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The Challenge Program:
A Quantitative Analysis of Strategies Designed
to Eliminate the Achievement Gap

by

Diane L. Moore

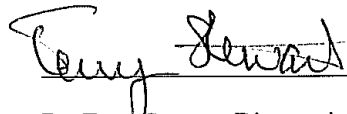
A Dissertation submitted to the Education Faculty of Lindenwood University
in partial fulfillment of the requirements for the
degree of
Doctor of Education
School of Education

The Challenge Program:
A Quantitative Analysis of Strategies Designed
to Eliminate the Achievement Gap

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This dissertation has been approved as partial fulfillment of the requirements for the
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Dr. Terry Stewart, Dissertation Chair

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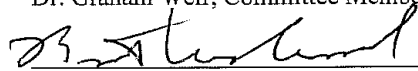
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Dr. Graham Weir, Committee Member

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2/24/12

Date

Declaration of Originality

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

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This paper is dedicated to my mother, Ruby Shively. Thank you for instilling in me a love of learning and a willingness to accept challenges.

Abstract

The achievement gap is one of the most daunting challenges educators face in U.S. schools today. Researchers have identified many factors that contribute to the persistence of this gap in public schools. Family backgrounds, cultural environment, and socioeconomic status appear to be the main environmental factors perpetuating the achievement gap. A review of literature also revealed poor quality teachers, ineffective school leadership, course tracking in high schools, and a lack of parental involvement were the main school factors identified.

This quantitative study examined one public high school's effort to reduce the achievement gap between African American students and Caucasian students. This high school created a voluntary program known as the Challenge Program. African American students in grades 9 through 12 actively worked with administrators, teachers and parents to reduce the existing gap. Multiple strategies within this program were implemented to support ongoing academic success among the Challenge students.

Quantitative analysis of cumulative GPA, End of Course (EOC) exam scores in English II and American History, and ACT scores between Challenge students, Caucasian students, and non-Challenge African American students in the graduating class of 2012 were completed to determine if the program was effective in reducing the achievement gap. Data analysis confirmed Caucasian students attending this high school continued to have higher achievement. While multiple tests provided mixed results, *z*-tests for differences in means and *t*-tests for differences in means assuming unequal variances revealed Challenge students had higher achievement levels compared to non-Challenge African American students when analyzing cumulative GPA and EOC exam

scores in English II. These results indicate the Challenge Program has made some progress in reducing the achievement gap at this high school.

This research involved an analysis of measurable achievement data for the students in the graduating class of 2012 at this high school. Continued analysis of performance data and a qualitative study of student and staff perceptions of the Challenge Program would be important to fully evaluate the program's success.

Table of Contents

Acknowledgements.....	i
Key to Abbreviations	ix
Chapter One: Overview	1
Background of the Problem	1
Statement of the Problem.....	5
Purpose of the Study	8
Rationale for the Study	8
Research Question and Null Hypotheses	9
Generalizations	11
Limitations of the Study.....	12
Definition of Terms.....	14
Conclusion	16
Chapter Two: Review of Literature	18
Defining the African American Achievement Gap	18
Environmental Factors	20
Institutional Factors	26
Early College High Schools (ECHS).....	37
High Schools that Work (HSTW).....	39

Summary	45
Chapter Three: Methodology	47
Rationale	47
Statement of the Problem.....	48
Research Setting.....	51
Implementation	55
Methodology	57
Instrumentation	58
Sample / Subjects for Data Collection	62
Timeline of Research -Collection of Quantitative Data	67
Statistical Treatment of Data	68
Summary	75
Chapter Four: Results	77
Question and Null Hypotheses.....	77
Summary	92
Chapter Five: Conclusions.....	95
Review of Methodology	96
Discussion of Cumulative GPA	97
Discussion of EOC exam scores in English II and American History	100
Discussion of ACT scores.....	102

Implications Regarding the Challenge Program	104
Recommendations for Future Study	105
Discussion.....	107
Conclusion	108
References.....	112
Vitae	122

List of Tables

Table 1. <i>High School Achievement Gap</i>	49
Table 2. <i>High School Enrollment</i>	52
Table 3. <i>2011-2012 High School Demographics</i>	53
Table 4. <i>2011-2012 Graduating Class of 2012 Demographics</i>	54
Table 5. <i>AYP Status for the High School</i>	55
Table 6. <i>ACT Test Results 2010 and 2011</i>	56
Table 7. <i>GPA Number Grade Conversion</i>	62
Table 8. <i>High School Cumulative GPA Scores</i>	63
Table 9. <i>Cumulative GPA Descriptive Statistics</i>	64
Table 10. <i>EOC American History Descriptive Statistics</i>	65
Table 11. <i>EOC English II Descriptive Statistics</i>	66
Table 12. <i>ACT Descriptive Statistics</i>	67
Table 13. <i>Cumulative GPA African American 2007-2011 and Challenge Students</i>	79
Table 14. <i>Chi-Square African American 2007-2011 and Challenge Students</i>	80
Table 15. <i>Cumulative GPA for Caucasian students 2007-2012</i>	81
Table 16. <i>Chi-Square Caucasian Students 2007 – 2012</i>	81
Table 17. <i>Chi-Square Caucasian Students 2007-2011 and Challenge Students</i>	82
Table 18. <i>Means of Cumulative GPA Scores Challenge and African American</i>	83
Table 19. <i>Z-test Challenge and African American Students</i>	84
Table 20. <i>Means of Cumulative GPA Scores Challenge and Caucasian Students</i>	84
Table 21. <i>Z-test Challenge and 2012Caucasian Students</i>	85
Table 22. <i>Means of English II EOC Exam Challenge and African American Students</i> ...	86
Table 23. <i>T-test Challenge and African American Students</i>	86

Table 24. <i>Means of Am. History EOC Exam Challenge and African American Students</i>	87
Table 25. <i>T-test Challenge and African American Students</i>	87
Table 26. <i>Means of English II EOC Exam Challenge and Caucasian Students</i>	88
Table 27. <i>Z-test Challenge and Caucasian Students</i>	89
Table 28. <i>Means of Am. History EOC Exam Challenge and Caucasian Students</i>	90
Table 29. <i>Z-test Challenge and Caucasian Students</i>	90
Table 30. <i>Means of English II EOC Exam Caucasian and African American Students</i> ...	90
Table 31. <i>T-test Caucasian and African American Students</i>	91
Table 32. <i>Means of Am History EOC Exam Caucasian and African American Students</i> ..	91
Table 33. <i>T-test Caucasian and African American Students</i>	92
Table 34. <i>Means of ACT Scores Caucasian and Challenge Students</i>	93
Table 35. <i>Z-test Caucasian and Challenge Students</i>	93
Table 36. <i>Summary of Null Hypotheses</i>	105

Key to Abbreviations

AGI	Achievement Gap Initiative
AYP	Adequate Yearly Progress
ACT	American College Test
CCHS	Camden County High School
DOE	United States Department of Education
ECHS	Early College High Schools
EOC	End of Course Exams
GPA	Grade Point Average
HQT	Highly Qualified Teacher
HSTW	High Schools That Work
IEP	Individual Education Plan
LEA	Local Education Agency
MAP	Missouri Assessment Program
MO DESE	Missouri Department of Elementary and Secondary Education
MO DHE	Missouri Department of Higher Education
NCA	North Central Association
NCLB	No Child Left Behind
PBIS	Positive Behavior Intervention and Support System
SREB	Southern Regional Education Board
VICC	Voluntary Inter-district Choice Corporation
WVDE	West Virginia Department of Education

Chapter One: Overview

Background of the Problem

In 2010 the Achievement Gap Initiative, a university-wide initiative at Harvard University, stated “There are virtually no racial or social class differences in mental ability among infants before their first birthday and a few social class indicators are able to explain the small differences that do exist”(The Achievement Gap Initiative [AGI], 2011, p. 1). This fact has fueled the debate regarding the persistence of an achievement gap between minority and white school age students in the United States. Many theories existed regarding the persistence of this gap. These theories ranged from a lack of minority parental involvement in education to the historical domination and exploitation of minorities in the U.S. (Carey, 2011). Scholars provided a wealth of research regarding the cause as well. Several reports pointed to environmental factors, such as cultural and family background status. While schools have not played a part in creating these out-of-school factors, the harm these factors caused to learning was significant (Berliner, 2009). Other researchers blamed institutional factors such as poor teachers and a lack of effective school leadership for the persistent achievement gap. These researchers argued school administrators failed to recognize the importance of assigning quality teachers and maintaining high expectations for minority students.

Arguably, economic class was the most important factor that contributed to the achievement gap. Richard Rothstein, a Research Associate for the Economic Policy Institute argued “The achievement gap is a phenomenon of averages, a difference between the average achievement of lower-class children and the average achievement of middle-class children” (Rothstein, 2004, p. 7). Holly Craig, Professor for the School of

Education and Director for the University Center for the Development of Language and Literacy at the University of Michigan, researched the role of poverty in African American language skills underachievement. Craig found many educators believed poverty was simply not an educational problem. The challenge with this belief was, poverty contributed to underachievement. This link to underachievement meant educators must attack the challenges related to poverty with every education-based solution available (Craig, 2006).

Although there appeared to be many reasons for the achievement gap, educators must continue to seek solutions to eliminate this gap. Christopher Jencks and Meredith Phillips, co-editors of the book *The Black-White Test Score Gap*, believed closing the achievement gap would provide important social and economic benefits. In 2004, Jencks and Phillips shared their views about the achievement gap with the Public Broadcasting System. They stated:

Closing the black-white test score gap would probably do more to promote racial equality in the United States than any other strategy now under serious consideration. Eliminating the test score gap would sharply increase black college graduate rates. It would also reduce racial disparities in men's earnings and would probably eliminate racial disparities in women's earnings. Eliminating the test score gap would also allow selective colleges, professional schools, and employers to phase out the racial preferences that have caused so much political trouble over the past generation. (p. 1)

During the past few decades, educators have implemented many initiatives designed to reduce or eliminate the achievement gap between African American students

and Caucasian students. Most of these initiatives failed to produce significant academic benefits, particularly at the high school level. According to the U.S. Department of Education (DOE), few documented reports have been found that provide solid evidence regarding the effectiveness of high school reform programs designed to reduce the achievement gap:

virtually all American high schools need a dramatic re-evaluation of their expectations. The schools we have today were never created with an eye toward establishing a high level of academic expectations for all students. Regardless of how they may have changed their graduation requirements over the last 20 years, most large comprehensive high schools-the kind that serve about 70 percent of American youth-have never seriously addressed the way they track students into vocational, general or “college prep” paths, offering different expectations and curricula for different students. (DOE, 2003, p. 3)

Due to the No Child Left Behind Act (NCLB), a federal act signed into law in January, 2002, all public schools in the U.S. are held accountable for every student being academically proficient in reading and math by 2014 (MO DESE, 2011a). The consequences developed in NCLB for schools not accomplishing 100% student proficiency are grave. According to the DOE, (2011), “Schools that remain in improvement for additional years are subject to corrective action and restructuring, including a takeover or complete reorganization of the school” (p. 2). The significant accountability requirements and consequences associated with the federal law continued to encourage much debate regarding school reform. Measurable outcomes, elimination of teacher tenure, tuition tax credits, and charter schools have taken center stage in the

national and state political arenas. This left public school leaders struggling to maintain a positive learning environment for students and staff. Public education leaders felt the pressure to find solutions, and eagerly implemented reforms. After spending considerable funds, many of these educators were disappointed to find little success in reducing the school district's achievement gap.

This study evaluated one public high school's effort to reduce the achievement gap. The high school was a suburban school located in St. Louis County, Missouri. Instructional programming has been provided in the public school district since 1868 with the high school opening its current facility in 1907. At the time of this study, the school provided academic services to 1,319 ninth through 12th grade students and offered 22 classes for college credit. There was a diverse enrollment of approximately 26% African American students and 74% white students. The high school participated in the Voluntary Inter-district Choice Corporation (VICC). This desegregation transfer program enabled African American students living in the City of St. Louis to transfer to participating public school districts in St. Louis County and Caucasian students living within participating St. Louis County school districts to transfer to St. Louis City public schools. Of the 350 African American students attending the high school, 97 were residents of the City of St. Louis. The graduation rate for the high school was strong, with 95.6% of the class of 2010 receiving diplomas. This was a credit to the solid foundation laid by every school in the district (Simpson, 2010). The suburban school district has been honored by the state of Missouri for 11 consecutive years (school year 2000-2001 through 2010-2011) for "distinction in performance," the highest state accolade a public school system

could receive. The high school has been accredited by the North Central Association since 1906 (AdvancEd, 2011).

