>
<td>11,311</td>
</tr>
<tr>
<td>Column Total</td>
<td>7,764</td>
<td>7,553</td>
<td>15,317</td>
</tr>
</tbody>
</table>

Note: High schools included in the sample came from the top and bottom one-third of the research sample in terms of total student populations during the 2010-2011, 2011-2012, and 2012-2013 academic year.

Inspection of Table 4.6 showed that there was a significant difference in the AP examination pass rate for students in schools with a student population <1,131 (29.7%) versus schools with a student population >1,131 (58.1%). The computed value of $\chi^2$ (955.95) exceeded
the value for $p < 0.05$ at $df = 1$ ($\chi^2 = 3.84$), indicating that there was strong evidence of relationship $a$ between the size of a school’s student population and student academic achievement as measured by scores received on the AP examinations. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.24) was examined and it was determined that there was a weak positive association between the two factors. In addition, an odds ratio test was conducted to further examine the data. This examination of the data set revealed that a student from a high school with a large student population was 3.284 more likely to pass an AP examination than a student from a high school with a small student population.

**Examination of School Location and AP Examination Pass Rates**

The AP examination data presented in Table 4.7 were used to perform a $\chi^2$ tests of independence. This test was based on a grouping of high schools according to the geographic location of the high schools in the research. For this analysis of the data, geographic location is denoted as either rural or urban as defined by the 2013 community designations assigned by the United States Department of Agriculture. All high schools in the research sample were included in this portion of the data analysis.
Table 4.7 AP Examinations Grouped by School Geographic Location (Rural/Urban) and the Number of Examinations Receiving a Passing or Non-Passing Score.

<table>
<thead>
<tr>
<th>Geographic Location</th>
<th>Number of Passing AP Examination Scores (n) (Column %)</th>
<th>Number of Non-passing AP Examination Scores (n) (Column %)</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Schools in a Rural Location</td>
<td>2,106 (22.4%)</td>
<td>3,248 (33.9%)</td>
<td>5,354</td>
</tr>
<tr>
<td>High Schools in an Urban Location</td>
<td>7,288 (77.6%)</td>
<td>6,337 (66.1%)</td>
<td>13,625</td>
</tr>
<tr>
<td>Column Total</td>
<td>9,394</td>
<td>9,585</td>
<td>18,979</td>
</tr>
</tbody>
</table>

Inspection of Table 4.7 showed that there was a significant difference in the AP examination pass rate for students in schools within an urban area (77.6%) versus schools in a rural area (22.4%). The computed value of \(\chi^2\) (308.07) exceeded the value for \(p< 0.05\) at \(df = 1\) (\(\chi^2\) = 3.84), indicating that there was strong evidence of relationship between the geographic location (rural/urban) a high school and student academic achievement as measured by scores received on the AP examinations. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.126) was examined and it was determined that there was a weak positive association between the two factors. In addition, an odds ratio test was conducted to further examine the data. This examination of the data set revealed that a student from an urban high school student was 1.77 times more likely to pass an AP examination than a student from a rural high school.

**Examination of School Socio-Economic Status and AP Examination Pass Rates**

The AP examination data presented in Table 4.8 was used to perform a \(\chi^2\) test of
independence. This test was based on a grouping on high schools according to the overall number of students eligible for the Federal Free and Reduced Lunch Program. In order to eliminate high schools that were close to the median percentage of students eligible for the Federal Free and Reduced Lunch Program, only the top and bottom third of the research sample were included in this examination of the data set. The median percentage of students eligible for the Federal Free and Reduced Lunch Program used to determine the top and bottom one-third of the sample for this purpose was 54.3%.

Table 4.8 AP Examinations Grouped by the Number of Students Eligible for the Federal Free and Reduced Lunch Program at Each High School and Numbers of AP Examinations Receiving a Passing and Non-Passing Score.

<table>
<thead>
<tr>
<th>Percentage of Students Eligible for the Federal Free and Reduced Lunch Program</th>
<th>Number of Passing AP Examination Scores n (Column %)</th>
<th>Number of Non-passing AP Examination Scores n (Column %)</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Schools with a High Percentage of Students Eligible for the Federal Free and Reduced Lunch Program</td>
<td>1,148 (12.2%)</td>
<td>1,511 (16.6%)</td>
<td>2,659</td>
</tr>
<tr>
<td>High Schools with a Low Percentage of Students Eligible for the Federal Free and Reduced Lunch Program</td>
<td>8,235 (87.8%)</td>
<td>7,585 (83.4%)</td>
<td>15,820</td>
</tr>
<tr>
<td>Column Total</td>
<td>9,383</td>
<td>9,096</td>
<td>18,479</td>
</tr>
</tbody>
</table>

Inspection of Table 4.8 showed that there was a significant difference in the AP examination pass rate for students in schools with a Low Percentage of Students Eligible for the
Federal Free and Reduced Lunch Program (87.8%) versus schools with a High Percentage of Students Eligible for the Federal Free and Reduced Lunch Program (12.2%). The computed value of \( \chi^2 \) (71.82) exceeded the value for \( p < 0.05 \) at \( df = 1 \) (chi square = 3.84), indicating that there was strong evidence of a relationship between a school’s percentage of student eligible for the Federal Free and Reduced Lunch Program and student academic achievement as measured by scores received on AP examinations. To assess the strength of this relationship, the computed value of Pearson’s Contingency Coefficient (0.62) was examined and it was determined that there was a strong positive association between the two factors. In addition, an odds ratio test was conducted to further examine the data. This examination of the data set revealed that the odds of a student from a high school with a low percentage of students eligible for the Federal Free and Reduced Lunch Program was 1.4289 times more likely than a student from a high school with a large percentage of students eligible for the Federal Free and Reduced Lunch Program to pass an AP examination.

**Overview of the Qualitative Portion of the Research Study**

The initial contact stages of the qualitative data collection aspect of this research study were identical to those undertaken in the quantitative data collection aspect. In all, 26 school districts agreed to allow their high schools to participate in the research study. However, approval at the school district did not guarantee agreement from individual school-level administrators and in the end 11 high schools agreed to participate in the qualitative data collection aspect of this research study. Interview data were collected from five high schools using an open enrollment student selection system and five high schools using a closed
Efforts made to secure the participation of high schools during this initial phase of the qualitative data collection process fell short of the desired qualitative research sample outlined in Chapter III. The research sample for the qualitative data collection aspect of this research study was to be 28 high schools consisting of two groupings, one set of 14 schools that used a closed enrollment student selection system and one set of 14 schools that used an open enrollment student selection system during the three academic years 2010-2011, 2011-2012, and 2012-2013. In addition, the goal was to collect qualitative data from two high schools in each of the state’s 14 federal congressional districts, one high school that used a closed enrollment student selection system and one high school that used an open enrollment student selection system. Like the quantitative research sample, the qualitative research sample failed to meet the level of geographic diversity of the proposed research sample outlined in Chapter III. In the end, qualitative data were collected from six of the state’s 14 congressional districts with only one congressional district being represented by the desired number and type of high schools.

**Description of the Qualitative Sample**

As previously detailed in this chapter, lack of participation from some high schools across the state of Georgia caused the final qualitative research sample to depart somewhat from the planned congressional district-based sample. Due to this lack of participation, an attempt was made to compare the research sample to the entire population of 448 high schools in the state of Georgia as of the 2013-2014 academic year. In order to compare the research sample to the overall population, demographic and ethnic data were gathered from a random sample of 10% of
the high schools in each of the state’s 14 federal congressional districts.

Table 4.9, Figure 4.5, and Figure 4.6 detail the results of the comparison between high schools in the qualitative research sample and those high schools in the random sample and demonstrate the level of departure between the qualitative research sample and the planned research sample as outlined in Chapter III.

Table 4.9 illustrates the first of the sampling departures involving the size of high school student populations. Table 4.9 is a comparison of the two samples in terms of the size of the high schools’ student population. When examining Table 4.9 it should be noted that the research sample did not contain the same percentage of smaller populated high schools (< 1,131). There also appears to be a large difference between the two samples in terms of the number of high schools with large student populations (> 1,131). The procedure used to obtain high school population statistics was identical to the method used in the quantitative data analysis portion of the research study. Despite these differences, the median student population and the mean student population of the high schools in the research sample are approximately the same as those of the planned congressional district-based sample. Given these facts it seems that the overall student population of the high schools in both samples could possibly be considered similar enough to regard the two samples as comparable in terms of overall size of high school student populations.
Table 4.9 Statistical Comparison of High School Student Populations in the Qualitative Research Sample.

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Research Sample</th>
<th>Sample of Georgia High Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum student population</td>
<td>981</td>
<td>333</td>
</tr>
<tr>
<td>Quartile 1</td>
<td>1,210</td>
<td>665</td>
</tr>
<tr>
<td>Median student population</td>
<td>1,295</td>
<td>1,131</td>
</tr>
<tr>
<td>Quartile 3</td>
<td>1,554</td>
<td>1,730</td>
</tr>
<tr>
<td>Maximum student population</td>
<td>2,494</td>
<td>3,592</td>
</tr>
<tr>
<td>Mean student population</td>
<td>1,485</td>
<td>1,275</td>
</tr>
</tbody>
</table>

Note: Comparison of high schools in the qualitative research sample and a random sample of high schools across the state of Georgia.

Figure 4.5 demonstrates sampling departures in terms of several important demographic factors including the number of students who were eligible for the Federal Free and Reduced Lunch Program as of March 2013, and the geographic location of the high schools. When examining Figure 4.5 it should be noted that the qualitative sample, much like the quantitative, contained nearly opposite percentages of urban and rural schools when compared to the random sample of Georgia high schools. The two samples are close in terms of the overall percentage of students eligible for the Federal Free and Reduced Lunch Program. The research sample has 3% fewer student eligible for the Federal Free and Reduced Lunch Program when compared to the random sample. However, a comparison of the two samples based on the number of schools in north Georgia versus the number of schools in south Georgia shows large differences between the two samples with more northern Georgia schools being included in the research sample than the planned congressional district-based sample.
Figure 4.6 demonstrates sampling departures involving the ethnic makeup of the samples’ student populations. The samples are similar in terms of the overall number of Hispanic students represented in each sample. However, there is a large difference in the numbers of Caucasian, Black, and Asian students represented in the two samples. Overall, the research sample over represents the number of Caucasian students and under represents the number of Black and Asian students when compared to the planned congressional district-based sample. This difference is noted in the subsequent consideration of the generalizability of the research study’s overall findings.
Overall, when examining Table 4.8, Figure 4.5, and Figure 4.6 it can be concluded that the current research sample approximates the planned congressional district-based sample in terms of the overall size of high school student populations, the number of students eligible for the Federal Free and Reduced Lunch Program as of March 2013, and the number of Hispanic students represented in the research sample. However, the research sample departs somewhat more completely in terms of the number of high schools located in urban versus rural areas of the state, high school geographic location (north/south Georgia), and the number of Caucasian, Black, and Asian students represented in the research sample.
Analysis of the Interview Data

One-on-one telephone interviews were conducted individually with persons in three different stakeholder groups from high schools across the state of Georgia in an effort to examine the third, fourth, and fifth research questions of this research study. After the audio recordings of the stakeholder interviews were transcribed, the interviews were coded using a process developing by Auerbach and Silverstein (2003) to highlight repeating ideas and themes. The following reports the common themes discovered from an examination of the stakeholder interviews. All three of these research questions deal with stakeholders’ perspectives of student academic achievement and overall student educational satisfaction.

In order to clearly present the data extrapolated from the coding process, the next three sections will adhere to the following order. The first subheading will revisit the research question associated with each stakeholder group. The second subheading of each section will be a presentation of ideas and themes common to all stakeholders regardless of the student selection system used at their school. The remaining subheadings of each section will detail themes that apply only to each individual group of stakeholders (stakeholders at open or closed enrollment high schools).