This high school offered several innovative programs, all of which strived to focus on academic success for all students. In 2005 the school inaugurated a week-long transition to high school program for incoming ninth grade students, a program modeled after college orientation sessions. The administration initially targeted 25 students for this program, called Future Leaders Seminar, but it proved to be so popular that more than 70% of incoming ninth grade students chose to spend a week of their summer to learn more about high school and ways to become involved, practice useful study strategies, and ensure their successful transition to high school.

The high school also created a non-traditional, individualized program in 2007 to assist at-risk students and students with special circumstances to increase their chances to graduate. This center was considered an alternative school and has succeeded beyond school administrators' expectations. School leaders firmly believed this initiative was responsible in part for the outstanding graduation rate at the high school. While the center focused on students with special circumstances and provided a non-traditional instructional program, high school administrators and teachers felt more attention needed to be focused specifically on the achievement gap.

Statement of the Problem

Since the school district's announcement in 2001 of a district-wide goal to reduce the African American achievement gap, the district has established an achievement gap committee to address the needs of at-risk minority students. Committee members focused their energy on researching ways to close the gap and involve parents as well as the

district community in their efforts. The high school, in turn, implemented specific strategies to reduce the achievement gap. These strategies included a.) social justice training for the entire staff, b.) ongoing specialized, intensive social justice training offered annually to a handful of high school staff through the school district (as of 2010, 30% of the high school staff received this intensive training), c.) documented social justice celebrations, d.) ongoing professional development regarding differentiation in the classroom, e.) student-led panel discussions on social justice, f.) parent social justice meetings, and g.) monthly professional development meetings that focused on social justice topics (Clark, 2010).

As part of the goal to recognize all student success, the high school implemented the annual Top Hat awards assembly. This assembly recognized the efforts of students who were not necessarily recognized for academic achievement. Additional recognition efforts like Student of the Week, Senior Student of the Month, acknowledgement cards, and motivational t-shirts were put into place. During the 2007-2008 school year, the high school continued their commitment by implementing the Positive Behavior Intervention and Support system (PBIS). PBIS activities for staff included professional development training on ways to acknowledge success and model positive behavior.

Other approaches to further the high school's commitment to closing the gap were the implementation of before and after-school tutoring and strengthening of the academic lab program (a study course offered during the school day). Academic lab offered students more individual attention within academic subject areas. A specific curriculum for the Academic Lab Department was created, including working with students to develop study skills, team building, successful reading strategies, and self-confidence.

The revised curriculum also divided academic labs by grade, to aid all at-risk incoming ninth grade students in a successful transition to high school. The high school continued to offer free before and after-school tutoring four days per week in the areas of math, communication arts, science, and social studies. Students could spend up to two additional hours per day receiving assistance in the aforementioned subject areas.

Despite ongoing efforts, the high school did not see much success in reducing the achievement gap. The high school failed to meet adequate yearly progress (AYP) for African American students in communication arts and math during the 2007-2008 school years (Riss, 2008). High school administrators spent months analyzing achievement data by subgroups and comparing high school Missouri Assessment Program (MAP) data to 22 similar high schools throughout the state. The high school students performed competitively with similar high school students throughout the state. Data for all high schools analyzed also revealed an achievement gap between Caucasian students and African American students.

After much research and discussion, during the 2008-2009 school year, the high school administration piloted a new approach, The Challenge Program, which provided individual student attention and required parental involvement over the students' four years of high school to boost African American achievement. Expectations for each participant were high and parental involvement was mandated. The overall objective of the program was to reduce the African American achievement gap by 50% by the end of the 2011-2012 school year. Additional measurable objectives outlined by the high school administration were: (a) all Challenge students would have an average 95% attendance

rate; (b) Challenge students would obtain an average GPA of 3.0; and (c) Challenge students would have a 90% involvement rate in extra-curricular activities (Clark, 2008).

Purpose of the Study

As educators struggled to understand why an achievement gap existed between Caucasian students and African American students within the U.S., many strategies were developed in an effort to close this gap. This study analyzed one program, known in this research as The Challenge Program, to determine if the program reduced the achievement gap in this high school. This program started in the fall of 2008 with a voluntary group of 53 African American ninth grade students. The stated objective was to decrease the disparity in academic performance between African American students and Caucasian students from one full point to a half of a point (GPA). At the time of this study, the program was in its fourth year of implementation. The pilot class of Challenge students started their final year at the high school in August, 2011 and are scheduled to graduate in May, 2012.

Rationale for the Study

U.S. high school administrators have spent years struggling to understand what factors cause the achievement gap between African American students and Caucasian students. Understanding these factors are just half the challenge. Ultimately, educators must implement effective strategies to reduce and eliminate this critical issue. These strategies usually come with a cost and must be evaluated to measure effectiveness.

In this study, the researcher analyzed cumulative GPA, EOC exam scores for English II and American History, and ACT scores to determine if the Challenge Program made a difference in achievement between African American students and Caucasian

students. The Challenge Program was offered in a medium-sized high school located in the suburbs of St. Louis, Missouri. Administrators in this high school tracked cumulative GPA and number of Fs to determine academic progress. While this data provided a quick “snapshot” for student progress, administrators had not considered statistical methods to support the academic results. Scientifically based research requires rigorous and objective analysis to produce reliable results. These results should be used to justify the researcher’s conclusions (Zucker, 2004). This study could have important findings that would enable other educators to consider additional, research-based, strategies when seeking ways to reduce the achievement gap in their own schools.

The research also provided accountability for the subject high school in this research. Creating a new program within education required school administrators to take risks with public funding. While public educators must be willing to take risks in order to change the status-quo, they should also be willing to subject the program to independent, in-depth analysis to determine the future of the program. The use of taxpayer revenue should demand accountability of programs.

Research Question and Null Hypotheses

Research question. Is there evidence that participation in the Challenge Program contributed to a decrease in the disparity in academic performance between participating African American students in the graduating class of 2012 and Caucasian students in the graduating class of 2012 at the high school, as measured by cumulative grade point average, ACT, and end of course exam scores in American History and English II?

Multiple null hypotheses were tested through this research. These included the following:

Null hypothesis one. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to African American students in the graduating classes of 2007 through 2011.

Null hypothesis two. As measured by cumulative grade point average, the Caucasian students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating classes of 2007 through 2011.

Null hypothesis three. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating classes of 2007 through 2011.

Null hypothesis four. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to non-Challenge African American students in the graduating class of 2012.

Null hypothesis five. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

Null hypothesis six. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have no

difference in their academic achievement levels compared to other African American students in the graduating class of 2012.

Null hypothesis seven. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

Null hypothesis eight. As measured by end of course exam scores in English II and American History, the Caucasian students in the graduating class of 2012 will have no difference in their academic achievement levels compared to non-Challenge African American students in the graduating class of 2012.

Null hypothesis nine. As measured by ACT scores, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

This study used quantitative assessments to evaluate the program. Standardized EOC scores in English II and U.S. History, ACT scores and cumulative GPAs were assessed to determine changes in academic achievement.

Generalizations

Duplication of this research should be applied to demographically similar high schools within the U.S. The school researched in this study was of average size for a public high school in Missouri. The 2009-2010 student enrollment was 1,359 students in grades 9 through 12 (MO DESE, 2010). The school was located in St. Louis County, a suburb in St. Louis, Missouri.

Limitations of the Study

Researchers must seek internal and external validity to assure outcomes achieved in their study were valid and applicable to the general population. “The key question in internal validity is whether observed changes can be attributed to your program or intervention (i.e., the cause) and **not** to other possible causes...” (Social Research Methods, 2006). There were seven threats to internal validity to consider: history, maturation, testing, instrumentation, statistical regression, selection of subjects, and mortality.

External validity was concerned with generalizing the results of the study to a larger population. There were six external validity threats to consider: effect of testing, multiple-treatment interference, selection-treatment interference, effects of experimental arrangements, experimenter effects, and specificity of variables. This research considered maturation and selection of subjects as possible internal threats while multiple-treatment interference and specificity of variables were external validity threats.

Maturation. Maturation refers to changes within the research subjects over time. For this study EOC, ACT, and GPA data were standard measures used to assess success for all students. The effect of maturation was a concern for this study due to the three and a half year time span involved in the analysis. To minimize this threat the study used data from EOC exams over a two year period, 2009-10 and 2010-11 school years, for randomly selected students in the graduating class of 2012 who started at this high school in the fall of 2008 and were in their senior year at this same high school. Test scores for students no longer attending the high school or who started after the fall of 2008 were discarded. The ACT analysis was limited to ACT test scores obtained over a one year

period, September, 2010 through September, 2011 for randomly selected students in the graduating class of 2012 enrolled in the high school.

Selection of subjects. The Challenge students were not randomly selected to participate in the high school program. This group of students volunteered to be in the program. The significant characteristic of all participating students was their race. The study sought to evaluate the effectiveness of a program designed to decrease the disparity in the academic performance between African American students and Caucasian students. The study attempted to control for this internal threat by comparing the assessment measures (ACT, EOC, and GPA) for three random groups of students in the graduating class of 2012: Challenge students, all other African American students, and all Caucasian students. Academic achievement data were selected randomly from groups of students who were enrolled at the high school since their ninth grade year.

Multiple-treatment interference. Multiple teachers provided instruction to the students involved in this study. These instructors provided a wide range of curriculum and were responsible for evaluating student assignments. To limit the threat of differences in instructional delivery, all students were subjected to the same grading scale and participated in the same district-approved curriculum.

Specificity of variables. The use of cumulative GPA was a concern for this study. Calculation of course GPA was based upon teachers' professional judgments of their students' performance and achievement levels. Formative and summative assessment grades were used to determine a cumulative numeric value for each student. Using GPA as an achievement indicator could be limiting for this research because teachers may have used different grading practices to calculate the GPA. To address this

potential limitation the cumulative GPA at the end of the student's first semester of their 12th grade year was used for all randomly selected students in the graduating class of 2012. While different students took different courses throughout the seven semesters considered in this study, all teachers providing grades were from the same high school and used the same calculation method to determine the student GPA given. In addition, two additional achievement data instruments were used to triangulate results. The EOC scores and ACT scores for randomly selected student groups were analyzed to provide this triangulation of data.

ACT score assessment was limited to randomly sampled Challenge program students and Caucasian students in the graduating class of 2012. Due to the low participation rate in taking the ACT exam within the non-Challenge African American student group, this group was eliminated from this analysis.

Using broad variables created a better opportunity to apply the research to other settings and people. The use of state-wide assessments (EOC scores in English II and American History) and nationally established measures (ACT and cumulative GPA) helped guard against this external threat. Results of this study should be limited to similar demographic public high schools within the state of Missouri. Generalizing to populations outside a suburban public high school with different socio-economic factors could result in different findings.

Definition of Terms

Achievement Gap. For the purpose of this dissertation, the achievement gap was defined as the difference in academic achievement between African American students and Caucasian students.

ACT. The American College Testing Program Inc., created an assessment which indicates probable success regarding college level coursework. The ACT test is a four subject area test and is accepted by all four year colleges within the United States (ACT, Inc., 2011c).

AYP (AYP). Criterion established to meet a federal law that required all public schools, public school districts, and states to develop achievement targets. Achievement targets were required to progress annually until 100% of students scored at or above the state's established proficient level by 2014 (MO DESE, 2011b).

End of Course Exams (EOC). Criterion-referenced tests delivered to middle and high school students when the Course-Level Expectations for a particular course have been covered (MODESE, 2011b).

Grade Point Average (GPA) "The average number of grade points a student earns for each graded high school course...Dividing a student's total grade points earned by the total course credits attempted determines a student's GPA." (National Assessment of Educational Progress [NAEP], 2007, p. 1).

Missouri Assessment Program (MAP). Grade-level assessments were augmented norm-referenced tests that were delivered annually each spring (in Missouri) in communication arts and mathematics for grades 3-8, and science for grades 5 and 8 (MO DESE, 2011c).

No Child Left Behind (NCLB). Legislation signed into law in 2002 requiring all public school students to meet proficient levels on state assessments in reading and math by 2014 (MO DESE, 2011a).

North Central Association (NCA). A voluntary member organization created in 1895 to accredit colleges, universities and schools. In 2010 NCA accredited over 8,500 educational institutions and was recognized by the DOE (NCA, 2010).

Positive Behavior Interventions and Support (PBIS). An approach used to assist school staff to implement specific practices that maximized academic and social student behaviors. Effective classroom management and preventative school discipline were two essential components of this approach (PBIS, 2011).

Conclusion

The academic achievement gap has existed in the U.S. for decades. While there is much debate about why the gap persists, educators must continue to seek effective instructional strategies to eliminate it. The substantial long-term impact of reducing and, ultimately, eliminating the achievement gap would have positive ramifications on virtually every racial equality issue facing the U.S.

While many educators verbalized a willingness to accept the achievement gap challenge, holding these school leaders completely accountable for eliminating the achievement gap could do more harm than good. A significant body of research indicated out-of-school factors play a large role in creating the achievement gap. School districts are faced with looming penalties related to NCLB if they fail to have all students meet assessment proficiency levels in reading and math by 2014. The stringent penalties have caused schools to try many reform efforts, which have resulted in few positive outcomes.

The high school educators involved in this research spent years studying reform efforts to determine which strategies would be most effective to eliminate the achievement gap in their school. Strategies chosen for the Challenge Program included

individualized four-year course plans, staff mentors to assist with academics, mandated parent involvement in book studies, monitoring of attendance, GPA goals established each semester, and an expectation for Challenge students to be involved in at least one extra-curricular activity at the high school.

This study analyzed the academic data for students in the Challenge Program. The program was created by high school administrators to reduce the academic achievement gap between the African American students and Caucasian students within the school. This research analyzed achievement data of randomly selected students within the graduating class of 2012 to measure the academic differences between the Challenge students, Caucasian students, and all other African American students. Specifically, EOC test scores in English II and American History were analyzed as well as the cumulative GPA for the randomly sampled groups. ACT scores for a randomly sampled group of Challenge students were analyzed against a randomly selected group of Caucasian student ACT scores. Finally, a cumulative GPA analysis was done comparing these three groups in the graduating class of 2012 to the cumulative GPA for the graduating classes of 2007 through 2011 disaggregated by Caucasian and African American cumulative GPA.

The literature review in the next chapter considers environmental and institutional factors that seem to contribute most to the minority achievement gap. A discussion of viewpoints and a review of existing high school initiatives developed to assist at-risk students are also provided.

Chapter Two: Review of Literature

Defining the African American Achievement Gap

This chapter focused on research that identified possible causes for the academic disparity between African American students and Caucasian students and how a public school district may remedy this disparity. Researchers and educators alike have sought answers to eliminate the academic achievement gap. Research confirmed minority students, as a group, scored lower on achievement measures than middle-class white students. According to a 2002 report published by the Missouri Department of Higher Education (MO DHE):

Large numbers of minority students and/or those in lower socioeconomic groups perform poorly on MAP tests. By the time students reach high school, the gaps have broadened to include not only MAP scores but also ACT scores and participation, high school graduation rates, and completion of the state's high school core curriculum. Performance gaps are also reflected in college attendance rates and enrollment in remedial college courses. While performance gaps are associated with minority and low socioeconomic (SES) status, large numbers of minority students and/or those in lower socioeconomic groups perform poorly on MAP tests. By the time students reach high school, the gaps have broadened to include not only MAP scores but also ACT scores and participation, high school graduation rates, and completion of the state's high school core curriculum. (p. 6)

Michael Holzman (2008), lead researcher for the Schott Foundation for Public Education, believed the reasons for this inequity were many. The lack of quality administrators and teachers, teacher bias which lowers academic expectations for minority students, fewer

resources, and minimal parental involvement were all reasons substantiated through his research. David Berliner, Regents Professor of Education at Arizona State University, maintained many out-of-school factors associated with poverty significantly impacted learning. These factors included low birth-weight, inadequate health care, sub-standard nutrition, pollutants in the environment, family instability, and neighborhood influence (Berliner, 2009). Achievement gaps do not exist at birth:

Measurements of the intelligence of kid's less than one year old show virtually no racial or social-class differences, yet racial and social class achievement gaps are firmly established by the time students start kindergarten. Something happens before kindergarten that produces differences in proficiency. (Walser, 2006, p. 1)

This chapter researched multiple factors, which contributed to the minority achievement gap. First, environmental factors were considered. These included a student's socioeconomic status, cultural environment, and family background. Institutional factors which impact learning were also considered within this review. These included the lack of effective leadership, placement of high quality teachers, tracking practices within high schools, and lack of parental involvement in the school's academic process (Educational Research Service, 2001). Finally, an in-depth review of two current high school initiatives was provided. Established in 2001, Early College High Schools (ECHS) was implemented specifically for at-risk students. This initiative concentrated on eliminating high school drop-outs and obtaining college credit for at-risk high school students. The second initiative, High Schools That Work (HSTW), was based upon the belief that most students could successfully accomplish challenging academic and

career/technical studies if a motivating environment existed to encourage students to succeed.

Environmental Factors

Cultural environment and family backgrounds. Why did white students perform academically better than African American students? Ronald Ferguson, senior research associate at Harvard's Kennedy School of Government, explained that achievement gaps do not occur naturally: "They are mostly because of differences in life experience" (Walser, 2006, p. 1). This cultural explanation for the achievement gap contends different cultural values placed on education creates differences in academic expectations.

Holzman (2008) explained that during the 1930s and 1940s, white people with authority made decisions about black people's lives that inordinately disadvantaged African Americans. Holzman claimed African Americans were denied quality education that virtually eliminated the possibility for this minority group to move out of poverty. Limited educational opportunities were just one example of this racism. African Americans lacked influence in the criminal justice system during this same period. Many African Americans, particularly men, were sent to prison for deeds that Caucasian Americans freely committed every day. While much has changed in this country, at the time of this study, the African American population was still less healthy than whites, had a much higher prison population than whites and overall, wherever there were large populations of blacks within a school, lacked access to quality education (Holzman, 2008).

The late Dr. John Ogbu, Professor of Anthropology at the University of California at Berkley, supported the contention that African American families developed different academic expectations within the U.S. Ogbu first coined the term “acting white” in the mid-1980’s (Lee, 2002). He maintained that no matter how hard schools tried to reform, the achievement gap problem would not be completely solved. He insisted the black community was part of this problem. Members of this minority group, whose ancestors were involuntarily brought to the U.S., perceived they would receive limited benefits from an educational system that was created through racist structures. In turn many African Americans developed social norms opposing white middle-class culture. Ogbu referred to this as oppositional identity (Wiggan, 2007).

Understanding and accepting established norms and expectations that look and feel different than a child’s family background was a struggle for many African American students. In the book *Why Are All the Black Kids Sitting Together in the Cafeteria*, (1997), Tatum pointed out that all adolescents explored their identity, but black youth also looked at themselves in terms of race. White adolescents were less likely to explore their race because theirs was the dominant race and therefore already accepted. Black adolescents realized the world around them acknowledged their race first and created perceptions about them based upon their race. At a young age, these youth were more likely to create their own perceptions based upon the external messages they received. This realization often caused a form of self-segregation, grouping by race to explore what it meant to be Black.

Peer groups within the African American culture imposed negative consequences (oppositional culture model) for members showing academic success (Herman, 2009).

Signithia Fordham, Professor of Anthropology at University of Rochester, agreed with Ogbu's theory. Her research with an inner-city Washington high school found race was rooted in more than the color of one's skin but also in behaviors and social status.

Black kids don't get validation and are seen as trespassing when they exceed academic expectations....The kids turn on it, they sacrifice their spots in gifted and talented classes to belong to a group where they feel good. (Lee, 2002, p. 4)

Tatum (1997) agreed, when anyone felt invalidated, their natural reaction was to disengage and find a place they felt more accepted. Doing well in school was considered a white characteristic and this perception created a serious conflict for black students. This forced a black student to choose between doing his or her academic best and risk being perceived as smart or making education less a priority and being recognized by peers as cool (Tatum,1997).

Oppositional identity has been one of the most debated theories in the past decade. Ferguson (Walser, 2006) disagreed with some of Ogbu's research. Through Ferguson's Tripod Project for School Improvement, teacher and student surveys were collected for more than nine years to measure classroom conditions and student engagement by race and gender. Based upon his survey results, the acting white premise was not completely true. Many of the stereotypes assumed to be true like the "acting white" concern, was not the problem but instead a reaction to not feeling comfortable in the classroom. Among the survey results, African American students stressed the importance of teacher encouragement over teacher demands as a motivating factor to learning. The survey work also indicated almost half of the African American students did not fully understand the classroom lesson half of the time or less. This compared to

one-quarter of the Caucasian student responses (Ferguson, 2002). This information emphasized the critical importance of classroom teacher and student relationships for African American student performance.

The challenge for Caucasian teachers was understanding the African American culture regarding respect. African American students demonstrated more assertive behavior to show “opposition to the kinds of subordination and toleration of disrespect that blacks have had to put up with over centuries” (Walser, 2006, p. 4). While Ferguson agreed that African American students needed to fit in with their friends, he also maintained substantial progress in narrowing the achievement gap could be accomplished by “affecting home intellectual climate and lifestyle as they affect achievement” (Walser, 2006, p. 1). Ferguson was most concerned over the achievement gap that exists for black students whose parents have college degrees compared to white students. His research indicated the achievement gap persisted regardless of the parental education levels. He suggested lifestyle changes would and should cause adults to focus on encouraging a love of learning among kids. Focusing parents and teachers on strategies to motivate learning such as encouraging leisure reading or removing the television from a child’s bedroom should positively affect achievement.

Socioeconomic status. In 2000 the U.S. Census Bureau reported 77.1% of the United States population was white while 12.9% of the U.S. population was African American. The census bureau reported in 2007 82.8% of black Americans 25 and older completed high school or higher education while 90.6% of white Americans met this criteria. This 2007 report also indicated 18.7% of black Americans 25 and older obtained a bachelor degree or higher compared to 31.8% of white Americans. In 2008 24.7% of all

blacks living in the United States met the definition of poverty compared to 11.2% of the white population. The annual median income for black Americans was \$34,218 compared to the white American annual median income of \$55,530 (U.S. Statistics, 2009). This data reflected the disparities that continue to exist between white and black Americans.

Throughout the U.S., schools with high concentrations of poor and minority students typically demonstrated the largest achievement gaps. During 2010 the lieutenant governor of South Carolina was quoted as saying “You show me the school that has the highest free and reduced [-price] lunch and I’ll show you the worst test scores” (Chenoweth, 2010, p. 1). Many of these high poverty schools were inner-city schools with a high minority population. According to a 1994 study, *Growing up with a single-parent: What hurts, what helps?* Sara McLanahan and Gary Sandefur (1994) found a significant correlation between lack of educational attainment and low household income. Low income families found it challenging to purchase educational resources and provide their children funding for extracurricular activities that promoted learning. These families concentrated their earnings on basic life needs such as food, clothing, and housing. Rothstein, (2004) maintained:

The growing unaffordability of adequate housing for low-income families is another social class characteristic that has a demonstrable effect on average achievement. Children whose families have difficulty finding stable housing are more likely to be mobile, and student mobility is an important cause of low student achievement. (p. 7).

Many educators claim the education system should not be held accountable for the dismal achievement levels of disadvantaged students. This argument professes America can not fix education until it fixes poverty (Klein, 2009). Poor students' parents are more likely to leave education to the educators and avoid involvement in their children's schools. This is not because they want to be less involved, but instead because they do not feel competent to challenge or discuss their child's education with teachers. Many of these parents also feel overwhelmed with life and unable to properly advocate for their child's education (Chenoweth, 2009).

Poor families, like most other families, wanted a better life for their children. A study in the December, 2010 Professional School Counseling Journal found African American male students in an urban midwestern high school understood the importance of doing well in school to escape poverty. These students viewed school as the way to escape poverty (Tucker, Dixon, & Griddine, 2010).

To break the ongoing effects of social inequality for African Americans, significant opportunities for educational achievement and employment must exist. Failing to create these opportunities will continue to cripple the effort to bridge the education and wealth gaps between African Americans and Caucasians in the U.S. (Bruce, Getch, & Ziomek-Daigle, 2009). In fact David Berliner, Regents' Professor at Arizona State University, wrote a policy brief, *Poverty and Potential: Out-of-School Factors and School Success*, which argued:

As wonderful as some teachers and schools are, most cannot eliminate inequalities that have their roots outside their doors and that influence events within them. The accountability system associated with NCLB is fatally flawed

because it makes schools accountable for achievement without regard for factors over which schools have little control. (2009, p. 40)

Rothstein agreed with Berliner that there should be social and economic policies dealing with health services, stable housing, and the reduction of income inequities for low income families to effectively narrow the achievement gap. Rothstein did not argue with the need for school reform, just that this type of reform was simply not adequate to close the achievement gap (Rothstein, 2004).

Institutional Factors

Lack of effective leadership. According to *Closing the Achievement Gap*, a Policy Action Guide for Washington State's School Directors (Boeck, 2002), race and class inequities were deeply embedded in schools. Many school leaders failed to understand how invasive bias was and how this bias eroded the possibility of a strong learning environment for all students. The policy action guide stressed the importance of school leaders finding effective ways to address bias within the school building. School leaders should shoulder some of the blame for academic failure and not fall into the popular majority eager to blame the student's life circumstances. Holzman (2008) suggested;

...leadership of these schools transform "they" questions into "we" questions.