Research Question 3: Students

The third research question in this research study was: Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of students concerning their personal academic achievement and level of educational satisfaction?
Eleven high school students who were enrolled in AP courses at the time of these interviews were conducted took part in the interview portion of this research study. Of these student participants, five students were enrolled at open enrollment high schools and six students were enrolled at closed enrollment high schools. The following three sections focus on the themes discovered during the interview coding process. These common themes include the importance of teachers, the academic challenge provided by their high schools, and thoughts about the effects of their high school’s AP student selection process.

Importance of Teachers

Nine of the eleven student participants addressed the importance of teachers in their high school’s academic environment and their personal course selection decisions. Student participants discussed their feelings concerning the large role they felt that teachers played in their decision to enroll in AP course, as well as the quality of their overall academic experience at the high school level.

Many of the student participants expressed a belief that their teachers were important guides during their time in high school and demonstrated a high level of caring and concern for the students. An example of this could be seen in one of the remarks made by Student Participant D.

Student Participant D stated:

I know that they [teachers] are really, you know, concerned with my well-being and with my learning, so I definitely take that into account, because I know that they care about me and want the best for me, so I definitely listen to their recommendations.

Student Participants G, I, and J all expressed a reliance on their teachers’ opinion of their
academic abilities as a major factor in their personal course selections and personal academic strengths and weaknesses.

Student Participant G stated “I trust my teachers 100% when they tell me if I should take a course or not. I actually rely a lot on the teacher recommendations for my class selection for the next year.”

Student Participant I stated:

Yeah, I mean I think the teachers, if a teacher comes up to me and says that I think you can really do well in this course, or I know that you can put in the time and you can do this, I love to hear what teachers have to say because, you know, it makes me feel good when teachers say, you know, you did so well in my class that I know that you will succeed in calculus class, so, think that is a big part of it.

Student Participant J stated “I believe that the teacher is responsible for my education would understand my strengths and give me another way of looking at things so that I can choose courses that may help me more later.”

Academically Challenging Environment

All eleven of the students participating in the research study discussed the notion that AP courses offer a more challenging and rigorous academic experience. In all cases this was expressed as a positive in the students’ overall educational experiences at the high school level. Examples of this common theme could be seen in remarks made by Student Participants C, G, and H.

Student Participant C stated “I chose to do AP Courses because I wanted something that sets me apart from an average student when I apply to college and hopefully get a little bit of college credit to the AP exams.”
Student Participant G stated “I chose AP classes because I am always up for a challenge and I knew that it would help me tremendously in my preparation for college.”

Student Participant H stated:

I think it does just because people are always trying to better themselves because of the pressures on going to college and the competition to get into schools, and if someone doesn’t have AP courses on their transcript then the colleges aren’t gonna look at them for early admission or anything, they are gonna kind of overlook them and may be hold them off for another admission or something like that.

Several students also stated that a major reason they decided to enroll in AP courses was due to a perceived advantage these courses offered students wishing to move on to a post-secondary institution after graduation from high school. Examples of this common theme could be seen in remarks made by Student Participants E, J, and K.

Student Participant E stated “I felt like being challenged in high school is going to get me ready for college, and also of course, going into college with what credit, but also a sophomore with a great advantage too.”

Student Participant J stated “I chose to enroll in AP classes because I come from a very low-income background and I would like to, or I would have liked to attend college, and do well in life, and that was a good way to start doing so.”

Student Participant K stated:

I just wanted the challenge, I thought that it would better prepare me for college classes and the way the classes are taught and the self-reliance, you know you have to get the stuff yourself, it’s not all gonna be given to you, so I thought that that would be helpful for me going into college.

Student Selection Policies: Open

All eleven of the students participating in the research study were asked directly about
their thoughts concerning their high school’s student selection system of enrollment in AP coursework. This topic presented the only real divide between the students participating in the research study. Some students stated a belief in the power of the open enrollment student selection system to allow students’ academic choice, while other students believed that some requirements should be in place in order to maintain high academic standards and protect academically underprepared students.

Student participants in favor of open enrollment student selection policies tended to cite a desire for individual students to have the freedom to decide on the type and level of course they would be enrolled in at the high school level. Examples of this common theme could be seen in remarks made by Student Participants C, D, G, and H. It should be noted that all of the student participants were enrolled at high schools using an open enrollment system, except Student Participant H.

Student Participant C stated “Well, you know it’s the student’s education if they want to challenge themselves they have every right to do so, and if they do good or do bad that is really up to themselves.”

Student Participant D stated, “…because at the end of the day the student is the one taking the course, so I definitely think that they should have, you know, the most say in what they do.”

Student Participant G stated, “The student is the one who knows what they want and if they think they can do it they should be given somewhat of a chance.”

Student Participant G also stated:

I do believe it helps the academic success because some students would never ever put themselves in an AP class if a teacher hadn't of told them that they were capable of doing it. Some kids are lazy but if they have the right boost, like a challenging AP class, then
they flourish in success.

Student Participant H stated:

I think that students should be allowed to choose whether or not they take the AP courses and if they get recommended to be put in them, but they still don’t want to take them, I think that they should still try to take the class, and if they can’t handle the workload, then I think that they should be able to drop it.

**Student Selection Policies: Closed**

Student participants who favored a closed enrollment student selection system tended to cite issues like student academic preparation and the lack of appropriate student work ethic. Examples of this common theme could be seen in remarks made by Student Participants A, F, and J. It should be noted that all of the student participants were enrolled at high schools using a closed enrollment system, except Student Participant A.

Student Participant A stated:

I have seen students who do not have the work ethic to it, so I do think that AP classes should be like, you have good grades in basic classes then you will want to further it. You can’t have super low grades or even failing in basic classes and then go into the AP expecting to do whatever.

Student Participant F stated:

I think that it’s definitely positive, because you’ll have students coming in there and have no clue what they’re doing, just goof off, and they kind of, umm, drag down the other students who are in there to learn and to make good grades, because we’ve had a couple of kids like that in our classes that end up dropping out within a few weeks.

Student Participant J stated:

I believe that our school’s closed enrollment policy is ideal in that while it is very selective and limiting for some students it is the most efficient use of resources and that if done any other way the amount of AP courses that we would be offer and the performance that we would be able to get out of these AP courses would be reduced.
Research Question 4: Teachers

The fourth research question for this research study was: Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of teachers concerning their students’ academic achievement and the educational environmental of the school?

Eleven high school teachers who were teaching AP courses at the time these interviews were conducted participated in the qualitative data collection phase of this research study. Of these teacher participants, six teachers were enrolled at open enrollment high schools and five teachers were enrolled at closed enrollment high schools. The following three sections focus on the themes discovered during the interview coding process. These common themes include the importance of parent involvement and thoughts about the effects of their high school’s AP student selection process (open and closed).

Importance of Parent Involvement

Eight of the eleven teacher participants addressed the importance of parent involvement in their student’s high school academic career, as well as parent involvement in student course selection decisions. Teacher participants discussed their feelings concerning the large role they felt that parents played in student academic progress and promoting academic success, as well as the effect parent involvement has on the quality of students’ overall academic experience at the high school level.

Many of the teacher participants expressed a belief that parent involvement was an essential part of student academic success. Examples of this could be seen in remarks made by
Teacher Participants A, D, G, and J.

Teacher Participant A stated:

I really think that it needs to be, you know, a collaborative group because the parent, you know, parents don’t know everything there is to know about AP courses, the teachers don’t know everything about the kid, so I think that it’s kind of a collaboration.

Teacher Participant D stated:

Yeah, I think that it’s a good thing, the parents need to be involved because AP classes are going to require a lot of work at home, and so the parents needs to understand that it may influence the things that they’re able to do as a family together, so, I think yeah the parents should be involved, consulted, and get their approval of it.

Teacher Participant G stated:

I think sometimes it can be really beneficial because the parents can kind of push kids who perhaps wouldn’t take the class, because they don’t have the level of confidence, but the parents that confidence in them, and they can be very successful.

Teacher Participant J stated:

… a little bit more parent involvement, maybe parent education, I think that we could raise our students, you know, increase their maybe their motivation, their work ethic, possibly grades, participation, a little bit if we had a little bit better parent participation, there are always gonna be parents who will help regardless, but if we could educate our parents early in the process, early in the year, I think that we would probably see a positive movement.

Student Selection Policies: Open

All eleven of the teachers participating in the research study were asked directly about their thoughts concerning their high school’s student selection system. Some teachers stated a belief in the power of the open to allow students’ academic choice, while other teachers firmly believed that some type of academic requirements should be in place in order to maintain high
academic standards, help ensure high examination pass rates, and protect academically underprepared students.

Teacher participants in favor of open enrollment student selection policies tended to cite a desire for individual students to have the freedom to decide on course placement, as well as a general belief in the power of AP coursework to elevate student academic abilities. Examples of this common theme could be seen in remarks made by Teacher Participants A, E, and F. It should be noted that all of these teacher participants were employed at open enrollment high schools.

Teacher Participant A stated:

I mean because nobody knows their kid better than the parent in most cases, umm, but at the same time I think it should be a combination of parent, the teacher teaching the course, umm, and maybe the advisor who knows, you know, has experienced what the student is like in the classroom.

Teacher Participant A also stated:

I think that it raises the bar, and raises the standards, some students, I think that the majority of students, and there are some that no matter what you put in place, they won’t necessarily rise to the occasion, but I think that students when they are challenged and when the expectations are put into place they tend to rise to that challenge, so having that policy in place allows them to have access to those higher standards, and I think it does bring the rigor of our school up.

Teacher Participant E stated “…I think that they need to start treating themselves like grownups or think more often we treat them like grownups and like decision makers, and responsible human beings.”

Teacher Participant F stated:

…it gives students who maybe that aren’t again that stereotypical model for an AP student because, you know, it is not cool to be smart, so yeah I think that the model that
we have makes it more inclusive. I think that is a positive effect.

Student Selection Policies: Closed

Teacher participants who favored a closed enrollment student selection system tended to cite issues like student academic preparation and the lack of appropriate student work ethic.

Examples of this common theme could be seen in remarks made by Teacher Participants D, E, I, and J. It should be noted that all of these teacher participants were employed at high schools using a closed enrollment system, except Teacher Participant E.

Teacher Participant D stated:

I think it really encourages the students to be responsible for the classes they take, I think that it encourages them to be in an active part of the process, I think that it encourages them to decide do they want to take on a challenge or not take on a challenge, and umm, I think in the long run it’s not one of the things you seen in the immediate short term, but I think in the long run it helps build confidence in students that hey I choose to do this, I did it, and I accomplished something, and I think especially by the time they reached college at that point they are going to see how they have pushed themselves, how they’ve challenged themselves, and they’re going to a huge boost of confidence and self-esteem and see what they’ve accomplished because they choose to do it.

Teacher Participant E stated that “…we have certain kids in AP classes that shouldn’t be there, and there is some dead weight [students] there at times.”

Teacher Participant I stated:

I think that it has actually encouraged a lot more students to take more rigorous courses, it’s encouraged students to believe in themselves and strive for high goals, and I also think that it has raised the level of rigor in the regular courses, umm, because you’ve got some kids in the regular courses who are now striving to get into the AP courses so they are trying to do the best that they can.

Teacher Participant J stated:

Yes, because when you have all of these students together, I’m a firm believer in tracking when you have all of the students at the same or close to the same level ability they
challenge each other, there is nothing challenging about being the smartest kid in the
class always when everybody else, you know, is yoo-hoos and not caring about their
work, but whenever you have your classmates, your peers who are challenging you and
doing better than you and you are suddenly not the smartest kid in the class, I think that
that motivates our students.

Research Question 5: AP Coordinators

The fifth research question in this research study was: Is there a connection between the
models employed for the selection of students to participate in AP programs at the high school
level and the perspectives of AP coordinators concerning their students’ academic achievement
and the educational environmental of the school?