"Why aren't the parents of these children doing more for their children?" becomes

"What can we teachers, as those responsible for the education of these, our children, do so they will succeed in this school and life? (p. 4)

Unfortunately the majority of high schools across the U.S. fell victim to the American school system's historic treatment of African American male students. Many

of these students were perceived as problem students with a bleak future. School administrators were less likely to consider that African American males in particular, were interested in education. This perception led to placing lower expectations on African American male students and removing rigor from their academic program by assigning these students to less qualified teachers (Tucker et al., 2010).

School administrators should be consistent in their treatment of students. Eileen Kugler, author of *Debunking the Middle-Class Myth* (2003), argued school leaders must set the tone within their school. Respect for all must be modeled every day. Any form of disrespect, regardless of how subtle, sent negative messages about discrimination. School leaders had the power to proactively influence racial relationships among students. Promoting equity and being sensitive to cultural differences would have multiple benefits within the school climate. Improvement in student behavior, more staff collaboration, and more minority parent involvement in their student's academic success were all proven benefits.

Principals must hold teachers accountable. Due to lifetime tenure laws found in most states, this objective is difficult to accomplish. In 2008, 30,000 tenured teachers worked for New York City public schools. Only three of these teachers were dismissed in that year. The requirements to terminate a tenured teacher were lengthy and many principals did not even try to document and terminate poor teachers (Thomas, Wingert, Conant, & Register, 2010).

Year after year, about 99 percent of all teachers in the United States were rated "satisfactory" by their school systems; firing a teacher invited a costly court battle with the local union. (Thomas et al., 2010, p. 3)

Most principals were distracted by the day-to-day crisis of school management. Sharon Brittingham, a high-achieving principal from an elementary school in rural Delaware, insisted keeping a constant focus on instruction was the only way schools could improve (Chenoweth, 2010). Effective leadership required focusing on the most important issue – academic achievement.

Karin Chenoweth (2010), senior writer with the Education Trust and author of several books and articles on the achievement gap, argued school leaders needed to do the following to have a positive impact on the achievement gap. First, bring rigor to teacher hiring decisions and teacher tenure decisions. Finding the right teachers and weeding out the wrong teachers within a school must happen for all children to have a chance for continuous learning. Next, allow everyone to play a part in running the school. This critical step would create ownership among all stakeholders to help establish school expectations and actively play a role to reach these expectations. Third, leaders must constantly monitor academic results against their goals to allow improvement. This means training staff to use student achievement data to evaluate decisions must become common and constant practice. Finally, demand high performance from all and provide relentless respect and support. Leaders that used these strategies for staff and students and modeled the way they should treat each other and maintained a positive tone in the school made positive strides to narrow the gap.

High quality teachers. Highly qualified teachers had strong pedagogical and instructional subject knowledge. Unfortunately, 33% of students taking high school mathematics in low-income, high minority schools did not have a highly qualified teacher. In fact, these instructors were teaching without a license or failed to have a

license with a mathematics major (Johnson & Kritsonis, 2011). According to William Sanders, Director of the University of Tennessee Value-Added Research and Assessment Center, the most dominant factor in learning was the quality of the teacher (Sanders & Rivers, 1996). Sanders found that students having strong teachers three or four times in a row would continue to excel no matter what their background. This research also indicated students who had as few as two poor teachers in a row never recovered (Thomas et al., 2010). One study in the Los Angeles school system found that if low-income minority students in grades three through five were guaranteed of having teachers who fell in the top 25% of effective teachers for four years in a row (instead of less than average teachers), the achievement gap could be completely eliminated (Klein, 2009).

To remain effective in the classroom, quality teachers must collaborate with each other. Teaching in isolation provided students the knowledge and skills of only their individual teacher. This was particularly harmful to minority students and poor students. These students often did not have the parental support at home to seek more assistance or notice if their child was struggling. Teachers working together provided support and a broad bank of knowledge for each to draw upon. Teachers also had the opportunity to discuss different instructional strategies to reach all students (Chenoweth, 2009).

Placing highly qualified teachers with students who were struggling had the most significant impact on closing the achievement gap. The Value-Added Research and Assessment Center at the University of Tennessee found groups of students with similar abilities, and initially, equal levels of achievement may have had significantly different academic performances based upon their assignment of teachers. These results indicated students who were regularly assigned effective teachers had a strong advantage to

accomplish higher levels of achievement (Sanders & Rivers, 1996). Yet in school districts throughout the U.S., a disproportionate number of less-qualified teachers provided education to African American students. Holzman (2008) believed this was the primary factor in the achievement gap between African American students and Caucasian students.

Delpit and Kilgour-Dowdy (2002) argued that teaching was much like a performance. How a teacher speaks forms students' attitudes toward learning. Students observed everything a teacher said and did to develop their relationship with the teacher. They explained:

Students are very sensitive to the interface of language and behavior and learn how to listen selectively if they do not trust the teacher's language. They often ignore the words and listen for the tone. Teachers sometimes mistake this for the students not paying attention. However they usually are, though not necessarily to what the teacher intends. (Delpit, & Kilgour-Dowdy, 2002, p. 152)

Ferguson (2002) argued that teachers needed to spend time studying the work of students who did not do well. Figuring out what they failed to learn, why the teacher thought they failed to learn it, and then seeking ways to alter instructional approaches to help them would begin to address the achievement gap. Surveys conducted by Ferguson found African American students in particular were concerned throughout their school experience with whether people thought they were smart. This inhibited many African American students from speaking up when they did not understand teacher assignments or directions (Walser, 2006). Ferguson went on to explain that schools contributed to the achievement gap by not differentiating appropriately for different students. Teachers

needed to understand the different experiences students brought into the classroom to be able to differentiate instruction appropriately. There was no value in a teacher trying to make class work more relevant and interesting to the students if the teacher did not understand what relevance meant to each student. Self-esteem rose as grades rose for African American students, except for the student who did not feel as though he or she fit in. African American male students specifically had drops in self-esteem if they made higher grades and did not feel as though they fit in. This was not the case for white male students. Ferguson argued African American students would not have to make poor grades to fit in. These students needed to exhibit behavior that was acceptable within their own culture. Many African American male students exhibited assertiveness as a way to obtain respect within their informal setting (Walser, 2006).

The challenge with Ferguson's (2002) work was convincing teachers to accept the need to change their instruction. While most teachers said they wanted to help all students learn, some found it a challenge to reach all students. Teachers needed to open themselves up for constructive criticism. Differentiation meant more work on the teacher's part to determine how best to meet individual student needs. White teachers needed to learn about the African American culture and ways to incorporate curriculum that included references to the African American intellectual accomplishments. Until the instructor was able to make a connection between the African American intellectual legacy and their African American students, teachers have found it difficult to bridge learning with the cultural differences (Tatum, 1997).

Retaining highly qualified teachers in high-poverty schools is another significant concern. A study completed by The Urban Institute in Washington, D.C. found "teachers

who stay in high-poverty schools may simply burn out faster, resulting in smaller increases in productivity over time compared to teachers working in less stressful environments (Sass, Hannaway, Xu, Figlio & Feng, 2010, p. 21). The study suggested individual, highly qualified teacher contributions needed to be a part of accountability measures for high-poverty schools. High-poverty school administrators needed to make retention of these teachers a high priority by finding innovative ways to attract highly qualified teachers into their schools. This priority needed to include discovering ways to improve teacher skills over time within the existing school environment.

Tracking within high schools. Tracking within schools occurred when school administrators placed students in a series of classes based upon their learning abilities. Administrators grouped high achieving students in high-track programs while lower achieving students moved through the school in less challenging courses. High schools throughout the U.S. practiced tracking, or “ability grouping,” to generate four year plans for students. There were a variety of reasons for this practice, but one of the more widely accepted views of parents and educators was this practice benefited high achievers (Campbell, 2006). Parents of gifted students were particularly strong advocates of this practice. They feared de-tracking would force teachers to “water-down” the curriculum and lower expectations within the class so all students would achieve. This widely held perception narrowly focused on a small population of students. Numerous studies found this practice denied academic opportunities for a large number of students. A disproportionate number of students tracked into low-ability classes were minority and poor students. Multicultural education advocates argued creating a low-track culture in a school created an ineffective learning environment (Burris & Welner, 2005). There was

a misperception that creating low expectations for struggling students would help boost the students' self-esteem. Unfortunately, this usually led to a short-term victory at best. The student recognized the school's message that they were not capable of performing at a high level. It also became clear to the student that the school would settle for low expectations. This eliminated any incentive a student might have to try to accomplish at a higher level (Liesveld & Miller, 2005).

Cultural-linguists maintained many African American students labeled academically inferior were not performing below average. While many Caucasian teachers considered an African American child language deficient, this misperception existed because the teacher failed to understand the African American culture and its impact on language. African American language originated as a combination of West African, Central African, and European languages. Slaves brought to America from the West and Central African regions adapted their African language to include a European influence. Caucasian teachers in the U.S. misunderstood and many refused to consider this linguistic difference. Once an African American student was incorrectly diagnosed as language deficient, the teacher changed their behavior towards the student, spending less time with the student and concentrating more on the "normal" students (Delpit & Kilgour-Dowdy, 2002).

In South Side High School, a suburban high school in New York, heterogeneous classes in all subject areas started with the ninth-grade class in 1999. The results were remarkable. Before implementing this reform, only 32% of all African American or Hispanic graduates earned Regents diplomas. After implementation, this percentage increased to 82% while Caucasian or Asian American graduates went up to 97%.

“Achievement followed from opportunities – opportunities that tracking denied. When all students were taught the high-track curriculum, achievement rose for all groups of students” (Burriss & Welner, 2005, p. 598).

Researchers found that tracking was a major factor contributing to the achievement gap between disadvantaged students and affluent students. According to Blanchett (2006), Associate Professor of Urban Special Education at the University of Wisconsin, school staff considered African American students mentally retarded three times more often compared to Caucasian students. African American students were two times as likely to be considered emotionally disturbed. Blanchett argued inequities in resource allocations, teaching the wrong curriculum and inadequate professional development for teachers contributed to the inappropriate special education label given to many African American students. Once tracking was established, African American students were rapidly assigned to lower level special education courses.

Lack of parental involvement. An intergenerational approach to learning would help resolve literacy problems. Darling (2008), President and Founder of the National Center for Family Literacy, encouraged teachers to teach parents reading strategies for their children. Integrating parents into the academic setting would advance literacy levels.

One of the biggest dilemmas facing a school was how to get all parents involved. Most Parent/Teacher organizations, for example, consisted of white, middle-class, educated parents. Cowhey (2009), a teacher at Jackson Street School in North Hampton, Massachusetts, worked with a group of low-income parents of color to overcome this dilemma. Cowhey’s goal was to see parents providing their own educational programs in the community and encouraging teachers to volunteer at those functions. In Cowhey’s

article “Learning How to Roar,” one single, working mother said, “I don’t have time to go to meetings at school to hear why someone thinks my kids’ test scores are low, but I’ll make the time to do something with my kids that will help them do better in school” (Cowhey, 2009, p. 28). Every parent that met with Cowhey expressed how uncomfortable it was to go to a parent meeting at school and find nobody there who was like them. The key to minority parental involvement, Cowhey explained, was empowerment. Empowering low-income or minority parents to work together would provide an opportunity to eliminate feeling like an outsider.

White middle-class families had an unfair advantage within many classrooms. Many teachers may have unspoken expectations of their students’ behavior based upon expected parent behavior. Kugler (2003) argued

White middle-class families know what schools expect of them and are willing to fulfill the role, because they come from backgrounds that provided them with relevant skills and experiences. They generally come to the school with a more trusting attitude, their personal experiences not tarnished by the racism or prejudice faced by minority parents. (p. 120)

In 2009 Joiner, a reporter for the *St. Louis Beacon News*, interviewed six St. Louis county high school African American students to determine how they felt about the achievement gap. Joiner noted only 30% of Missouri African American students were proficient in English, compared to 57% of Caucasian students and 62% of Asian students. Math results were worse, with only 23% of African American students making sufficient progress compared to 54% for Caucasians and 65% for Asians. Two of the students interviewed were Samantha Bures, a sophomore at Hazelwood Central High School and

Drake Hall, a junior at Webster Groves High School. Bures, a high-achieving student, provided tutoring to classmates who were struggling with English, math, and science.

Bures believed parental involvement in a child's academic life was critical for individual success saying; "There are students whose parents aren't really involved in their lives"

(Joiner, 2009, p. 2). Hall agreed with Bures.

Closing the achievement gap really starts at home. Children need to learn to understand the importance of education. How much pressure your parents put on you about the importance of making good grades and strive for the best things in life is important. (Joiner, 2009, p. 2)

Parental influence can help or hinder the development of high and clear academic expectations. Students whose parents did not attend college provided less direction than students whose parents did attend college. Students need to feel pressure from parents to do well in school (Tucker et al., 2010). Administrators from Forest Grove High School in Forest Grove, Oregon agreed. Parents at this high school are involved in developing the school's mission statement and the academic standards that all students are required to meet. Due to their parent-centered approach, Forest Grove High School was named one of ten schools as "breakthrough schools" in 2008 by *Principal Leadership* magazine (Rourke & Boone, 2008).

Educators must avoid judging parental involvement based upon how little they see a minority parent in school. Many parents felt uncomfortable in the actual school environment, but were very involved in their child's academic life at home. Teachers need professional development in adult learning. This would enable teachers to work with parents to help reinforce learning at home. Most parents wanted to serve as an

advocate for their children but did not know how. Equipping them with the ability to help support learning at home would be one of the most effective measures school leaders should champion.

Early College High Schools (ECHS).

ECHS was a strategy created in 2001 to combine high school and college instruction for high school age students. “Early college high school is a bold approach, based on the principle that academic rigor, combined with the opportunity to save time and money, was a powerful motivator for students to work hard and meet serious intellectual challenges”(ECHS Initiative, 2011, p. 1).

Core principles. All ECHS schools agreed to adhere to five fundamental principles of the initiative:

Core Principle 1: Early colleges are committed to serving students underrepresented in higher education;

Core Principle 2: Early colleges are created and sustained by a local education agency, a higher education institution, and the community, all of whom are jointly accountable for student success;

Core Principle 3: Early colleges and their higher education partners and community jointly develop an integrated academic program so all students earn one or two years of transferable college credit leading to college completion;

Core Principle 4: Early colleges engage all students in a comprehensive support system that develops academic and social skills, as well as the behaviors and conditions necessary for college completion;

Core Principle 5: Early colleges and their higher education and community partners work with intermediaries to create conditions and advocate for supportive policies that advance the early college movement. (ECHS, 2008, p. 2)

Specifically designed for at-risk students, the program created a school environment with fewer discipline issues and significantly higher attendance rates. Initially funded through the Bill and Melinda Gates Foundation, the initiative has grown to include 230 high schools in 28 states (Dessoiff, 2011). The program has been very successful in reducing the dropout rate among at-risk students and encouraging postsecondary education opportunities.

About 86 percent of early college high school graduates in 2009 went on to some form of postsecondary education.....That compared with about 66% of all high school graduates nationally who enrolled in college immediately after high school in 2006...(Dessoiff, 2011, p. 75).

Pedagogical approaches. The key to success for this strategy involved six pedagogical approaches to academics:

1. Collaborative group work allows students of all different skills to be supported and challenged by their peers. Working together helps students learn from each other.
2. Writing to learn allows students, including ELL's, to develop ideas and use critical thinking. They can reflect on what they are learning so they can refine the learning in order to apply it at higher cognitive levels.

3. Literacy groups, which are best compared to focused book clubs, help build comprehension and higher discourse among students across various texts in different disciplines.
4. Questioning from students and teachers fosters purposeful conversations and stimulates intellect.
5. Classroom discussion encourages students to develop thinking, listening and speaking skills.
6. Scaffolding helps students connect prior knowledge they learned to challenging new concepts. (Dessoiff, 2011, p. 80).

In 2008 over 70% of the students in ECHS schools were students of color and 59% qualified for free or reduced lunch (ECHS, 2008). In 2010, North Carolina reported 46 high schools implementing ECHS strategies had no dropouts. Students graduating from an ECHS movement school also received 20 or more college credits through dual enrollment. The initiative helped to overcome many environmental and institutional barriers to academic success for low-income, minority and at-risk students.

High Schools that Work (HSTW)

The largest high school reform initiative in the U.S. was created by the Southern Regional Education Board in 1987 (SREB, 2011a). Thirty states and over 1,200 schools within the U.S. have joined this initiative. The reform, which established research and assessment-based goals and practices, was designed to accelerate student learning for high school level students (West Virginia Department of Education [WVDE], 2011). There were 10 key practices high schools implemented to be a part of the HSTW initiative. These practices included (a) setting high expectations, (b) increasing access to

career/technical studies, (c) increasing academic courses providing college-preparatory curriculum, (d) requiring students to complete a program of study, (e) integrating school-based and work-based learning options, (f) allowing time for teachers to plan integrated instruction, (g) creating a rigorous learning environment for every student, (h) providing guidance to students and parents to ensure an in depth program of study, (i) creating a system that provides extra help to students, and (j) using assessment and evaluative data to improve academics and recognize student performance (MO DESE, 2009).

HSTW was built around the belief that most students could successfully accomplish challenging academic and career/technical studies if a motivating environment existed to encourage students to succeed. School leaders and teachers were responsible for creating this environment. This philosophy required school staff to teach in ways that provided students the ability to see the usefulness in what they were learning. HSTW school leaders recognized the years between middle school and post-secondary learning were crucial. School staff acted as advisors with students and their parents to establish objectives and provide additional academic assistance when needed. The high school leadership was charged with supporting teachers by creating common plan time and professional development that was aligned with the school's vision and improvement plan (SREB, 2009a).

Because the greatest failure rate in high school occurred in grade 9, HSTW schools were encouraged to create small student to teacher ratios in this grade. The SREB maintained that "Students who fail the ninth grade are at least 50 percent less likely to graduate from high school" (SREB, 2009a, p. 7). The SREB encouraged schools to establish a "master" teacher to assist a team of teachers in core subject areas in the ninth

grade. This team was assigned the same group of students and had common planning time to work together to integrate the curriculum and coordinate teaching methods.

The SREB also believed the senior year of high school had to be changed for students. Placement exams were given in grade 11 to guide students and parents to determine what courses should be taken during the senior year. This enabled the high school to provide remediation to a college-bound student in English or math if needed. The placement exam results also provided an opportunity for students to take courses that provided postsecondary credit during their senior year. Students not planning to attend college were afforded "...opportunities to take industry-approved programs leading to an associate's degree, a certificate or an employer's certification" (SREB, 2009a, p. 8).

Camden County High School (CCHS). Located in Kingsland, Georgia, this school was a comprehensive high school implementing HSTW. In 2008 CCHS was selected as a HSTW Pacesetter School (SREB, 2009b). Using the 10 practices outlined by HSTW, the school has increased the number of Advanced Placement courses offered and now has many students receiving dual high school and college credit. CCHS required all teachers to participate in focus teams to review data and give input on curriculum and instructional strategies. CCHS also hired a graduation coach for students, provided additional extra-help programs and expanded opportunities for students to receive course credits. Academies were established to develop small learning communities for students. While the only grade-level academy was the ninth grade academy, the other academies were "career" oriented: business, engineering and industrial technology, fine arts, health and environmental science, government and public services. This initiative provided students an opportunity to develop attachments to teachers and peers who express similar

career interests throughout their high school years. Faculty were provided professional development to learn how to use career/technical concepts within their instruction. Authentic, hands-on projects were integrated throughout the curriculum based upon the career interest (SREB, 2009b).

In the 2008-2009 school year CCHS established a program for non-traditional learners to provide these students a way to complete high school. These students were allowed to work or modify their learning day, because they had other responsibilities that prevented them from attending classes every day. The alternative program was technology driven, and allowed non-traditional students to earn up to eight credits toward graduation. These students were in school for a minimum of three hours per day, attending classes in either the morning, afternoon, or evening. CCHS has seen more than 200 students enrolled in this alternative program and more than 50 students graduated on time due to this non-traditional learning opportunity (SREB, 2009b).

CCHS administrators were pleased with the results after implementing HSTW practices. The graduation rate rose from 72.9% in 2005 to 74.5% in 2008. The CCHS Deputy Principal and Freshman Academy Director, Denise Cato, believed this “is especially significant in light of the fact that the number of students graduating has increased each year – from 461 in 2005.....to...548 in 2008” (SREB, 2009b, p. 6).

Loganville High School. Located in Loganville, Georgia this HSTW school was recognized by Peter Jennings, ABC-TV’s nightly news anchor, in November 1999, because of the school’s increased student achievement. Like many other medium-size public high schools throughout the U.S., Loganville was a suburban nine through 12 grade school located about an hour away from a large city. In the 1980s and early 1990s

this high school had poor student performance and low expectations. Attendance averaged below 90% on a daily basis and no one within the community seemed to care about the dismal achievement levels. In 1993 the school principal, Ken Prichard, attended a summer HSTW staff development conference. Prichard then led his own high school staff through the professional development and started the wheels moving to expect high performance levels from every student (SREB, 2000).

Loganville High School began its school improvement journey by eliminating low-level classes and raising graduation requirements. Algebra I replaced general mathematics and additional units of study in science, mathematics, and technology were added to the graduation requirements. Staff bought into the ten key HSTW practices to improve the whole school. Loganville educators created an advisement system that required parents to meet annually with a school representative to review their child's program of study. Failure to meet annually delayed a student's class schedule for the next school year. Through these mandated meetings, teachers were able to see that parents really did want to be involved with their children's learning process (SREB, 2000).

Loganville upgraded their career/technical courses to connect with current career opportunities. Mathematics and reading became a focal point for career education. Courses on integrated manufacturing technology applied trigonometry methods and reading comprehension for complicated technical manuals became the norm in these classes. Youth apprenticeship programs were created within the community for hands-on experience (SREB, 2000).

Loganville's teachers were credited with raising academic expectations in all classrooms. Motivating student learning became the focus for these teachers. The HSTW

strategies provided significant improvement for students. Georgia High School Graduation Test results for Loganville High School increased between 1994 and 2000 in all core subject areas (English/language arts, math, writing, social studies, and science). In 2000, students scored 100% on the writing test, 99% on language arts, 98% on math, 96% on social studies, and 88% on science. Attendance rates at the high school increased significantly as well. In 1992, the average daily attendance rate was 87% compared to 96% in 1999. Finally, the school reduced the dropout rate from 8% in 1996 to 3.2% in 2000 (SREB, 2000).

SREB findings. In a comparison study of most-improved and non-improved HSTW schools from 2004 to 2006, the SREB concluded, “.....schools laden with opportunities – posted significant improvement in achievement across every student group” (SREB, 2011b, p. 1). Rich learning opportunities for students became the focus for effective HSTW schools. The SREB outlined 12 actions necessary to improve student achievement and raise graduation rates:

Action 1: Get the school mission right, and make it clear to all stakeholders;

Action 2: Align core academic courses to college-and-career readiness standards;

Action 3: Engage students intellectually, emotionally, socially and behaviorally in learning;

Action 4: Embed reading and writing standards and strategies into all courses to advance reading and academic achievement in middle grades and high school;

Action 5: Connect real-world learning opportunities and student’s interests in intellectually demanding career/technical courses joined with college-ready academic core;

Action 6: Create a culture where failure is not an option by providing reteaching, tutoring, extra help and extra time, formative assessments, and opportunities to relearn and redo;

Action 7: Identify at-risk students early and provide them with the needed support to meet grade-level standards and stay on track for graduation;

Action 8: Emphasize guidance and advisement that connects each student to an adult in the building;

Action 9: Provide extensive professional development for staff that is aligned with the school's mission and improvement plan and emphasizes implementation of new learning strategies;

Action 10: Strengthen middle grades students' transition into high school and reduce ninth-grade failure rates;

Action 11: Ensure schools have a learning-centered leader;

Action 12: Adopt a research-based school improvement design in chronically low-performing high schools and their feeder middle grades schools. (SREB, 2011b, pp. 44-47)

SREB maintained these actions were effective with “all student groups – regardless of race/ethnicity and socioeconomic status...” (SREB, 2011b, p. 3).

Summary

Understanding the causes of the achievement gap was complex. A combination of environmental, family, socioeconomic, and institutional factors appeared to play significant roles. Education leaders throughout the U.S. were struggling to develop strategies to reduce and ultimately eliminate the gap. In 2002, the federal government

mandated that all students reach proficient levels in math and reading subject areas by 2014. Reaching this expectation would require the elimination of the achievement gap. Public schools were being held accountable for this mandate, and the academic stakes were high for schools to succeed.

While there were many institutional factors school leaders had direct control over, there were other out-of-school factors, like socioeconomic and family influence, school leaders also needed to address to eliminate the gap. Educators were faced with a daunting challenge to eliminate the achievement gap. This challenge, created by multiple factors, would require a complex, systemic approach to succeed.

Research regarding high school initiatives designed to reduce the achievement gap revealed two encouraging programs. ECHS and HSTW utilized similar strategies to support student learning. Both initiatives held high expectations for all students and created comprehensive support systems around students to foster success. Chapter 3 outlines a similar program, the Challenge Program, implemented in a suburban high school in Missouri. This chapter reviews the methodology used to evaluate achievement data to determine if the program reduced the achievement gap between African American students and Caucasian students.