Nine high school-level AP coordinators took part in the interview portion of this research
study. Of these nine AP coordinator participants, four AP coordinators were employed at open
enrollment high schools and five AP coordinators were employed at closed enrollment high
schools. The following four sections focus on the themes uncovered during the interview coding
process. These common themes include, the importance of teachers, issues with academically
underprepared students, AP courses as important pieces in the college admission process, and
participant thoughts about the effects of their high school’s AP student selection process (open
and closed).

Importance of AP Teachers

Six of the nine AP coordinator participants addressed the importance of AP teachers to
their high school’s overall academic environment. AP coordinator participants discussed their
feelings concerning the important role they felt that AP teachers played in the quality of their
school’s overall academic environment.
Many of the AP coordinator participants expressed a belief that their AP teachers play a large part in the success or failure of a high school AP program. An example of this could be seen in one of the remarks made by AP Coordinator Participants B, and D.

AP Coordinator Participant B stated “I think teachers are definitely the motivating factor, they inspire students to take the courses and make them feel comfortable in the process, they umm, teachers gain reputations around the school for being challenging yet fair and also enjoyable”.

AP Coordinator Participant D stated:

…and so that really struck me as the recommending teacher the weight that that recommendation has and I have sit down face to face conferences with all of my students to say here’s what I’m recommending you for and here’s why.

*Importance of AP in the College Admission Process*

Five of the nine AP coordinator participants addressed the importance of AP coursework to their high school’s overall academic environment by way of its perceived importance in the college admission process. AP coordinator participants expressed their feelings concerning the link between the college admissions process and student decisions to enroll in AP courses. Example of this could be seen in the remarks made by AP Coordinator Participants D, F, and H.

AP Coordinator Participant D stated:

And there is a little bit of that arms race mentality, if I don’t put my kid in all of the AP classes they will be behind, we are one of the largest feeder schools to the University of Georgia and so that’s driving a lot of it, as the requirements to get into the University of Georgia have gone up that we’ve seen that kind of funnel down towards our student population, where they’re now looking ahead and saying well if I want to get into Georgia, I got take five AP classes and I’ve got to score high on all of them, and so that’s a huge factor in all of this decision making in particular with our parents.
AP Coordinator Participant F stated that student “…know that it is prestigious to be in the AP program.”

AP Coordinator Participant H stated:

I think the students that are taking AP classes are students that are generally focused on going to a four year college university, umm, serious about their academic studies, and hoping to potentially have the benefit of having a few college credits upon entry to a college by scoring high enough on those AP exams to earn some credits.

**Academically Unprepared Students**

Six of the nine AP coordinator participants described concerns they had about the effect academically unprepared students have on their high school’s overall academic environment. Examples of this train of thought could be seen in the remarks made by AP Coordinator Participants A, G, and H.

AP Coordinator Participant A stated “…we have kids that are not appropriate for the higher level classes that take it and they’re stuck, they end up failing, or you know, it hurts their self-esteem.”

AP Coordinator Participant G stated:

Yes, sometimes we get kids in there who maybe should not take it and sometimes it brings down the actual educational environment in the class, it can have a negative impact, they’re just in there half the time or they take away from the seriousness of the class.

AP Coordinator Participant H stated:
I think that when you opened it up to the entire student population, umm, you are opening yourself up to have students in classes that have no business being in that class and certainly then no business taking the exam because they are nowhere near prepared or even have the ability to score anywhere, you know, that’s where your higher students do.
Student Selection Policies: Open

All eleven of the AP coordinator participating in the research study were asked directly about their thoughts concerning their high school’s student selection system of enrollment in AP coursework. This topic presented the only real divide between the AP coordinator participating in the research study. Some AP coordinators stated a belief in the power of the open enrollment student selection system to allow students’ academic choice, while other AP coordinators believed that some requirements should be in place in order to maintain high academic standards and protect academically underprepared students. Examples of these types of thoughts could be seen in the remarks made by AP Coordinator Participants A, C, and F. It should be noted that only AP Coordinator Participant A was employed at a high school using an open enrollment student selection system.

AP Coordinator Participant A stated that her school was “…just afraid that [a closed enrollment policy] would cut kids out when the point is to convince the kids to take things that they wouldn’t have thought about taking before.”

AP Coordinator Participant C stated:

I would hate to think that we missed a student who really should be in the class because I think sometimes you get students who, who may just not work very hard, but they’re really interested in a subject area, but they just don’t want to put the work out, umm, I think the depth that the AP classes go into some things students would love to just sit in there and hear and learn and all but they just don’t want to do it for a grade, umm, I think that would be the negative part of it the student may truly want to learn it, but they just don’t want to do what it takes to earn a grade in it

AP Coordinator Participant F stated:

I think that they [students] have more ability to make their own independent decision, ultimately I would say a student himself or herself should make that decision based on what the parents and teachers recommend, you know, take that into account, but it is up to the student.
Student Selection Policies: Closed

AP coordinator participants who favored a closed enrollment student selection system tended to cite issues like student academic preparation and the lack of appropriate student work ethic. Examples of this common theme could be seen in remarks made by AP Coordinator Participants C, D, and E. It should be noted that all of these AP coordinators participants were employed at a high school using a closed enrollment student selection system, except AP Coordinator Participant E.

AP Coordinator Participant C stated:

I think you do need to have some definition otherwise people just would not understand what an AP class is, they may just think oh they’re just some neat kids in that class I think that I want to be in it. To me it kind of like, like I shouldn’t be in band unless I can play an instrument.

AP Coordinator Participant D stated:

…we’re [teachers] the insiders, we know what things look like at the next level and they don’t necessarily, first time AP parents are among the neediest parents there are …they don’t know what to expect, but the teachers do, and so the teachers come to and says look you’re not getting it

AP Coordinator Participant E stated:

I think that the open enrollment that is in place allows students to jump into a course that they are not prepared for and allows them to, you know, fail, and yet be far, far behind in their academic progress on necessary required courses, so there is that too. I mean it’s a little bit unrealistic I think to think that anyone can take a college level class.

Summary

The data and analysis presented in Chapter IV provided a detailed description of the results of the mixed-methodologies that were used to conduct the research necessary for this
study. The data collection methods used were the gathering of AP examination scores at the individual high school level, one-on-one telephone interviews with three groups of high school stakeholder (AP student, AP teachers, and AP coordinators), and archival demographic data. All information collected was used to examine the five overarching research questions that guided this study. This data and the accompanying analysis will guide the conclusions, implications, and recommendations offered in Chapter V of this research study.

The results of this investigation allows, within sampling problems that emerged, the following general conclusions. Based on an investigation of course-level AP examination data gathered from a three year period (2010-2011, 2011-2012, and 2012-2013) at high schools across the state of Georgia, it was determined that there is strong evidence of a statistically significant positive relationship between student academic achievement, as measured by student scores AP examinations, and the student selection system (open or closed) used by high schools to determine student enrollment in AP programs. In addition, further examination of the AP examination data set showed strong evidence of a statistically significant positive relationship between student academic achievement and the percentage of students eligible for the Federal Free and Reduced Lunch Program, as well as the geographic location of the high school (rural/urban), and the overall size of a high school’s student population.

The results of the analysis of stakeholder interviews revealed several important perspectives among the three groups of high school stakeholders (students, teachers, and AP coordinators) concerning the connection between a high school’s student selection system and overall student academic achievement, as well as the educational environmental of the school. The major perspectives seen in this study were a belief in the importance of teachers, the
importance of parental involvement, and a belief that AP coursework improved the overall academic environment of high schools. However, major differences in perspective were observed in all stakeholder groups when discussions centered on the relative merits of open and closed student selection systems.
CHAPTER V
DISCUSSION

Summary

The purpose of this research study was to examine the relationship between open and closed student selection systems, the two most commonly used student selection systems utilized to determine student enrollment in AP educational services at the high school level, and student academic achievement. In addition, this study examined the relationship between student selection systems and the perspectives of various organizational stakeholders concerning the possible connection between the use of a particular student selection system and the academic environment of the school. In order to achieve this goal the research study explored the relationship between the two major student selection systems and student academic achievement, as measured through scores received on the College Board’s AP examinations. Additionally, an analysis of one-on-one interviews conducted with school-level organizational stakeholders (students, teachers, and AP coordinators) was used to examine the perceptions of stakeholders concerning the two student selection models and the models’ possible relationship to the overall educational environment of the high school.

This study has the potential to assist in broadening the current understanding within the educational community of the importance of student selection models at the high school level. This study could provide relevant research for school districts or individual high schools as they
look to establish or reorganize AP programs with an eye toward better serving the educational needs of their students.

A mixed methods approach was used in completing this study. The quantitative components of the research were conducted through the collection and examination of student scores on AP examinations analyzed and reviewed from a three-year academic period. The AP examination data were analyzed through the grouping of examination data according to the use of an open and a closed student selection system, as well as through the disaggregation of the examination data by AP course. Student AP examination scores were also dichotomized into non-passing scores ("1" and "2") and passing scores ("3", "4", or "5"). These two groupings were determined through the use of the College Board’s definition of examination scores that will most likely allow students to earn post-secondary academic credit ("AP report to the nation 2012," 2012). The qualitative portion of the research focused on an analysis of data collected through telephone interviews with individual school-level stakeholders. The coding of these qualitative data was used to examine the perceptions of stakeholders concerning the two student selection models and the models’ possible relationship to the overall educational environment of the high school.

The primary findings and conclusions that emerged from this study were derived from five guiding research questions. The following research questions guided this study.

1. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and academic achievement of students enrolled in AP programs as determined by scores received on year-end AP examinations collected over a three-year period?
2. Is there a connection between the size of a school’s student population and the type of student selection model used to determine student participation in school wide AP programs?

3. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of students concerning their personal academic achievement and level of educational satisfaction?

4. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of teachers concerning their students’ academic achievement and the educational environment of the school?

5. Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of AP coordinators concerning their students’ academic achievement and the educational environment of the school?

The analysis of the AP examination data illustrated a strong positive relationship between the use of a closed student selection model and student academic achievement, as measured through the dichotomized groupings (pass and non-passing) of scores received on AP examinations. Data from seven of the nine individual AP examinations that met the requirements for inclusion in this research study provided evidence of this statistically significant relationship. The analysis of the interview data highlighted several recurring themes regarding stakeholder perceptions concerning the use of open and closed student selection systems. These recurring themes included the importance of the strong relationships between teachers and students, an overall satisfaction with AP courses in terms of the increased level of academic rigor these courses offer students, the need to involve all stakeholders (students, parents, and teachers) in the student enrollment process, and the need to ensure that students are academically prepared for
The rigor of AP coursework. The interpretation of the primary findings, as well as those of the secondary findings are detailed in the following section.

The following sections of Chapter V discuss the major findings and conclusions that were established as a result of this research study. Also included within this chapter are the limitations of this study, recommendations for action, and suggestions for further study.

**Interpretation of Findings**

The following discussion of the interpretation of the findings of this research study is divided into six sections. Each of these six sections focuses on one of the major findings detailed in Chapter IV of this study. Each section discusses the implications of one of the major findings for high schools using a closed student selection system and high schools using an open student selection system. The following six sections revolve around a discussion of the implications of the analysis of the AP examination score data, the importance of choosing a student selection system that matches the school’s vision for its AP program, the importance of a strong positive relationship between students and teachers, the importance of academically rigorous student preparation, the implications of the size of a school’s student population of the selection of a particular enrollment system, and the implications of additional AP examination data presented in Chapter IV. Although these additional investigations of the AP examination data were not originally apart of the proposed research design, they emerged as the analysis evolved and contain information that could be relevant for high school stakeholders.
Implications of the Analysis of the AP Examination Score Data

The quantitative findings of this research study were based upon an analysis of student scores on AP examinations from open and closed enrollment high schools. This data provided ample evidence of a strong positive relationship between the use of a closed student selection system at the high school level and higher student pass rates on AP examinations. This relationship was the main focus of the first research question. Data from seven of the nine AP examinations analyzed showed statistically significant results regarding the use of a closed enrollment system and higher AP examination pass rates when compared to data from schools using an open student selection system. In fact, a deeper examination of the data resulting from the use of an odds ratio test, a statistical test used to determine how strongly the presence or absence of a particular characteristic is associated with the presence or absence of another characteristic, showed that in all seven cases the odds that a student at a high school employing a closed student selection system would pass an AP examination were at least 1.3 times higher than a student at an open enrollment school (Field, 2009). Three of the seven cases showed students at closed enrollment schools were more than twice as likely to pass an AP examination than were their open enrollment counterparts.