Chapter Three: Methodology

Rationale

This study analyzed cumulative GPA, EOC exam scores for English II and American History, and ACT scores to determine if the Challenge Program has made a difference in achievement between African American students and Caucasian students. The high school of interest had a student population around 1,400 and was located in a middle-class suburb of St. Louis, Missouri. The school has received national attention throughout the years. In 1966, CBS aired a documentary detailing the lives of teenagers in the town where this high school was located. The documentary presented life in the town as the “apple pie” experience, and described the high school as typical of middle class high schools throughout the country. National recognition was thrust upon the high school again in 1999, when *Time* magazine reporters documented what life was like for typical high school students. This 35 page cover story selected this particular high school “because it was.....well, remarkably average” (Seaman, 1999). Throughout the years this high school generated inordinate national attention because the high school was average and apparently, not overly newsworthy.

The high school administrators and staff viewed their school as anything but average. The school district received the highest honor, Distinction in Performance, from the State of Missouri for 11 years in a row. The high school has been accredited by North Central Association since 1906. The graduation rate averaged 98% and the school offered 22 classes of college level credit. The high school created programs to engage students in learning and find alternative learning opportunities for nontraditional learners.

Statement of the Problem

School officials were proud of the student accomplishments and generally believed the high school provided a strong academic program. When asked about academic concerns, high school administrators quickly pointed to the achievement gap between African American students and Caucasian students within the school. While the high school implemented various strategies in the past, there was no advancement in African American test scores.

Table 1

*High School Achievement Gap
Cumulative GPA Grade 9*

	White	Black	Gap
2006-2007	3.3	2.3	1.00
2007-2008	3.2	2.4	0.80

Note: Data provided by high school data specialist through School Information Systems.

Research Question and Null Hypotheses

During the 2008-2009 school year, the high school introduced a new initiative, the Challenge Program, to address the achievement gap. When students started their ninth grade year of high school in the fall of 2008, 67% of the African American students volunteered to participate in the Challenge Program. This voluntary program involved individual plans for each student and mandated parental involvement for the full four years of high school. The overall objective of the program was to reduce the African American achievement gap by 50% by the end of the 2011-2012 school year. Additional measurable objectives outlined by the high school administration were a.) All Challenge students would have an average 95% attendance rate; b.) Challenge students would obtain an average cumulative GPA of 3.0; and c.) Challenge students would have a 90%

involvement rate in extra-curricular activities (Clark, 2008). Research completed by the high school administrators in this study district supported the extra-curricular criteria for this program. Lleras (as cited in Ciciora, 2009), a professor of human and community development at the University of Illinois, researched the benefits of extra-curricular activities for high school students. Lleras found students who participated in these activities earned a higher income and completed more years of higher education than students with equal academic scores but no involvement in extra-curricular activities (Ciciora, 2009).

Research Question. Is there evidence that participation in the Challenge program contributed to a decrease in the disparity in academic performance between participating African American students in the graduating class of 2012 and Caucasian students in the graduating class of 2012 at the high school, as measured by cumulative grade point average, ACT, and end of course exam scores in American History and English II?

Null hypothesis one. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to African American students in the graduating classes of 2007 through 2011.

Null hypothesis two. As measured by cumulative grade point average, the Caucasian students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating classes of 2007 through 2011.

Null hypothesis three. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating classes of 2007 through 2011.

Null hypothesis four. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to other African American students in the graduating class of 2012.

Null hypothesis five. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

Null hypothesis six. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to other African American students in the graduating class of 2012.

Null hypothesis seven. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

Null hypothesis eight. As measured by end of course exam scores in English II and American History, the Caucasian students in the graduating class of 2012 will have

no difference in their academic achievement levels compared to non-Challenge African American students in the graduating class of 2012.

Null hypothesis nine. As measured by ACT scores, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

Research Setting

As demonstrated in Table 2, the high school's enrollment has remained stable, fluctuating between 1,300 and 1,400 students in grades 9 through 12 since the 2006-2007 school year. For the graduating class of 2012, a total of 16 new students have enrolled during their four years at the high school. This high retention rate is typical for this high school.

Table 2

High School Enrollment

Grade	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
9	359	346	317	329	323	335
10	360	368	347	319	336	323
11	340	355	378	344	322	328
12	331	347	358	370	361	333

Note. Adopted from "School District Enrollment Projection" provided by Information Management Systems.

Table 3 provides a student demographic breakdown between gender, race (Caucasian, African American Challenge program students and all other African American students), free and reduced lunch, and special education (individual education plan [IEP]) for the 2011-2012 school year.

Table 3

2011-2012 High School Demographics

	Total High School	Caucasian Students	Challenge Program	All other African American
Male	689	482	83	106
Female	630	446	95	66
Free Lunch	236	50	82	100
Reduced Lunch	40	13	18	9
IEP	266	156	38	64
Total	1319	928	178	172

Note. Data provided by high school data specialist through School Information Systems.

Specific student demographics for the high school graduating class of 2012 are illustrated in Table 4 below. Comparing the graduating class of 2012 to the overall high school population, the following observations were made; Caucasian students made up 71.2% of the graduating class of 2012 while 26.06% of the students were African American. For the purpose of this study the remaining 2.74%, which was a total of nine students, were Asian, Hispanic, or Native American, and were not a part of this analysis. The overall Caucasian student population within the high school was 70.35% while 26.54% were African American. Within the graduating class of 2012, 18.48% of the students had an IEP for special education services. This was 1.68% below the total IEP student population within the high school which equaled 20.16%. Students qualifying for free and reduced lunch within the graduating class of 2012 equaled 18.79% of the student population. Like the percentage of IEP students, this was slightly lower compared to the overall high school student population qualifying for free and reduced lunch of 20.92%.

Examining the graduating class of 2012, the following observations were made; of the 61 students in the graduating class of 2012 qualifying for an individual education plan for special education, 44.26% were African American students while 52.46% were Caucasian. There was a substantial difference between African American students and Caucasian students when considering free and reduced lunch status. Of the 62 students in the graduating class of 2012 qualifying for free and reduced lunch, 72.58% were African American students while 19.35% were Caucasian. The overall free and reduced lunch demographics for the high school was 22.83% Caucasian compared to 75.72% African American.

Table 4

2011-2012 Graduating Class of 2012 Demographics

African	Graduating	Caucasian	Challenge	All other
	Class of 2012	Students	Program	American
Male	181	125	25	27
Female	149	110	28	6
Free Lunch	57	11	25	20
Reduced Lunch	5	1	3	1
IEP	61	32	12	15
Total	330	235	53	33

Note. Data provided by high school data specialist through School Information System.

NCLB requirements mandated all high schools to provide data indicating the AYP of student performance. Student performance was reported in communication arts, mathematics, and additional indicators. Additional indicators included multiple goals of attendance and graduation rate. EOC exam scores were used to report this data to the MO

DESE. Data was required to be disaggregated into the following subcategories: white, black, IEP, free/reduced lunch, and all. Failure to meet established goals in each subcategory equaled a not met for the category. Table 5 demonstrates the high school's AYP status for 2006 through 2010.

Table 5

AYP Status for the High School

Category	2006	2007	2008	2009	2010
Communication Arts	Not Met	Not Met	Not Met	Met	Met
Mathematics	Met	Not Met	Not Met	Met	Met
Additional Indicator	Met	Met	Met	Met	Met

Note. Adapted from “Adequate Yearly Progress – Final” by MO DESE (2010). Retrieved from <http://dese.mo.gov>.

Over 90% of the 2010-2011 senior class indicated they planned to attend college following graduation. While 68% planned to attend a four-year college, 24% planned to attend a two-year college. Table 6 reflects the ACT test results for the students completing this exam in 2010 and 2011 compared to the national average for 2010 and 2011. As demonstrated in Table 6, students at this high school consistently performed above the national and state averages on the ACT exam in both years. For 2010 a total of 244 students completed the ACT while 2011 saw 21 more students for a total of 265 completing this exam.

Table 6

ACT Test Results 2010 and 2011

Subject	National Average		Missouri Average		High School Average	
	2010	2011	2010	2011	2010	2011
English	20.5	20.6	21.5	21.5	24.2	23.4
Math	21.0	21.1	21.0	21.0	23.1	22.4
Reading	21.3	21.3	22.0	21.9	24.2	24.4
Science Reasoning	20.9	20.9	21.6	21.6	23.2	22.6
Composite	21.0	21.1	21.6	21.6	23.8	23.1

Note. Adapted from High School Profile; College Entrance Test Results and ACT Profile Report – State.

Implementation

The Challenge Program was first implemented during the 2008-2009 school year. High school administrators invited all African American students in the graduating class of 2012 and their parents or legal guardians to volunteer to be a part of the program during the summer of 2008. Written material outlining the creation of the program was sent to these students and their parents. An orientation meeting outlining the need to eliminate the achievement gap and the stated goals of the program was provided on August 14, 2008. Fifty-three of the 86 incoming African American students chose to be a part of this new program. Of these 53 students, 53% were female and 47% were male.

All Challenge Program participants were told the program was designed to reduce the African American achievement gap by 50% by the end of the 2011-2012 school year. Additional measurable objectives outlined by the high school administration were (a) all Challenge students would have an average 95% attendance rate, (b) Challenge students

would obtain an average GPA of 3.0, and (c) Challenge students would have a 90% involvement rate in extra-curricular activities. Since the first orientation for the pilot group of Challenge students in the summer of 2008, each incoming ninth grade class of African American students were asked to volunteer for this program. Specific strategies to support academic success within the Challenge Program included the following:

1. Student involvement in the planning of the Challenge Program;
2. Required group meetings and motivators including Challenge Program sweatshirts and food coupons offered quarterly;
3. Development of a four-year plan of high school classes;
4. Special scheduling of courses to accommodate special student needs such as work or health related concerns;
5. Availability of tutoring provided by teachers before and after school;
6. College tours provided by the high school counseling department;
7. Frequent communication (at least monthly) from the high school administrators to Challenge Program parents updating individual student and overall program progress;
8. District administrators and teachers assigned as mentors for each student to serve as an advocate between the school and home;
9. Career planning provided through the high school counselors;
10. Daily checks by school personnel on attendance and late arrivals;
11. Weekly grade checks provided by school staff to all teachers and mentors;
12. Common scheduling for Challenge students to take courses with other Challenge students;

13. Provide individual assistance through mentors and high school staff for each Challenge student;

A summer orientation meeting for ninth grade African American students and their parents was offered each year. During the orientation administrators explained the specifics of the program and invited students and parents to volunteer for the Challenge program. All students choosing to participate were assigned mentors and four-year course plans were developed. Each mentor was responsible for establishing semester grade goals with each Challenge student by the second week of the new semester. The high school hired and assigned two instructional assistants to check attendance, tardy records, and grades of every Challenge student on a daily basis. These assistants were charged with notifying high school administrators and student mentors regarding student concerns. Mentors notified of any concerns accepted responsibility for communicating these concerns with the student as well as parents. Concerns were immediately addressed with a course of action. High school administrators made themselves available to all mentors for any guidance requested.

With the pilot group of Challenge students in their senior year, a total of 178 African American students in grades 9 through 12 volunteered and were actively participating in the Challenge Program. This represented 50.85% of the African American student population at the high school.

Methodology

Hypothesis testing is defined as "...a decision-making process for evaluating claims about a population." (Bluman, 2010, p. 398). Hypothesis testing involves the following steps:

(a) defining the study population, (b) determining and stating the research hypothesis to be tested, (c) providing a level of significance, (d) selecting a sample population, (e) collecting appropriate data, (f) calculating for the statistical tests, and (g) reaching a conclusion based upon the results of the statistical calculations (Bluman, 2010). This quantitative research design independently utilized three types of achievement data to cross-validate findings. “When a conclusion is supported by data collected from a number of different instruments, its validity is thereby enhanced” (Fraenkel & Wallen, 2009. p. 453). Triangulation of the data in this study was performed to provide a more accurate interpretation of the research findings.

Instrumentation

The data collected for this research was gathered from three different instruments. The instruments used were EOC exam scores, ACT scores, and cumulative GPA.

EOC Exams. These exams, which were mandated assessments within the State of Missouri, were designed to assess high school student progress toward mastery of the Missouri Show-Me Standards. EOC exams were required in the subject areas of Algebra I, Biology, English II, and Government (MO DESE, 2011b). All public high school students were required to take these assessments with the following exceptions:

1. Any student with an individual education plan whose academic team determined the alternative assessment (MAP-A) was more appropriate;
2. English Language Learners (ELL) in the U.S. for 12 months or less was exempt;
and
3. Foreign exchange students, homeschooled students and private school students were allowed but not required to take end-of-course exams.

Testing for these groups of students was at the discretion of the local school district.

There were additional end-of-course assessments available to Missouri school districts in American History, English I, Algebra II, and Geometry (MO DESE, 2011b). Any state receiving Title I funds through the federal government was required to assure validity and reliability of its assessment system. MO DESE assured validity and reliability of EOC exams through an external independent alignment study conducted by the Human Resources Research Organization (Taylor, Webb, Koger, Koger, & Thacker, 2009).