The two AP examination data sets that did not show statistically significant results regarding the use of a closed enrollment system and higher AP examination pass rates were AP Calculus AB and AP Statistics. The data collected concerning student scores on the AP Statistics examination was statistically neutral and showed no relationship to the use of either an open or a closed student selection system. The results of analysis of data collected concerning student scores on the AP Calculus AB examination showed a statistically significant relationship
regarding the use of an open enrollment system and higher AP examination pass rates when compared to data from schools using a closed student selection system. It is worth noting that the only AP examination data sets that did not show statistically significant results regarding the use of a closed enrollment system and higher AP examination pass rates when compared to data from schools using an open student selection system were both mathematics courses. There are many possible reasons for this finding including the fact that often in order for a student to enroll in an AP mathematics course he must have been on an advanced mathematics track since his freshmen year in high school or before. This means that some potential academically-able students who desire to enroll in an AP mathematics course may not have been allowed to enroll based on course selection decisions made before the student entered high school. This issue is often not a problem in other academic areas where entrance into an advanced course is not as dependent upon previous advanced course work when compared to mathematics courses. Given these facts, it is most likely the case that the tracking used to determine enrollment in advanced mathematics courses supersedes the use of either an open or a closed student selection system (Flores & Gomez, 2011).

Another possible explanation often cited by supporters of open enrollment systems is differences in the socio-economic status of the high schools (Burney, 2010; Flores & Gomez, 2011; Hallett & Venegas, 2011; Scott et al., 2010; VanSciver, 2006). Burney (2010) stated that students from lower socio-economic backgrounds often do not perform as well on AP examinations when compared to students from higher socio-economic backgrounds due to a lack of adequate academic preparation. Given this statement, a higher pass rate might be expected in closed enrollment schools where the exclusion of academically unprepared students is possible.
However, the results reported in Chapter IV did not show an appreciable difference, in terms of the percentage of students from lower socio-economic backgrounds, between the research sample and the random sample of Georgia high schools. In addition, there were roughly the same numbers of high schools with high percentages of students from lower socio-economic backgrounds in both the open and closed portion of the research sample. Although this study made no effort to account for differences in student socio-economic backgrounds and cannot claim that student socio-economic status had no effect, it must be noted that there is no evidence to suggest that it did have an effect on the study’s findings.

Implications of the Qualitative Analysis of the Data

Regardless of concerns related to student socio-economic backgrounds, the differences in student academic performance on the AP examinations analyzed during this study may not solely be attributed to the function of employing either an open or a closed student selection system. The qualitative data suggested the possibility that the differences in student academic achievement may be more a result of the inherent characteristics of the closed enrollment student selection system than any possible deficits in the open enrollment student selection system. The coding and analysis of the interview data gathered during the qualitative data collection phase of this research study buttressed this belief. Research Questions Three, Four, and Five focused on the perceptions of school-level organizational stakeholders concerning the relationship between a given student selection system and the educational environment of the participants’ high schools. Data analysis related to these three research questions yielded important information concerning how open and closed enrollment systems function within, and are affected by, the realities of the
day-to-day life of a high school. The creation of a coherent vision for a school’s AP program in order to choose the best student selection system, stakeholder relationships, and the insurance that students receive appropriate academic preparation for the rigor of AP coursework emerged as important implications for school stakeholders related to the use of a particular student selection system.

**The Relationship Between a School’s Vision for its AP Program and Selection Systems**

The importance of the relationship between the academic vision of the high school and the decision to use a particular student selection system became quite clear during the analysis of the qualitative data. The use of a particular student selection system seemed to be directly connected to the vision a school’s stakeholders had for the school’s AP program. In almost every case stakeholders from open enrollment schools that were interviewed for this study spoke about their school’s desire to make certain all students had an opportunity to enroll in any course offered at the school. On the other hand, stakeholders from closed enrollment high schools spoke most often about the need to insure student academic preparedness and the need to lessen the possibility that ill-prepared students might lower the academic and instructional level of AP classrooms.

During the interview portion of this study, it became clear that there were two main theories concerning the appropriate vision for a high school AP program. Not surprisingly, these two theories were sharply different for stakeholders from open and closed enrollment schools. At open enrollment schools the vision most often articulated focused on student choice and a desire to allow students who might be considered by some to be academically marginal to engage in AP
coursework. This was regardless of student results on accompanying AP examinations.

Stakeholders from closed enrollment schools often espoused a school vision that focused more on maintaining the academic rigor of the school’s AP program, as well as a focus on placing students where they would be most successful academically. The relative merits of both of these types of vision for a school wide AP program could be deliberated endlessly by supporters on both sides of the debate without a definitive resolution. The data speak to the importance of stakeholders defining their school's vision for its AP program before choosing to implement either an open or a closed student selection system.

Another facet of the connection between a school’s student selection system and its espoused vision for its AP program can be seen in remarks made by teachers and AP coordinators concerning potential charges of educational elitism by other student, teacher, and community stakeholders. Closed enrollment systems are vulnerable to charges of elitism as repeatedly stated by several of the subjects interviewed from closed enrollment high schools. An example of this can be seen in the remarks of Teacher Participant J when she stated

…there is an idea that the [AP program at the school] is elitist, not only the students in it, but the teachers as well, there is jealously on the part of teachers, and also on the part of the students, a little bit of competition is good, but still, there is a little bit of a stigma for being in the [AP program], and a feeling like maybe they have abandoned their friends.

The Importance of Stakeholder Involvement

One of the important factors separating successful and unsuccessful educational programs is the involvement and support of all relevant stakeholders (Balzarova & Castka, 2012). The involvement and support of the appropriate stakeholder groups was a common theme discovered through the examination of the stakeholder interview data collected during the study. All three
groups of stakeholders (students, teachers, and AP coordinators) spoke about the importance of including the other two groups in the educational process. The importance of involving other stakeholders seemed related to a desire by school officials to make sure students and parents were properly educated about the rigor and benefits of AP coursework. In addition, many stakeholders expressed a belief that increased stakeholder involvement and better stakeholder education concerning the school’s AP program would lead to greater community support and buy-in from school-based stakeholders, as well as help to build a better working relationship with the high school’s feeder schools.

The desire to better educate students and parents about the AP program and involve parents more heavily in the course selection process is one of the positive attributes of closed enrollment student selection systems. Closed enrollment systems help to prompt student and parent involvement in the course selection process through the simple fact that students must engage in an often formulaic application process in order to register for AP courses. This process often involves the collection of both parent and student signatures agreeing to the student’s enrollment in AP coursework, as well as an acknowledgment from both parties that they understand the rigor associated with AP coursework. Most of the faculty interviewed for this study that were employed at high schools using a closed enrollment systems spoke about the use of parent AP informational meetings at their schools as an important way to educate parents and students about the academic expectations and rigor of AP coursework.

The results of this study indicate that closed enrollment student selection systems tend to promote a collaborative framework that more closely involves the student, teachers, and parents in the course selection process when compared to open enrollment student selection systems.
During the interview portion of the study, AP teachers at both open and closed enrollment high schools consistently remarked about the importance of parental involvement and its link to student academic success. During the interview portion of the study, both sets of teachers continually voiced a need for more parental education focused on better communicating the rigorous nature of AP coursework, as well as increased parent involvement in the course selection process. Teachers, as a whole, stated a belief that parents were the most important influence on student academic success or failure and supported any initiative that would involve parents more in the educational process. AP Coordinator Participant D outlined this desire when he stated “I would like to think that we can help to train our parents a little bit better to recognize the child’s true academic ability”. The issues related to parental involvement voiced by many AP teachers during the interview process can possibly be traced back to some of the major motivations for the expansion of the AP program since 1990. These motivations included a desire to increase the rigor of high school curricula and the knowledge that AP courses played a major role in the college admissions process (Brady, 2012; Hallett & Venegas, 2011; Iatarola et al., 2011; McIlroy, 2010).

Many high schools with open enrollment systems also had detailed efforts to involve parents in the educational process, but without a definite system in place at these schools teachers often stated concerns about parental involvement. They indicated that parents were not as knowledgeable about the rigor of AP coursework when compared to statements made by their closed enrollment peers. This issue was given voice by Teacher Participant G, who was employed by an open enrollment high school, in the following statement:

… I think it is still ultimately for a lot of the kids, especially the ones, the kids who are choosing to take AP, the bulk of that is coming from parents. I would say the kids who don’t choose to take AP probably haven’t really talked it over with their parents and their
parents probably are not as connected to know what is even considered for AP. Another positive effect of the focus on stakeholder communication at schools using a closed student selection system is a unity of purpose and buy-in amongst the members of a school’s faculty. Teachers and AP coordinators at high schools that employed a closed student election system spoke with far more consistency about a unity of purpose among the members of their school’s AP faculty than was expressed by their open enrollment counterparts during the interviews portion of this research study. AP Coordinator Participant D stated

…by the time our kids leave [the school] every kid should take at least one AP course if they’re willing, if they don’t want to we can’t force them, but if they want to I think that they should because at least then we will have a chance to give them an exposure to what it’s going to look like for them in a college setting, but it will be here where we care about them and we want them to be successful and we can help to develop those skills. The only way that we can do that is if we get everybody on board and we make that target something that the whole school buys into because the success of our AP teachers is not just the success of our AP teachers it’s the success of all of the teachers who help to support that child throughout their career.

This quotation expressed a notion concerning a unity of purpose that seemed to be more common to the teacher and AP coordinators at closed enrollment high schools. This does not mean to suggest that teachers and AP coordinators at open enrollment high schools do not see the education of their students as an endeavor requiring the commitment of multiple teachers across a student’s entire educational career. However during the interview process several AP teacher participants at both open and closed enrollment schools expressed a more isolated and single classroom specific notion of student academic success.

This unity of purpose among a school’s faculty or between the faculty of a high school and its feeder school’s faculty appears to be associated with the higher academic success rates seen amongst the closed enrollment high schools in this research study. This conclusion supports research completed by Thomas (2011) regarding the notion that a unity of purpose encourages
more stakeholder (student, teachers, and parents) buy-in and this unity of purpose connects the student’s educational experience across time. The data collected during the interview portion of this study suggested that increased stakeholder buy-in is more likely to be a common feature of high schools that employ a closed enrollment student selection system than those which employed an open student selection system. This study also indicated that an application process that calls for written teacher recommendations also requires teachers to have more ownership in a student’s academic preparedness. Teachers interviewed for this study that were employed at closed enrollment schools repeatedly stated that they worked closely with the teachers at different subject areas and grade levels to help insure student academic readiness as a part of the recommendation process often used in closed enrollment systems.

The Importance of Academically-Rigorous Student Preparation

One of the core concerns often expressed by supporters of both open and closed student selection systems, and a common theme discussed by many of the AP teachers interviewed for this research study, was an attempt to balance student access to AP coursework with efforts to insure student academic preparedness (Casement, 2003; Downey, 2012; Tat, 2013). Tat (2013) best summed up the discussion over this issue when he stated “At the heart of the debate is the issue of equitable access compared with students’ actual preparedness to take on the challenge” (p. 1).

It appears that the student preparedness issue is central to the debate between open and closed enrollment systems. Of course, a closed enrollment system can simply exclude poorly prepared students; however the ability to exclude students was seemingly one of the least
important mechanisms enhancing the success of the closed enrollment system. Some of the power of the closed enrollment system appeared to come from the fact that the system necessitates a school’s administrative and teaching faculty to pay close attention to all parts of the student selection process. This might include close scrutiny of standards and assessment criteria used in academic coursework and curricula prior to entrance into an AP course.

The stakeholders from both high schools employing an open and a closed student selection system that were interviewed for this study espoused a common theme regarding the need to make certain that students were academically prepared for the rigor of AP coursework. Although both groups articulated a belief in the importance of student academic preparation, the intrinsic features of both student selection systems affected the ability of its stakeholders to implement effective strategies to insure student academic preparedness. Stakeholders from closed enrollment schools often spoke about how the recommendation process inherent to the operation of the closed student selection system forced teachers to be more mindful of student academic preparedness, while stakeholders from open enrollment schools spoke only of sporadic efforts to communicate with other teachers or feeder schools in order to help insure student academic preparedness.

The analysis of the qualitative data did not find that stakeholders at closed enrollment schools were more interested in student academic preparedness than stakeholders at open enrollment schools, but the data did show that the innate characteristics of the closed student selection system required stakeholders to be more mindful of student academic preparedness due to the requirements of their schools’ application process. An example of this can be seen in the remarks of Student Participant F when she spoke to the power of a closed enrollment system to
focus students on academic preparedness before course enrollment. Student Participant F stated “…it (a closed enrollment system) shows the student that they have to work hard, work through the class, that they have to want to take it, you have to give more of yourself and apply yourself”.

Teacher and AP coordinator stakeholders from closed enrollment schools that were interviewed for his study spoke often of the need to insure student academic preparedness not just to ensure positive results on AP examinations, but also to insure that students were placed in the academic situation that best met their individual educational needs. This is in contrast to multiple episodes during the interview process when teachers and AP coordinators from open enrollment schools recounted an anecdote describing the student who enrolled in an AP class only to fail the course and fall behind on the credits needed to graduate from high school.

On a similar note, one of the most important concerns expressed by stakeholders from closed enrollment schools about their system and one of the most widely offered positives attributes of open enrollment systems articulated by their stakeholders concerned students who might be mistakenly turned away from an AP course by the closed enrollment process. Teachers, student, and AP coordinators at almost every school participating in this study expressed a concern that a closed student selection system might not always be able to properly evaluate the academic preparedness of every student wishing to enroll in AP coursework and might lead to a student’s denial based on extenuating factors.

The Relationship Between Selection Systems and the Size of a School’s Student Population

The second research question that guided this study focused on examining the possible relationship between the size of a school’s student population and the type of student selection
model used at that school. The idea behind this line of inquiry was to investigate how this factor might potentially affect a school’s choice of student selection systems. The statistical examination of the data revealed no evidence of a statistically significant relationship between the size of a school’s student population and its choice of student selection system. Due to these results no recommendations can be made related to the size of a school’s student population and the decision to implement a particular student selection system for the enrollment of students in AP coursework.

**Implications of the Additional Examinations of AP Examination Data**

During the data analysis phase of this research study the researcher decided that additional statistical examinations of the collected AP course data would be performed that were not proposed in the initial five research questions guiding this study. The three areas that were investigated during this additional data analysis phase were an examination of the possible relationship between the size of a school’s student population and pass rates on AP examinations, the possible relationship between a school’s geographic location (rural/urban) and pass rates on AP examinations, and the possible relationship between a school’s percentage of students eligible for the Federal Free and Reduced Lunch Program and pass rates on AP examinations.

The examination of the possible relationship between the size of a school’s student population and AP examination pass rates revealed a statistically significant relationship between the two factors and evidence that a student from a high school with a large student population (> 1,131) was 3.284 times more likely to pass an AP examination than a student from a high school
with a small student population (< 1,131). The quantitative and qualitative data collected for this study pointed toward a possible explanation for this finding. The stakeholders interviewed for this study consistently reported a belief that increased opportunities for student engagement in advanced academic coursework assisted students in future advanced academic coursework. In addition, past educational research also espoused the connection between increased opportunities for students to engage in advanced academic coursework and future academic success (Dutkowshy et al., 2009; Perrone et al., 2010). Schools with large student populations employ more teachers and thus are able to offer a larger number and variety of academic courses, including advanced academic courses. This increased number and variety of advanced courses provides students at these schools with more opportunities to engage in advanced academic coursework thus possibility increasing their chances of performing well in AP courses (Iatarola et al., 2011).

The examination of the possible relationship between school geographic location (rural/urban) and AP examination pass rates revealed a statistically significant relationship between the two factors. There was evidence that a student from an urban high school student was 1.77 times more likely to pass an AP examination than a student from a rural high school. Access to fewer financial and teaching resources may hamper the ability of these schools in rural areas to compete with the larger number of AP courses offer by schools in urban areas.

The examination of the possible relationship between the percentage of a school’s students who are eligible for the Federal Free and Reduced Lunch Program and AP examination pass rates revealed a statistically significant relationship between the two factors. Evidence indicated that a student from a school with a low percentage of students eligible for the Federal
Free and Reduced Lunch Program was 1.4289 times more likely to pass an AP examination than a student from a high school with a large percentage of students eligible for the Federal Free and Reduced Lunch Program. This outcome is consistent with previous research findings related to AP examination pass rates and the socio-economic backgrounds of a school’s student population (Burney, 2010; Flores & Gomez, 2011; Hallett & Venegas, 2011; Iatarola et al., 2011; Scott et al., 2010; VanSciver, 2006). These data supported the idea that schools with a higher percentage of students from lower socio-economic backgrounds have fewer financial resources to dedicate to examination preparation and tend to have with fewer educational resources (Burney, 2010; Flores & Gomez, 2011; Hallett & Venegas, 2011; Iatarola et al., 2011; Scott et al., 2010; VanSciver, 2006).

Summary of the Findings

The study made apparent that the data pointed toward the superiority of the closed student selection system. The quantitative data analysis produced strong evidence of a relationship between the use of a closed student selection system and increased student academic achievement, as measured by student scores received on AP examinations. In addition, the qualitative data pointed toward a more complex answer to the questions poised at the outset of this research study. The qualitative data analyzed during this study indicated a connection between a school’s overall educational vision and its chosen selection system, the importance of meaningful involvement from all relevant stakeholders, the importance of establishing and maintaining positive relationships between teachers and students, and proper academic preparation better student enter AP courses. The results of the data analysis did reveal that the
inherent features of closed enrollment student selection system helped to create circumstances that allowed for these best practices to more easily manifest themselves in schools using a closed enrollment student selection system. This is not to imply that schools using an open student selection systems do not or cannot have evidence of these same best practices, it is only meant to imply that closed enrollment systems are more likely to allow these practices to flourish. On the same note, this study did not uncover evidence that high schools consciously institute closed enrollment systems with these positive attributes in mind, however students, teachers and parents felt their effects nonetheless.

Limitations of the Research Study

When examining the finding and conclusions offered in this research study, one must consider certain limitations concerning the ability to generalize the study’s findings. The following section outlines the three major limitations that could possibly have affected the results of this study, and thereby its findings and conclusions.

Research Sample Limitations

As described in Chapter IV, for a variety of reasons, the intended research sample was unable to be obtained. The major reason that the intended sample was not acquired was unwillingness on the part of many school districts to participate in the study. In response to this divergence from the proposal, a random sampling of 10% of the high schools from each federal congressional districts in the state was conducted revealing three major differences between the research sample and the intended sample: an overrepresentation of Caucasian students, an
underrepresentation of Black students, and an overrepresentation of urban high schools. It must be noted that the research sample did not meet the intended sampling parameters and that the three major differences between the research sample and the intended sample might have an impact on the ability to make generalizations based upon the findings of the study.

**Student Participant Limitations**

Another possible limitation on the ability to make generalization based on the findings of this research study revolves around the study’s definition of student participant. Traditionally, a student participant might be defined as any student enrolled in or completing a particular academic course. However, the data collected for this study were only able to indicate the number of students who received a score on an AP examination from the College Board. The students who completed an AP course but did not sit for an AP examination, but did complete an AP course were not considered student participants for the purposes of this study. Research showed that roughly one-third of the students throughout the nation who were enrolled in an AP course did not sit for the year-end AP examination each academic school year (Dutkowsky et al., 2009; Schneider, 2009). Therefore, one must note that any discussion in this study concerning the effects of a particular student selection system on student academic achievement does not account for students who took an AP course, but did not sit for the corresponding AP examination.

There are many possible reasons why some students might decide not to sit for a particular AP examination, including inability to afford the fee required to sit for the examination, the student’s personal belief that he is not adequately prepared to succeed on the
examination, and the fact that not all post-secondary institutions accept AP credits (Casement, 2003). Given this information, discussions concerning the possible effects of a student selection system on student academic achievement in this research study cannot speak to the totality of a selection system’s possible impact on all students engaged in AP coursework at the high schools participating in this research study.

Teacher Impact Limitations

Another possible limitation on the results of this research study relate to the impact individual teachers have on student academic achievement. There is a large body of research that indicates evidence of a strong relationship between student academic achievement and teacher quality. Similarly, the examination of research related to this study demonstrated a belief among many educational researchers that highly qualified teachers were an extremely important part of any high-quality high school AP program (Callahan et al., 2009; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011). This research study, however, did not speak to the possible impact individual teacher quality had upon the academic achievement of students that was unrelated to the use of a particular student selection system.

Student Background Limitations

Another possible limitation on the results of this research study relate to the possible impact of the socio-economic and ethnic backgrounds of individual students on student academic achievement. There is an abundance of relevant research that points to socio-economic status and ethnic background as major factors impacting student academic achievement (Burney, 2010;
Hertberg-Davis & Callhan, 2008). This research study made no attempt to account for either the socio-economic status or ethnic background of individual students when collecting or analyzing the quantitative and qualitative data gathered for this study. Hence, this study does not speak to the possible impact the student’s socio-economic status or ethnic background might have had on student academic achievement.

**Recommendations for Action**

The central purpose of this research study was to examine the possible relationship between the use of an open or closed student selection system for the enrollment of students into high school AP courses and student academic achievement, as well as perceptions of organizational stakeholders. All research findings, interpretations of data, and conclusions were the result of an intricate convergence of various quantitative and qualitative data. The following recommendations for action are exclusively based upon the conclusions drawn as a result of the research completed. These recommendations for action are intended for school leaders attempting to create or revise an AP program at the high school level.

**Recommendation One: Involve All Stakeholders in the Course-Selection Process**

High school administrators who are charged with overseeing their school’s AP program must work to maximize stakeholder involvement in the school’s AP program, including but not limited to the student selection process. Initial contact with student and parent stakeholders should be made well before the prospective students enter high school. The initial efforts to begin the process of educating parents and students about the potential benefits and rigor of AP
coursework should be undertaken by all relevant school-level administrators and faculty. In the perfect situation, student academic preparation for the rigor of AP coursework would begin at the middle school level.

Efforts to engage student and parent stakeholders are likely to lead to better understandings of the increased academic expectations that come with enrollment in AP courses. Teachers and school administrators should make every effort to inform students and parents that AP coursework may not be the right choice for every student. This will help to reduce some of the common tensions that come between teachers, students, and parents who are engaging in their first AP course. These commons tensions can include increased homework that may affect time spent on other student activities, lower student grades caused by initial exposure to advanced content, and/or potential anger over a student’s failure to receive post-secondary educational credit due to an unsatisfactory result on the AP examination.

**Recommendation Two: Encourage Positive Student-Teacher Relationships**

Teachers must use the power of their personal relationships with students to encourage them to push themselves academically. This might include encouraging students to enroll in advanced courses, including but not limited to AP courses. Teachers with excellent reputations serve as magnets that draw in students who otherwise might not have been interested in a taking an advanced academic course in a particular subject area or possibly never considered enrolling in an advanced academic course at all. The importance of teacher recommendations and their impact on student self-confidence was an important item repeated throughout the literature and in the interviews collected for this study (Hertberg-Davis & Callhan, 2008).
In addition, a school’s teaching faculty cannot be the only focus of this effort, even though teachers are often the primary gateway for students when they first choose to access advanced academic coursework (Hertberg-Davis & Callhan, 2008). The power of a school’s entire faculty to influence students’ decisions to enroll in advanced academic coursework must not be underestimated. The importance of guidance counselors, building-level administrators, as well as the teaching and administrative faculty at the high school’s feeder schools must be taken into account when creating or revising an AP program. All stakeholders must have a firm understanding of the school’s vision and mission for its AP program. In addition, all of these stakeholders must make an effort to engage students in positive talk about possibilities of AP coursework.