This research analyzed the 2009-2010 English II EOC exam scores and the 2010-2011 American History EOC exam scores for a random sample of 30 Challenge students in the graduating class of 2012 compared to a random sample of 15 other African American students and a random sample of 30 Caucasian students in the graduating class of 2012. A random sample of 15 was chosen for the non-Challenge African American student group due to a lack of EOC scores available for this group of students. The state of Missouri phased in EOC exams beginning in 2008 through 2011. Many students qualified for EOC exam exemptions during this period of time and were not required to complete the exams.

ACT. The ACT is a national college admissions examination. The examination assesses student abilities in English, mathematics, reading, and science. There is an optional writing assessment students may choose to complete as well. The ACT is the most widely accepted college entrance exam in the U.S. and is designed to assess a high school student's ability to perform at a college level (ACT, 2011b). To assure reliability and validity the ACT test adheres to the following standards:

Standards for Educational and Psychological Testing, American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (1999) (ACT, 2011c).

Code of Professional Responsibilities in Educational Measurement, National Council on Measurement in Education (1995) (ACT, 2011c).

Code of Fair Testing Practices in Education, Joint Committee on Testing Practices (2004) (ACT, 2011c).

This research analyzed ACT scores from a random sample of 30 Challenge students and a random sample of 30 Caucasian students in the graduating class of 2012. Due to a lack of ACT scores available for the non-Challenge African American student group, no analysis was completed for this group.

GPA. The standard measure to determine a high school students' academic achievement in the U. S. is the grade point average (GPA) (NAEP High School Transcript, 2007). The GPA represents the average number of grade points a student earns for each graded high school course. To calculate a student's GPA, the high school divided a student's total grade points earned by the total course credits attempted. Table 7 below demonstrates how numeric grades were converted to standardized grades.

Table 7

GPA Number Grade Conversion

Numeric Grade	Standard Grade	Grade Point Average
90 – 100	A	4.0
80 – 89	B	3.0
70 – 79	C	2.0
60 – 69	D	1.0
Less than 60	F	0.0

Note. Adapted from U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, the 2005 High School Transcript Study (NAEP High School Transcript, 2007).

This study analyzed the average cumulative GPA's for Challenge students in the graduating class of 2012 compared to the average cumulative GPA's for non-Challenge African American students and the average cumulative Caucasian students within the graduating class of 2012.

Cumulative GPA's were also collected and analyzed for African American students and Caucasian students in the graduating classes of 2007 through 2011. An assessment of overall GPA scores was completed to establish achievement levels of African American students and Caucasian students before implementation of the Challenge Program compared to the achievement levels of the groups after implementation of the program.

Summary of instrumentation. There were three different instruments used in this study. These instruments included EOC exam scores, cumulative GPA, and ACT

scores. The intent of using different tools was to triangulate the data to validate findings related to the Challenge program.

Sample / Subjects for Data Collection

Student achievement data from one high school located in the suburbs of St. Louis County, Missouri was collected for this study and used to evaluate academic performance between the Challenge students, non-Challenge African American students and Caucasian students in the graduating class of 2012.

An analysis of cumulative GPA for graduating classes beginning in the 2006-2007 school year through the 2010-2011 school year for African American and Caucasian students was completed to assess overall achievement before implementation of the Challenge Program. The analysis for this data also established the level of performance between Caucasian students before the Challenge Program was implemented and the Caucasian students in the graduating class of 2012. Additional comparisons were done to establish performance levels for African American students before implementation of the Challenge Program and during implementation of the program. Table 8 reflects the cumulative GPA scores collected for each graduating class.

Table 8

High School Cumulative GPA Scores

Graduating Class:	2011	2010	2009	2008	2007
Caucasian	3.27	3.29	3.26	3.35	3.33
African American Students	2.47	2.32	2.29	2.37	2.28

Table 9 shows descriptive statistics calculated for the cumulative GPA scores for random student groups in the graduating class of 2012. These statistics included measures of central tendency and measures of dispersion. These measures were used to calculate z-

tests for differences in means between the Challenge student scores, non-Challenge African American student scores, and Caucasian student scores for students in the graduating class of 2012.

Table 9

Cumulative GPA Descriptive Statistics

<i>Challenge Students</i>	
Mean	2.719469
Median	2.680445
Standard Deviation	0.641312
Sample Variance	0.411281
Minimum	1.17333
Maximum	3.97143
<i>African American Students</i>	
Mean	1.994785
Median	1.803625
Standard Deviation	0.683776
Sample Variance	0.467549
Minimum	.85897
Maximum	3.72816
<i>Caucasian Students</i>	
Mean	3.38259333
Median	3.590545
Standard Deviation	0.674513455
Sample Variance	0.454968401
Minimum	1.91429
Maximum	4.1775

Measures of central tendency clearly reflected the existing achievement gap among Caucasian students and African American students in the graduating class of 2012. The mean GPA for Caucasian students was 3.38 while Challenge students reflected a mean of 2.72 and non-Challenge African American students had a mean GPA score of just 1.99. Measures of dispersion showed the sample variance to be consistent at 0.4 between Caucasian, Challenge, and non-Challenge African American students.

Table 10 provides descriptive statistics for the EOC American History exam scores.

Table 10

EOC American History Descriptive Statistics

<i>Challenge Students</i>	
Mean	192.6296296
Median	194
Mode	188
Standard Deviation	19.50768714
Sample Variance	380.5498575
Minimum	139
Maximum	231
<i>African American Students</i>	
Mean	184.8
Median	182
Mode	170
Standard Deviation	22.77279078
Sample Variance	518.6
Minimum	148
Maximum	231
<i>Caucasian Students</i>	
Mean	213.9
Median	214
Mode	207
Standard Deviation	19.35039873
Sample Variance	374.437931
Minimum	148
Maximum	250

The measures of central tendency revealed Caucasian students had the highest mean score at 213.9 out of 250, while the mean score for Challenge students was 192.6, and the mean score for non-Challenge African American students was 184.8. When considering measures of dispersion the sample variance for Caucasian student scores was 374.4 while the sample variance for Challenge student scores was 380.5. The non-Challenge African American sample variance of 518.6 displayed a much larger variance

from the mean. Table 11 shows the same descriptive statistics calculated for EOC English II exam scores.

Table 11

EOC English II Descriptive Statistics

<i>Challenge Students</i>	
Mean	207.5
Median	206
Mode	206
Standard Deviation	14.04095
Sample Variance	197.1481
Minimum	180
Maximum	237
<i>African American Students</i>	
Mean	183.9333
Median	190
Mode	190
Standard Deviation	27.81949
Sample Variance	773.9238
Minimum	100
Maximum	218
<i>Caucasian Students</i>	
Mean	224.1333333
Median	225
Mode	237
Standard Deviation	13.49005594
Sample Variance	181.9816092
Minimum	200
Maximum	250

The measures of central tendency revealed Caucasian students had the highest mean score at 224.1 out of 250, while the mean score for Challenge students was 207.5, and the lowest mean score for non-Challenge African American students was 183.9. When considering measures of dispersion the sample variance for Caucasian student scores was 181.9 while the sample variance for Challenge student scores was 197.1.

Similar to the American History test scores, the non-Challenge African American sample variance of 773.9 displayed a much larger variance from the mean.

Descriptive statistics were also calculated for the Challenge student and Caucasian student ACT exam scores. The data are summarized in Table 12.

Table 12

ACT Descriptive Statistics

<i>Challenge Students</i>	
Mean	18.2
Median	19
Mode	19
Standard Deviation	3.566124
Sample Variance	12.71724
Minimum	13
Maximum	27
<i>Caucasian Students</i>	
Mean	25.83333
Median	26
Mode	22
Standard Deviation	4.518799
Sample Variance	20.41954
Minimum	15
Maximum	34

The measures of central tendency revealed Caucasian students continued to have the highest mean test score at 25.8 while the mean score for Challenge students was 18.2. When considering measures of dispersion the sample variance for Caucasian student scores was 20.4 which was wider than the Challenge student score variance of 12.7.

Confidentiality of student achievement data was a significant consideration for the researcher. All achievement data used in this study was collected through the high school data specialist. No identifiable student data was given to or reviewed by the researcher.

Role of the researcher. The researcher had no direct, day-to-day relationship with any of the high school students in the graduating class of 2012. The researcher was the Assistant Superintendent, Chief Operations Officer for the subject school district and received no personal gain from this study. It should be noted the researcher's son, a Caucasian male, graduated from this high school with the class of 2010. His cumulative grade point average was one of 122 Caucasian males cumulative GPA collected as a part of this research.

Timeline of Research -Collection of Quantitative Data

Cumulative GPA scores for Caucasian students and African American students in the graduating classes of 2007 through 2011 were collected from the high school data specialist in August, 2011.

EOC exam scores for 2009-2010 English II and 2010-2011 American History for the 30 randomly selected Caucasian students, 30 randomly selected Challenge students, and 15 randomly selected non-Challenge African American students in the graduating class of 2012 were collected from the high school data specialist during August and September of 2011. This data was categorized into groups. Group I was Challenge student scores, Group II represented non-Challenge African American student scores, and Group III was Caucasian student scores. Analysis of this data using a z -test for difference in means and a t -test for difference in means assuming unequal variance was conducted in the months of September and October, 2011. This analysis was done to test the EOC exam score portion of null hypotheses six, seven, and eight.

Collection of ACT scores for 30 randomly selected Caucasian students and 30 randomly selected Challenge students in the graduating class of 2012 was collected from

the high school data specialist during September, 2011. A z -test for difference in means was conducted during the month of October 2011 to test null hypothesis nine. No ACT scores were collected for non-Challenge African American students in the graduating class of 2012 because fewer than 15 students in this group have taken the ACT during the timeframe of this study.

Cumulative GPA data for the students in the class of 2012 was collected at the end of the first semester, January 2012. The cumulative GPA for the Challenge students, non-Challenge African American students, and Caucasian students in the class of 2012 as well as Caucasian students for each graduating class from 2007 through 2012 and African American students for each graduating class from 2007 through 2012 were analyzed to test null hypotheses one, two, and three. A chi-square goodness-of-fit analysis was conducted during the month of January 2012. The observed cumulative GPA was analyzed against the expected GPA to determine if there was a significant difference for each null hypothesis. To test null hypothesis four and five, multiple z -tests for difference in means were conducted. These tests analyzed EOC exam scores in English II and American History for Challenge students, Caucasian students, and non-Challenge African American students in the graduating class of 2012.

Statistical Treatment of Data

Quantitative analysis. “In causal-comparative research, investigators attempt to determine the cause *or* consequences of differences that *already exist* between or among groups of individuals” (Fraenkel & Wallen, 2009, p. 363). This study used causal-comparative analysis to study the academic achievement levels of the African American students in the Challenge Program. The purpose was to determine if the program

contributed to a significant decrease in the disparity in academic performance between participating African American students in the graduating class of 2012 and Caucasian students in the graduating class of 2012.

A chi-square distribution is used as a goodness-of-fit test to “see whether a frequency distribution fits a specific pattern...” (Bluman, 2010, p. 573). For this study, three chi-square tests were manually calculated comparing the observed cumulative GPA for various student groups within the graduating classes of 2007 through 2012 with the expected frequency within each test. Null hypothesis one compared the 2012 Challenge student cumulative GPA to the cumulative GPA of African American students in the graduating classes of 2007 through 2011. Utilizing four degrees of freedom established a critical value of 9.488 with an alpha level of 0.05. Null hypothesis two compared the 2012 Caucasian student cumulative GPA to the cumulative GPA of Caucasian students in the graduating classes of 2007 through 2011. An alpha level of 0.05 and a critical value of 9.488 were established for this test. Null hypothesis three compared the 2012 Challenge student cumulative GPA to the cumulative GPA of Caucasian students in the graduating classes of 2007 through 2011. This test also established an alpha level of 0.05 and a critical value of 9.488.

A z -test is used in inferential statistics to calculate the difference between the population mean and sample mean (Bluman, 2010). The calculation is to determine if there is a statistically significant difference. The reliability of a z -test depends upon the researcher knowing the population mean and the population standard deviation. Z -tests are most commonly used when analyzing standardized test scores. This analysis provided

the researcher with data that showed if a sample group of tests fell above or below a standard performance.

For the purposes of this research, multiple z -tests and t -tests for smaller samples of 15 students were used to test for differences in means between the Challenge student scores, non-Challenge African American student scores, and Caucasian student scores for students in the graduating class of 2012. Cumulative GPA scores were selected to test null hypothesis four and five. EOC scores in American History and English II were used to test null hypothesis six, seven, and eight and ACT scores were used to test null hypothesis nine. The z -tests and t -tests determined if a significant difference in academic performance was observed for the Challenge students compared to the two other samples for cumulative GPA scores and EOC scores. When analyzing ACT scores, only samples from the Challenge students and Caucasian students in the graduating class of 2012 were utilized. Microsoft Office Excel 2007 spreadsheets were used to calculate all z -tests and t -tests. Once descriptive statistics were calculated to establish the mean and standard deviation, a two-tailed test was performed. An alpha level of 0.05 was established with critical values set at plus or minus 1.96 for each of the z -tests.