**Recommendation Three: Insure Students Receive Academically Rigorous Preparation**

All relevant stakeholders, including high school-level teachers, administrators, and guidance counselors, as well as the administrative and teaching faculties of the corresponding feeder schools, must work to make certain students receive the necessary academic preparation before enrolling in high school-level AP coursework. The expansion of the AP program over the past 30 years has led to the number of students enrolled in AP coursework to more than double. In 2012, over two million students took 3.7 million College Board-affiliated, year-end AP examinations ("AP report to the nation 2012," 2012). These numbers mean that millions of American high school students are enrolling in AP coursework and cannot be assured that all are receiving the needed academic preparation at the middle school and high school levels.

One of the major reasons cited in this study for student failure in AP coursework was lack
of student academic preparedness. It is imperative that high school-level administrators and AP teachers work to create a sequence of courses that nurtures and prepares students for the academic challenge of AP coursework. This would entail working with the high school’s feeder schools to start the process of academic preparation well before the students enter the high school. This can be a difficult challenge, but one that better prepares students for the academic realities of AP coursework.

**Recommendation Four: Prepare for Charges of Elitism**

Charges of elitism can be damaging to the educational environment of any high school. This was an issue that was voiced by several stakeholders from both closed and open enrollment schools when musing on the possible perils of a closed enrollment system (Casement, 2003). Predictably, no stakeholder from a high school using an open student selection system voiced this type of concern when discussing their school’s student selection system and this issue most likely only affects closed enrollment schools. High schools employing a closed enrollment system could most likely never completely escape charges of educational elitism, but the teachers and administrators at these schools should be aware of this potential problem area and work hard to mitigate feelings of elitism that might come with the implementation of a closed enrollment student selection system.

One way to diminish possible charges of educational elitism would be to make efforts to allocate opportunities to teach advanced academic courses to a larger group of qualified, willing teachers. Naturally the scheduling needs of individual schools will not allow all teachers to teach advanced academic courses, nor is it desirable for under qualified teachers to be placed in AP
classrooms. However, allowing a wider group of qualified, willing teachers to be among the ranks of the advanced teachers will help to lessen charges of elitism among a school’s teaching faculty. If advanced teaching opportunities are assigned to a wider group of qualified, willing teachers then more of the school’s teaching faculty will feel as though they are a part of the system and this will create better relationships among stakeholders, and more teacher buy-in and support for the school’s program.

Another way to lessen potential charges of educational elitism would be to provide multiple opportunities for academically unprepared students to progress toward meeting the requirements of the school’s closed enrollment system. Schools using a closed student selection system can minimize charges of elitism by offering bridging courses or summer programs to students who wish to take AP courses, but do not meet the academic requirements set forth by the schools closed selection system. These bridging opportunities serve both the needs of students, while allowing a closed enrollment system to maintain high academic standards for admission to AP coursework.

**Recommendations for Additional Research**

Five potential areas in need of additional research related to this topic became clear during this study. These five potential areas in need of further study include an examination of data collected from a larger sample of high schools, an examination of the possible impact of student socio-economic and ethnic backgrounds, an examination of the possible impact of teacher quality, an examination of other instruments widely used to measure student academic achievement and their relationship to student selection systems, and an investigation of what
factors influence a school district or individual high school’s decision to opt for a particular student selection system.

The most obvious manner in which this research study could be expanded upon in the future involves the collection of data from a larger, more geographically diverse sample of high schools. This study was limited to a focus on high schools in the state of Georgia. As detailed in Chapter IV, the intended sample for this study was not obtained due to a unwillingness of some school districts to participate. This failure to acquire the desired sample must be noted when one is considering the study’s findings. A future study might be able to capture a more accurate sample or expand the sample to include high schools from different regions of the nation.

Another area in need of additional research involves the results of the quantitative data analysis of the AP Calculus AB and AP Statistics examinations. The statistical examination of the nine AP courses investigated during this study revealed strong evidence of a positive statistically significant relationship between the use of a closed student selection system and student achievement on AP examinations. However, two of the AP examinations investigated did not produce these same results. The analysis of the AP Calculus AB data showed evidence of a positive statistically significant relationship between the use of an open student selection system and student achievement on the AP Calculus AB examination, while a review of the AP Statistics data was statistically neutral. It is possible that these results are particular to this study’s sample, however given that both are mathematics courses it could be possible that other factors influenced the results discovered during this study and could be better understood as a result of further research.

Another potential area for future research related to this study could focus on an
examination of the possible impact of student socio-economic and ethnic backgrounds. This study made no attempt to collect data related to or investigate the impact of student socio-economic and ethnic backgrounds on student academic achievement in AP programs. There is a large body of literature suggesting that a student’s socio-economic and ethnic background play an important part in student academic achievement (Burney, 2010; Hertberg-Davis & Callhan, 2008). An examination of the possible relations between socio-economic status and/or ethnic background in relationship to student academic achievement on AP examinations would be an appropriate and valuable extension of this research study.

Another possible area in need of additional research related to this study would focus on an examination of the possible impact of teacher quality. This study made no attempt to examine the impact of teacher quality of AP students, AP programs, or student academic achievement in AP programs. There is a large body of literature suggesting the important of teacher quality in relation to student academic achievement (Callahan et al., 2009; Flores & Gomez, 2011; Hallett & Venegas, 2011; Hertberg-Davis & Callhan, 2008; Iatarola et al., 2011). Hence, an effort to examine the impact of teacher quality in relation to open and closed student selection systems would be an interesting extension of this study.

There are many potential valid measures of student academic achievement that were not collected during this study. With this in mind, an additional area of research related to this study would be to repeat this study using different measures of student academic achievement. This future research might include an evaluation of the ACT scores, SAT scores, grade point average, student college-going rate, or student scores on any number of state-based academic assessments and the relationship these measures have with the open and closed enrollment systems that
served as the focus of this research study.

The qualitative portion of this research study focused on the perceptions of school-level organizational stakeholders and their personal assessments concerning the impact of their school’s student selection system on student academic achievement and the overall academic environment of the high school. However, only one of the study’s participants was aware of the details surrounding the initial creation of his high school’s AP program and the decision to employ a particular student selection model. This fact revealed another potential area in need of additional research, the process surrounding the initial creation of high school AP programs. A future research study could examine the internal and external influences that affect a high school’s decision-making process when developing a new AP program or revising an older AP program policies. This would be a valuable area to examine given the ever-increasing size and scope of the AP program in the United States, as well as the proliferation of national and state academic accountability systems, which are often based on standardized test results.

**Conclusion**

Whether student enrollment in an AP program should be decided based on an open or closed student selection system has stymied school leaders and caused parent angst for many years. The discussion of the results of this research study found in Chapter V provided a detailed description of the possible implications of the study’s finding of both systems, as well as recommendations for action for current and future high school administrators and teachers looking to create or revise an AP program at their schools. An examination of the analysis of the AP examination data detailed in Chapter IV revealed strong evidence of a statistically significant
relationship between the use of a closed student selection system and increased student academic achievement, as measured by student scores received on AP examinations. This conclusion, however, did not completely describe the totality of the relationship between the use of a particular student selection system and student academic achievement. The analysis of the qualitative data set revealed a more complex set of factors influencing the relationship between these two variables.

Four factors emerged as important: need to consider the choice of a student selection system in concert with the basic organizational vision school stakeholders have for the school and its AP program, a need to involve all organizational stakeholders in the course selection process, the establishment of strong, positive relationships between students and teachers, and a need to make certain that students receive the appropriate academically rigorous preparation before entering the AP program.

Recognition of these three factors led to the creation of four recommendations for action aimed at informing school leaders about the best practices associated with increased student academic achievement in high school AP programs. The four recommendations for action discussed in this chapter were to involve all stakeholders in the course-selection process, the establishment of strong, positive relationships between students and teachers, insurance that students receive academically rigorous preparation, and the creation of bridging opportunities for academically unprepared students. These four recommendations for action are designed to help school officials design an AP program that best serves the needs of the students and the school.

In the end, the factors that lead to the success of any educational program are difficult to quantify. The findings and recommendations for action contained within this study are but one
possible perspective on the complex issue of designing and implementing a challenging and
effective advanced educational program. Every situation is different and every school has its own
vision and is a living organism that must survive in a specific community and in partnership with
its stakeholders. Hopefully the findings of this research study will help guide future educational
leaders toward a more perfect model for the delivery of advanced educational services.
REFERENCES


Brady, L. (2012). The contrived debate between IB and AP. *School Administrator, 69*(8), 50-51.

17(18), 28-33.


A continuum of international education: The primary years programme, the middle years programme, the diploma programme. (2012). Retrieved October 25, 2013, from http://www.ibo.org/programmes


Sadler, P. M., & Tai, R. H. (2007b). Weighting for recognition: Accounting for advanced placement and honors courses when calculating high school grade point average. NASSP


Tat, L. (2013). Expanding access in advanced placement classes so more north jersey kids can excel. from http://www.northjersey.com/news/189549131_LOCAL_ISSUE_Advanced_placement_classes_Expanding_access_so_more_kids_can_excel.html


APPENDIX A

INSTITUTIONAL REVIEW BOARD FOR HUMAN SUBJECTS
MEMORANDUM

TO: Ryan Bandy

FROM: Lindsay Pardue, Director of Research Integrity
       Dr. Bart Weathington, IRB Committee Chair

DATE: February 10, 2014

SUBJECT: IRB #14-033: Impact of Advanced Placement Student Selection Models on Academic Achievement and Stakeholder Perceptions of Program Effectiveness

The IRB Committee Chair has reviewed and approved your application and assigned you the IRB number listed above. You must include the following approval statement on research materials seen by participants and used in research reports:

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project #14-033.

Please remember that you must complete a Certification for Changes, Annual Review, or Project Termination/Completion Form when the project is completed or provide an annual report if the project takes over one year to complete. The IRB Committee will make every effort to remind you prior to your anniversary date; however, it is your responsibility to ensure that this additional step is satisfied.

Please remember to contact the IRB Committee immediately and submit a new project proposal for review if significant changes occur in your research design or in any instruments used in conducting the study. You should also contact the IRB Committee immediately if you encounter any adverse effects during your project that pose a risk to your subjects.

For any additional information, please consult our web page http://www.utc.edu/irb or email instrb@utc.edu

Best wishes for a successful research project.
APPENDIX B

AP STUDENT INTERVIEW QUESTIONS
AP Student Interview Questions

Research Question #3:

Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of students concerning their personal academic achievement and level of educational satisfaction?

1. What is your current grade level? Which AP courses have you taken during high school?
2. How does your school currently select students for placement in AP courses?
3. What role do teachers, administrators, and counselors play in determining student placement in AP coursework at your school?
4. What role do students and parents play in determining student placement in AP coursework at your school?
5. Why did you choose to enroll in AP courses?
6. Who has the greatest influence on your selection of courses?
7. Do you believe your school takes student motivation into account when placing student in AP courses?
8. Should student opinions be considered when course placements are made? Why? Why not?
9. Do you select courses based upon your peers/friends?
10. What role do your parents play in determining which courses you will complete next year?
11. What factors do you believe shape a teacher’s perception of a student's ability?
12. How do you view course recommendations given by teachers? Do they influence your decisions as to which courses you will take next year?
13. Are there any outside influences that affect the scheduling process? If so, explain.
14. What is your overall opinion of your school’s current AP course enrollment system?
15. Does AP course placement contribute to the student academic success?
16. What, if any, outside factors influence your decisions to take AP courses?
17. Do you think that allowing (or not allowing) all students to enroll in any AP course they wish to take has a negative or positive impact on your school, why?
18. Do you believe your school’s AP course placement system contributes to student academic success? If so, how and why? If not, why and what do you believe contributes to student achievement success?
19. Do you believe your school’s AP course placement system is necessary? Why or why not?
20. Do you have any other comments regarding course placement criterion and student academic success?
21. Do you have any questions for me?

These interview questions are based upon the work of Dr. Fredrick Williams and are used with his permission
APPENDIX C

AP TEACHER INTERVIEW QUESTIONS
AP Teacher Interview Questions

Research Question #4:

Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of teachers concerning their student academic achievement and the educational environmental of the school?

1. How long have you been a teacher? How long have you taught at your current high school? Which AP course do you currently teach? How long have you taught AP courses?
2. How does your school currently select students for enrollment in AP courses?
3. How long has your school used its current student academic placement model?
4. What are the specific beliefs, roles, and influences of teachers, administrators, and counselors when determining student placement in AP coursework at your high school?
5. What role do students and parents play in determining student placement in AP coursework at your high school?
6. Should parental recommendations be considered when course placements are considered? Why? Why not?
7. What is your role in the student academic placement process? Please explain and/or describe.
8. Whom do you believe possess the greatest influence regarding ability level placement - teachers, administrators, counselors, students or parents? Please be specific. Why?
9. Do you believe the model used at your school is appropriate? Please explain. If you disagree, can you suggest a better method?
10. What factors does your high school have in place when determining a student's academic placement for the next school year?
11. Is student motivation connected to academic placement?
12. Does the social environment of the school factor into your recommendations for student placement in AP courses? If so, how? If not, what factors into your recommendations for placement in AP courses?
13. What, if any, outside factors influence your school’s decisions regarding student academic placement?
14. Do you believe a student's ability to achieve academically in a particular course is based upon his/her ability to succeed in other classes?
15. Do you believe your school’s student academic placement model contributes to student academic success? If so, how and which criterion. If not, why and what do you believe contributes to student academic success?
16. How do you measure proficiency when determining whether a student should be placed in college prep, honors, or AP courses?
17. Do you believe your school’s current academic placement model is necessary? Why or why not?
18. What positive effects do you believe your school’s current academic placement model has on the school’s environment?
19. Do you believe there are any negative effects on your school from the use of your current
academic placement model?

20. What improvements, if any, would you make to your school’s current academic placement model?

21. Do you have any other comments regarding your school’s current academic placement model and its relationship to students academic success?

22. Do you have any questions for me?

These interview questions are based upon the work of Dr. Fredrick Williams and are used with his permission
APPENDIX D

AP COORDINATOR INTERVIEW QUESTIONS
AP Coordinator Interview Questions

Research Question #5:

Is there a connection between the models employed for the selection of students to participate in AP programs at the high school level and the perspectives of high school AP coordinators concerning their students’ academic achievement and the educational environment of the school?

1. How long have you worked at your current school? How long have you served as the school’s AP coordinator? What roles do you have at your school?
2. How many AP courses does your school currently offer and how long has each AP course been offered at your school?
3. How does your school currently select students for enrollment in AP courses?
4. How long has your school used the current student selection system?
5. What are the specific beliefs, roles, and influences of teachers, administrators, and counselors when determining student placement in AP coursework at your high school?
6. What role do students and parents play in determining student placement in AP coursework at your high school?
7. Should parental recommendations be considered when course placements are considered? Why? Why not?
8. What is your role in the selection process for enrollment in AP coursework? Please explain and/or describe.
9. Whom do you believe possesses the greatest influence regarding student placement in AP coursework at your high school - teachers, administrators, counselors, students or parents? Please be specific. Why?
10. Do you believe the model used at your school is appropriate? Please explain. If you disagree, can you suggest a better method?
11. What factors does your high school have in place when determining a student's academic placement for the next school year?
12. Is student motivation connected to academic placement?
13. What, if any, outside factors influence your school’s decisions regarding student academic placement?
14. Does the social environment of the school factor into your recommendations for student placement in AP courses? If so, how? If not, what factors into your recommendations for placement in AP courses?
15. Do you believe a student's ability to achieve academically in a particular course is based upon his/her ability to succeed in other classes?
16. Do you believe your school’s student academic placement model contributes to student academic success? If so, how and which criterion. If not, why and what do you believe contributes to student academic success?
17. Do you believe your school’s current academic placement model is necessary? Why or why not?
18. What positive effects do you believe your school’s current academic placement model has on the school’s environment?
19. Do you believe there are any negative effects on your school from the use of your current
academic placement model?
20. What improvements, if any, would you make to your school’s current academic placement model?
21. Do you have any other comments regarding your school’s current academic placement model and its relationship to students academic success?
22. Do you have any questions for me?

These interview questions are based upon the work of Dr. Fredrick Williams and are used with his permission.
APPENDIX E

PERMISSION TO USE DR. WILLIAMS’ INTERVIEW QUESTIONS
APPENDIX E
PERMISSION TO USE DR. WILLIAMS INTERVIEW QUESTIONS

From: Frederick Williams <fwilliams@hpschools.net>
Subject: Re: Request
Date: January 24, 2014 2:31:43 PM EST
To: Ryan Bandy

Mr. Bandy,

Thank you for taking time to read my dissertation and to request permission to use parts or all of the interview questions used within my research.

My response to this email provides permission for you to use parts or all of the interview questions used within my research to facilitate work on your dissertation.

Best wishes as I am sure you will find your work to be just as rewarding as I have found within mine.

Please do not hesitate to contact me if you have further questions.

Sincerely,

Frederick D. Williams, Ed.D.
Principal, Highland Park High School
102 N. 5th Avenue
Highland Park, NJ 08904
APPENDIX F
INVITATION TO PARTICIPATE LETTER - STUDENT

Dear

My name is Ryan Bandy and I am a student at the University of Tennessee at Chattanooga working on a doctoral degree. I am conducting a research study entitled Impact of Advanced Placement Student Selection Models on Academic Achievement and Stakeholder Perceptions of Program Effectiveness. The purpose of this mixed methods research study is to investigate the possible relationship between open and closed models for the selection of high school students for enrollment in AP courses, student academic success, and the perceptions of school stakeholders concerning the effectiveness of the student selection systems.

Your school district’s superintendent has been contacted and has agreed to allow teachers and students to participate in this research study. You have been identified as a student currently enrolled in Advanced Placement classes at your high school. Your participation will involve a one-time telephone interview with me at a time and place of your convenience.

There are no foreseeable risks to you for participating in this research. A possible benefit might be that as a result of the study educators might learn more about the possible relationship between how students are selected for inclusion in AP coursework, student academic success, and the perceptions of school stakeholders concerning the effectiveness of the student selection systems.

As a participant in this study, you should understand the following:

• The interview will take between 30-45 minutes.
• Your participation in the study is voluntary.
• You may decline to participate or withdraw from participation at any time without consequences.
• Your identity will be kept confidential.
• Audio recordings will be made of all telephone interviews in order help ensure proper interview transcription.
• Ryan Bandy, the researcher, has thoroughly explained the parameters of the research and, I (the participant) fully understand the objectives of the research and my involvement as a participant.
• The researcher will structure a coding process to assure that anonymity of your name is protected.
• Data will be stored in a secure and locked area. The data will be held until the dissertation has obtained final approval, and then destroyed.
• The research results will be used for publication.

This research has been approved by the UTC Institutional Review Board (IRB). If you have any questions concerning the UTC IRB policies or procedures or your rights as a human subject, please contact Dr. Bart Weathington, IRB Committee Chair, at (423) 425-4289 or email instrb@utc.edu.
Please complete the bottom part of this letter and return it in the stamped, addressed envelope. By signing this consent form you are indicating that you are 18 years of age or older. Keep a copy for your records. Thank you.

Sincerely,

Ryan Bandy
Advanced Placement Department Chair
Social Studies Department Chair
2478 Happy Valley Road
Ridgeland High School, Rossville, Georgia
Phone: (706) 820-9063
Fax: (706) 820-1342

Printed name of the interviewee

___________________________________

Signature of the interviewee

___________________________________ Date________
APPENDIX G

INVITATION TO PARTICIPATE LETTER - TEACHER
APPENDIX G
INVITATION TO PARTICIPATE LETTER - TEACHER

Dear

My name is Ryan Bandy and I am a student at the University of Tennessee at Chattanooga working on a doctoral degree. I am conducting a research study entitled Impact of Advanced Placement Student Selection Models on Academic Achievement and Stakeholder Perceptions of Program Effectiveness. The purpose of this mixed methods research study is to investigate the possible relationship between open and closed models for the selection of high school students for enrollment in AP courses, student academic success, and the perceptions of school stakeholders concerning the effectiveness of the student selection systems.

Your school district’s superintendent has been contacted and has agreed to allow teachers and students to participate in this research study. You have been identified as a teacher of Advanced Placement classes at your high school. Your participation will involve a one-time telephone interview with me at a time and place of your convenience. The interview will take between 30-45 minutes. Your participation in the study is voluntary. If you choose not to participate or if you decide to cease participating at any point you may do so without consequence. The results of the research study will be published but your identity will remain confidential; your name will not be disclosed to any outside party.

There are no foreseeable risks to you for participating in this research. A possible benefit might be that as a result of the study educators might learn more about the possible relationship between how students are selected for inclusion in AP coursework, student academic success, and the perceptions of school stakeholders concerning the effectiveness of the student selection systems.

As a participant in this study, you should understand the following:
- The interview will take between 30-45 minutes.
- Your participation in the study is voluntary.
- You may decline to participate or withdraw from participation at any time without consequences.
- Your identity will be kept confidential.
- Audio recordings will be made of all telephone interviews in order help ensure proper interview transcription.
- Ryan Bandy, the researcher, has thoroughly explained the parameters of the research and, I (the participant) fully understand the objectives of the research and my involvement as a participant.
- The researcher will structure a coding process to assure that anonymity of your name is protected.
- Data will be stored in a secure and locked area. The data will be held until the dissertation has obtained final approval, and then destroyed.
- The research results will be used for publication.
This research has been approved by the UTC Institutional Review Board (IRB). If you have any questions concerning the UTC IRB policies or procedures or your rights as a human subject, please contact Dr. Bart Weathington, IRB Committee Chair, at (423) 425-4289 or email instrb@utc.edu.

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project #14-033

Please complete the bottom part of this letter and return it in the stamped, addressed envelope. By signing this consent form you are indicating that you are 18 years of age or older. Keep a copy for your records. Thank you.

Sincerely,

Ryan Bandy
Advanced Placement Department Chair
Social Studies Department Chair
2478 Happy Valley Road
Ridgeland High School, Rossville, Georgia
Phone: (706) 820-9063
Fax: (706) 820-1342

________________________________________________________________________

Signature of the interviewee

________________________________________________________________________

Date ______________________
APPENDIX H

INVITATION TO PARTICIPATE LETTER – AP COORDINATOR
Dear

My name is Ryan Bandy and I am a student at the University of Tennessee at Chattanooga working on a doctoral degree. I am conducting a research study entitled Impact of Advanced Placement Student Selection Models on Academic Achievement and Stakeholder Perceptions of Program Effectiveness. The purpose of this mixed methods research study is to investigate the possible relationship between open and closed models for the selection of high school students for enrollment in AP courses, student academic success, and the perceptions of school stakeholders concerning the effectiveness of the student selection systems.

Your school district’s superintendent has been contacted and has agreed to allow teachers and students to participate in this research study. You have been identified as the current Advanced Placement coordinator at your high school. Your participation will involve a one-time telephone interview with me at a time and place of your convenience. The interview will take between 30-45 minutes. Your participation in the study is voluntary. If you choose not to participate or if you decide to cease participating at any point you may do so without consequence. The results of the research study will be published but your identity will remain confidential; your name will not be disclosed to any outside party.

There are no foreseeable risks to you for participating in this research. A possible benefit might be that as a result of the study educators might learn more about the possible relationship between how students are selected for inclusion in AP coursework, student academic success, and the perceptions of school stakeholders concerning the effectiveness of the student selection systems.

As a participant in this study, you should understand the following:
• The interview will take between 30-45 minutes.
• Your participation in the study is voluntary.
• You may decline to participate or withdraw from participation at any time without consequences.
• Your identity will be kept confidential.
• Audio recordings will be made of all telephone interviews in order help ensure proper interview transcription.
• Ryan Bandy, the researcher, has thoroughly explained the parameters of the research and, I (the participant) fully understand the objectives of the research and my involvement as a participant.
• The researcher will structure a coding process to assure that anonymity of your name is protected.
• Data will be stored in a secure and locked area. The data will be held until the dissertation has obtained final approval, and then destroyed.
• The research results will be used for publication.
This research has been approved by the UTC Institutional Review Board (IRB). If you have any questions concerning the UTC IRB policies or procedures or your rights as a human subject, please contact Dr. Bart Weathington, IRB Committee Chair, at (423) 425-4289 or email instrb@utc.edu.

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project #14-033

Please complete the bottom part of this letter and return it in the stamped, addressed envelope. By signing this consent form you are indicating that you are 18 years of age or older. Keep a copy for your records. Thank you.

Sincerely,

Ryan Bandy
Advanced Placement Department Chair
Social Studies Department Chair
2478 Happy Valley Road
Ridgeland High School, Rossville, Georgia
Phone: (706) 820-9063
Fax: (706) 820-1342

Printed name of the interviewee

___________________________________
Signature of the interviewee

___________________________________ Date
APPENDIX I

PARENTAL CONSENT LETTER FOR MINOR STUDENT AND STUDENT’S ASSENT
APPENDIX I
PARENTAL CONSENT LETTER FOR MINOR STUDENT AND STUDENT’S ASSESS

Dear Parent:

I am a graduate student under the direction of Professor Vicki Petzko in the College of Health, Education, and Professional Studies at the University of Tennessee at Chattanooga. I am conducting a research study to investigate the relationship between methods used by high school to select students for enrollment in AP coursework and student academic success.

Your child's participation will involve a one-time telephone interview session. Your participation, as well as that of your child, in this study is voluntary. If you or your child chooses not to participate or to withdraw from the study at any time, there will be no penalty, (it will not affect your child's grade, treatment, or care, whichever applies). The results of the research study may be published, but your child's name will not be used. Audio recordings will be made of all telephone interviews in order help ensure proper interview transcription. However, all audio recording will be destroyed after the research study has received final approval. This research has been approved the University of Tennessee at Chattanooga Institutional Review Board.

Although there may be no direct benefit to your child, the possible benefit of your child's participation is an introduction to college-level research and an opportunity to help others understand the factors that lead to academic success.

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project #14-033

If you have any questions concerning this research study or your child's participation in the study, please call me or Dr. Vicki Petzko at vicki-petzko@utc.edu or email me at ryanbandy@walkerschools.org

Sincerely,

Ryan Bandy
Advanced Placement Department Chair
Social Studies Department Chair
2478 Happy Valley Road
Ridgeland High School, Rossville, Georgia
Phone: (706) 820-9063
Fax: (706) 820-1342

I give consent for my child _________________________________ to participate in the above study.
Parent's Name (print): _________________________________________

Parent's Signature __________________________________ (Date) ________________

Child's Signature __________________________________ (Date) ________________

If you have any questions about the rights of your child or your rights as a subject/participant in this research, or if you feel you or your child have been placed at risk, you can contact Dr. Bart Weathington, Chair of the Institutional Review Board, at 423-425-4289. Additional contact information is available at www.utc.edu/irb.
APPENDIX J

SCHOOL SUPERINTENDENT AGREEMENT TO PARTICIPATE LETTER
Dear (administrator/school superintendent name):

My name is Ryan Bandy and, in addition to being the chair of the Advanced Placement and Social Studies departments at Ridgeland High School in the Walker County, Georgia School District, I am a doctoral student at University of Tennessee at Chattanooga (UTC). I am working on dissertation research in which I hope that you will consent to participate.

The purpose of this research is to determine the impact of open and closed student selection models on student academic achievement in Advanced Placement (AP) courses. The study will provide information that can be used by educators to help students achieve at higher levels, by teachers and administrators to make suitable decisions for student academic placement based on accurate data.

This study will observe the following guidelines to ensure participant confidentiality:

- Pseudonyms will be used in place of the name of your district and/or school
- Pseudonyms will be used in place of teacher names. Their participation in an interview is entirely voluntary
- Pseudonyms will be used in place of student names. If a student is randomly selected to be interviewed, permission will be required from the parent if the student is younger than 18 years old. Student participation in an interview is entirely voluntary.
- No individual student achievement data will be requested. The data used in this study are aggregate data.
- The only foreseeable risk is a small potential for a breach of confidentiality due to the audio taping of the interview.

This research study will include the collection of raw AP examination data from high schools within your school districts from 2010-2011, 2011-2012, and 2012-2013. The AP scores collected will not include individual student or teacher names. The AP examination data needed will consist of overall course pass percentages and numbers of students sitting for the examination.

In addition, to the collection of AP examination data, interviews will be conducted with one or two AP teachers and one or two AP students within your school district. Participants will be asked to take part in a telephone interview that will take about 30-45 minutes that will ask about your perceptions of the school’s AP student selection practices. Audio recordings will be made of all telephone interviews in order help ensure proper interview transcription. I will not identify any student or teacher by name in my study. Confidentiality will be maintained and all collected information that identifies individuals will be removed and replaced with a code. A list linking the code and any identifiable personal information will be kept separate from the research data in...
a locked cabinet.

All data will be stored electronically on a secure computer, with password protection, or in a locked file cabinet. The audio-recordings also will be stored in a locked file, then transcribed and destroyed as soon as possible. The data will be kept until the researcher's dissertation is completed and approved. Names will not be used in any report or publication resulting from this study.

Participation in this study is voluntary. Volunteers may refuse to answer any question or discontinue their involvement at any time without penalty. Parental approval will be sought for minors, and students 18 and over will be told on their consent forms that they must be 18 and over in order to participate.

This research has been approved by the UTC Institutional Review Board (IRB). If you have any questions concerning the UTC IRB policies or procedures or your rights as a human subject, please contact Dr. Bart Weathington, IRB Committee Chair, at (423) 425-4289 or email instrb@utc.edu.

If you have any questions about my personal character, professionalism or integrity please do not hesitate to contact my superintendent, Mr. Damon Raines, at damonraines@walkerschools.org or (706) 638-7949 He is supportive of this research and would be able to address any such concerns.

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project #14-033

Please review the enclosed Student and Teacher Consent Forms below. These forms will be used for all participants who agree take part in this research study. If you will agree to allow teachers and students in your school district participate, please sign and return one copy of this form within one week in the enclosed envelope. Keep the second copy for your files. Please contact me at (706) 820-9063 ex. 2135 if you have any questions. I hope that you will consider participating in this important study that will provide valuable information for teachers, counselors, and administrators that will help them to meet the needs of students.

Sincerely,

Ryan Bandy
Advanced Placement Department Chair
Social Studies Department Chair
2478 Happy Valley Road
Ridgeland High School, Rossville, Georgia
Phone: (706) 820-9063
Fax: (706) 820-1342

Your signature below indicates that you have read the information above and agree to allow principals, teachers and students in your school district to participate in this research study. In addition, you agree that you had been given the opportunity to ask any questions that you may have about the research study.

*I agree to allow teachers and students in my school district to participate in this research study.*

_________________________________  __________________
Administrator’s Signature                Date

_________________________________
Administrator’s Printed Name

_________________________________
School District Name
APPENDIX K

HIGH SCHOOL PRINCIPAL AGREEMENT TO PARTICIPATE LETTER
Dear (high school principal name):

My name is Ryan Bandy and I am a student at the University of Tennessee at Chattanooga working on a doctoral degree. Your school district’s superintendent has been contacted and has agreed to allow teachers and students to participate in a research study that I am conducting as a portion of the requirements for my degree. Your high school has been identified as a potential candidate for inclusion in this research study.

I am conducting a research study entitled *Impact of Advanced Placement Student Selection Models on Academic Achievement and Stakeholder Perceptions of Program Effectiveness*. The purpose of this mixed methods research study is to investigate the possible relationship between open and closed models for the selection of high school students for enrollment in AP courses, student academic success, and the perceptions of school stakeholders concerning the effectiveness of the student selection systems.

This study will observe the following guidelines to ensure participant confidentiality:

- Pseudonyms will be used in place of the name of your district and/or school.
- Pseudonyms will be used in place of teacher names. Their participation in an interview is entirely voluntary.
- Pseudonyms will be used in place of student names. If a student is randomly selected to be interviewed, permission will be required from the parent if the student is younger than 18 years old. Student participation in an interview is entirely voluntary.
- No individual student achievement data will be requested. The data used in this study are aggregate data.
- The only foreseeable risk is a small potential for a breach of confidentiality due to the audio taping of the interview.

In addition, to the collection of AP examination data, interviews will be conducted with one or two AP teachers and one or two AP students within your school district. Participants will be asked to take part in a telephone interview that will take about 30-45 minutes that will ask about your perceptions of the school’s AP student selection practices. Audio recordings will be made of all telephone interviews in order help ensure proper interview transcription. I will not identify any student or teacher by name in my study. Confidentiality will be maintained and all collected information that identifies individuals will be removed and replaced with a code. A list linking the code and any identifiable personal information will be kept separate from the research data in a locked cabinet.

There are no foreseeable risks to your high school, your students, or your teachers for participating in this research. A possible benefit might be that as a result of the study educators
might learn more about the possible relationship between how students are selected for inclusion in AP coursework, student academic success, and the perceptions of school stakeholders concerning the effectiveness of the student selection systems.

This research has been approved by the UTC Institutional Review Board (IRB). If you have any questions concerning the UTC IRB policies or procedures or your rights as a human subject, please contact Dr. Bart Weathington, IRB Committee Chair, at (423) 425-4289 or email instrb@utc.edu.

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project #14-033.

Please complete the bottom part of this letter and return it in the stamped, addressed envelope. By signing this consent form you are indicating that you are 18 years of age or older. Keep a copy for your records. Thank you.

Sincerely,

Ryan Bandy
Advanced Placement Department Chair
Social Studies Department Chair
2478 Happy Valley Road
Ridgeland High School, Rossville, Georgia
Phone: (706) 820-9063
Fax: (706) 820-1342

Your signature below indicates that you have read the information above and agree to allow teachers and students in your high school to participate in this research study. In addition, you agree that you had been a given the opportunity to ask any questions that you may have about the research study.

I agree to allow teachers and students in my high school to participate in this research study.

__________________________________________________________
Principal’s Signature                                      Date

__________________________________________________________
Principal’s Printed Name

__________________________________________________________
High School Name

__________________________________________________________
School District Name
VITA

Ryan Edward Bandy was born in Tullahoma, Tennessee. After graduating from Franklin County High School, he attended the University of the South where he completed his bachelors degree in History and graduated as a member of the Order of the Gown in 1998. In 2002, Ryan completed his masters degree in secondary education at the University of Tennessee at Chattanooga and accepted a position as a social studies teacher at Ridgeland High School in Rossville, Georgia. In 2006, he was named Ridgeland High School Teacher of the Year. In 2008 and 2010 was he named STAR teacher for the Walker County School District. In 2006, Ryan led a team of teachers who designed and implemented a school-within-a-school design for the delivery of advanced educational services to students at Ridgeland High School. Since 2007 he has served as the chair of the social studies department, as well as the director of the Ridgeland Honors Academy at Ridgeland High School. In December 2014, Ryan completed his Ed.D. in Learning and Leadership at the University of Tennessee at Chattanooga. He is currently employed as a teacher at Ridgeland High School in Rossville, Georgia.