Null hypothesis one. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no significant difference in their cumulative grade point average compared to African American students in the graduating classes of 2007 through 2011.

Cumulative GPA scores (observed frequencies) for African American students in the graduating classes of 2007 through 2011 and the 2012 Challenge students were collected to determine the average cumulative GPA (expected frequency). A chi-square

goodness-of-fit test was calculated to determine if the observed values and expected values were close. If the values did not exceed the critical value of 9.488 the research failed to reject the null hypothesis.

Null hypothesis two. As measured by cumulative grade point average, the Caucasian students in the graduating class of 2012 will have no significant difference in their cumulative grade point average compared to Caucasian students in the graduating classes of 2007 through 2011.

Cumulative GPA scores for African American students in the graduating classes of 2007 through 2011 and the 2012 Challenge students were collected to determine the average cumulative GPA. A chi-square goodness-of-fit test was calculated to determine if the observed values and expected values were close. If the values did not exceed the critical value of 9.488 the research failed to reject the null hypothesis.

Null hypothesis three. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to the Caucasian students in the graduating classes of 2007 through 2011.

A chi square goodness-of-fit test was calculated using the cumulative GPA score for 2012 Challenge students and the cumulative GPA scores for Caucasian students in the graduating classes of 2007 through 2011. Based upon the four degrees of freedom, the critical value for this test was set at 9.488. If the results indicated a difference above the critical value, then evidence was present to reject the null hypothesis.

Null hypothesis four. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their

cumulative grade point average compared to non-Challenge African American students in the graduating class of 2012.

To determine the differences in cumulative GPA scores between Challenge students in the graduating class of 2012 and non-Challenge African American students in the graduating class of 2012, a random sample of 30 Challenge student scores and a random sample of 30 non-Challenge African American student scores were selected. Microsoft Excel 2007 was used to calculate the mean and standard deviation for both cumulative GPA scores. A two-tailed z -test for difference in means was calculated.

Null hypothesis five. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating class of 2012.

To determine the differences in cumulative GPA scores between Challenge students in the graduating class of 2012 and Caucasian students in the graduating class of 2012, a random sample of 30 Challenge student scores and a random sample of 30 Caucasian student scores were selected. Microsoft Excel 2007 was used to calculate the mean and standard deviation for both cumulative GPA scores. A two-tailed z -test for difference in means was calculated.

Null hypothesis six. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to non-Challenge African American students in the graduating class of 2012.

To determine the differences in EOC exam scores between Challenge students in the graduating class of 2012 and non-Challenge African American students in the graduating class of 2012, a random sample of 30 Challenge student scores in English II and American History, and a random sample of 15 non-Challenge African American student scores in English II and American History were selected. Microsoft Excel 2007 was used to calculate the mean and standard deviation for both groups in both subject area test scores. Two-tailed z -tests for difference in means and t -tests for difference in means assuming unequal variance were calculated for English II scores and for American History scores.

EOC English II and EOC American History scores were individually analyzed to determine if there were significant increases or decreases in the Challenge student scores compared to the non-Challenge African American student scores in the graduating class of 2012. If significant differences were found the null hypothesis was rejected.

Null hypothesis seven. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

To determine the differences in EOC exam scores between Challenge students in the graduating class of 2012 and Caucasian students in the graduating class of 2012, a random sample of 30 Challenge student scores in English II and American History and a random sample of 30 Caucasian student scores in English II and American History were selected. Microsoft Excel 2007 was used to calculate the mean and standard deviation for both groups in both subject area test scores. Two-tailed z -tests for difference in means

and *t*-tests for difference in means assuming unequal variance were calculated for English II scores and for American History scores.

EOC English II and EOC American History scores were individually analyzed to determine if there were significant increases or decreases in the Challenge student scores compared to the Caucasian student scores in the graduating class of 2012. If significant differences were found the null hypothesis was rejected.

Null hypothesis eight. As measured by end of course exam scores in English II and American History, the Caucasian students in the graduating class of 2012 will have no difference in their academic achievement levels compared to non-Challenge African American students in the graduating class of 2012.

To determine the differences in EOC exam scores between Caucasian students in the graduating class of 2012 and non-Challenge African American students in the graduating class of 2012, a random sample of 30 Caucasian student scores in English II and American History and a random sample of 15 non-Challenge African American student scores in English II and American History were selected. Microsoft Excel 2007 was used to calculate the mean and standard deviation for both groups in both subject area test scores. Two-tailed *z*-tests for difference in means and *t*-tests for difference in means assuming unequal variance were calculated for English II scores and for American History scores.

EOC English II and EOC American History scores were individually analyzed to determine if there were significant increases or decreases in the Caucasian student scores compared to the non-Challenge African American student scores in the graduating class of 2012. If significant differences were found the null hypothesis was rejected.

Null hypothesis nine. As measured by ACT scores, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

To determine the differences in ACT scores between Challenge students in the graduating class of 2012 and Caucasian students in the graduating class of 2012, a random sample of 30 Challenge student ACT scores and a random sample of 30 Caucasian student ACT scores in the graduating class of 2012 were selected. Microsoft Excel 2007 was used to calculate the mean and standard deviation for both groups ACT scores. A two-tailed z -test was then calculated for these scores. The test was conducted to determine if there is a statistically significant increase or decrease in the Challenge student ACT scores compared to the ACT scores of the Caucasian students in the graduating class of 2012. If statistically significant differences were found above the critical value of 1.96, the null hypothesis was rejected.

Summary

This study evaluated the academic data for students in the Challenge program at a suburban high school in St. Louis, Missouri. Utilizing ACT scores, EOC exam scores for English II and American History, and cumulative GPA through the end of the 12th grade first semester, the study compared three groups of students from the graduating class of 2012 to see if the Challenge program decreased the disparity in the academic performance between African American students and Caucasian students at the high school.

Null hypotheses one, two, and three used chi-square goodness-of-fit tests to determine if the observed cumulative GPA values were close to the expected GPA

values. If these values were close together and below the critical values the null hypotheses were not rejected.

Null hypotheses four, five, six, seven, and eight were tested using two-tailed z -tests and t -tests to determine any statistically significant increases or decreases when analyzing cumulative GPA scores and EOC English II and American History test scores. If statistically significant differences were found above or below the established critical values these null hypotheses were rejected.

Null hypothesis nine was tested using a two-tailed z -test to determine if a statistically significant increase or decrease existed when analyzing ACT test scores between Caucasian and Challenge students in the class of 2012. If a statistically significant difference was found above the critical value of 1.96, this null hypothesis was rejected.

Chapter 4 will provide a detailed analysis of each of the nine null hypotheses. A summary of the various tests was provided to determine if each null hypothesis was supported or rejected.

Chapter Four: Results

The purpose of this study was to evaluate one public high school's effort to reduce the achievement gap between African American students and Caucasian students. High school administrators implemented a new initiative, known as the Challenge Program, at the beginning of the 2008-2009 school year. This study analyzed cumulative GPA, EOC exam scores for English II and American History, and ACT scores to determine if the Challenge Program made a statistically significant difference in achievement between African American students and Caucasian students in the graduating class of 2012.

Question and Null Hypotheses

Research question. Is there evidence that participation in the Challenge Program contributed to a decrease in the disparity in academic performance between participating African American students in the graduating class of 2012 and Caucasian students in the graduating class of 2012 at the high school, as measured by cumulative grade point average, ACT, and end of course exam scores in American History and English II?

Null hypothesis one. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to African American students in the graduating classes of 2007 through 2011.

Cumulative GPA scores for African American students in the graduating classes of 2007, 2008, 2009, 2010, and 2011 were collected from the high school data specialist. The cumulative GPA score for Challenge students in the graduating class of 2012 was

also collected through the end of their first semester, in January, 2012 from the high school data specialist. Table 13 reflects the cumulative GPA data for these years.

Table 13

Cumulative GPA African American students 07- 11 and 2012 Challenge students

Graduating Class	Cumulative GPA
2007	2.28
2008	2.37
2009	2.29
2010	2.32
2011	2.47
2012	2.73

Note: Data provided by high school data specialist through School Information Systems.

There was an observed difference between the cumulative GPA of 2.73 for 2012 Challenge students compared to the average cumulative GPA of 2.34 for African American students graduating between 2007 and 2011 at this high school. This equated to an observed improvement in the cumulative GPA of 0.39 between the 2012 Challenge students and the African American students for the past five years.

A chi square goodness-of-fit test was completed to compare the observed cumulative GPA values to the expected cumulative GPA. Using an alpha level of 0.05 and four degrees of freedom the critical value was determined to be 9.488. Table 14 shows the test results revealed a test value of 0.278901.

Table 14

Chi-Square African American Students 20 07-2011 and 2012 Challenge Students

	2011	2010	2009	2008	2007
African American Students	2.47	2.32	2.29	2.37	2.28
Challenge 2012	2.73	2.73	2.73	2.73	2.73
	0.02476	0.06157	0.07091	0.04747	0.07417
	2	5	6	3	6

The chi-square goodness-of-fit analysis revealed null hypothesis one was not rejected. There was no difference in average cumulative GPA when comparing Challenge students in the graduating class of 2012 to African American students in the graduating classes of 2007 through 2011.

Null hypothesis two. As measured by cumulative grade point average, the Caucasian students in the graduating class of 2012 will have no significant difference in their cumulative grade point average compared to Caucasian students in the graduating classes of 2007 through 2011.

Cumulative GPA scores for Caucasian students in the graduating classes of 2007, 2008, 2009, 2010, and 2011 were collected from the high school data specialist. The cumulative GPA score for Caucasian students in the graduating class of 2012 was also collected through the end of their first semester, in January 2012 from the high school data specialist. Table 15 reflects the cumulative GPA data for these years.

Table 15

Cumulative GPA for Caucasian students 2007- 2012

Graduating Class	Cumulative GPA
2007	3.33
2008	3.35
2009	3.26
2010	3.29
2011	3.27
2012	3.30

Note: Data provided by high school data specialist through School Information Systems.

There was no observed difference between the cumulative GPA of 3.30 for 2012 Challenge students compared to the average cumulative GPA of 3.30 for Caucasian students graduating between 2007 and 2011 at this high school.

A chi square goodness-of-fit test was completed to compare the observed cumulative GPA values to the expected cumulative GPA. Using an alpha level of 0.05 and four degrees of freedom the critical value was determined to be 9.488. Table 16 shows the test results revealed a test value of 0.001818.

Table 16

Chi-Square Caucasian Students 2007 – 2012

	2011	2010	2009	2008	2007
Caucasian	3.27	3.29	3.26	3.35	3.33
Caucasian 2012	3.30	3.30	3.30	3.30	3.30
	0.000273	0.000029	0.000485	0.000758	0.000273

The chi square goodness-of-fit analysis revealed null hypothesis two was not rejected. There was no difference in average cumulative GPA when comparing Caucasian

students in the graduating class of 2012 to Caucasian students in the graduating classes of 2007 through 2011.

Null hypothesis three. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating classes of 2007 through 2011.

Using the same cumulative GPA scores for Caucasian students in the graduating classes of 2007, 2008, 2009, 2010, and 2011 as outlined in Table 9, the average cumulative GPA of 3.30 was compared to the cumulative GPA of 2.73 for Challenge students in the graduating class of 2012. This comparison revealed a 0.57 observed difference between Challenge students in the graduating class of 2012 to Caucasian students in the classes of 2007 through 2011.

A chi square goodness-of-fit test was completed to compare the observed cumulative GPA values to the expected cumulative GPA value. Using an alpha level of 0.05 and four degrees of freedom the critical value was determined to be 9.488. Table 17 shows test results revealed a test value of 0.597253.

Table 17

Chi-Square Caucasian Students 2007-2011 and Challenge Students 2012

	2011	2010	2009	2008	2007
Caucasian	3.27	3.29	3.26	3.35	3.33
Challenge 2012	2.73	2.73	2.73	2.73	2.73
	0.106813	0.114872	0.102894	0.140806	0.131868

The chi square goodness-of-fit analysis revealed null hypothesis three was not rejected. There was no difference in average cumulative GPA when comparing Challenge

students in the graduating class of 2012 to Caucasian students in the graduating classes of 2007 through 2011.

Null hypothesis four. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to non-Challenge African American students in the graduating class of 2012.

The cumulative GPA scores were collected by the high school data specialist. The data specialist provided the researcher a random sample of 30 Challenge student scores and a random sample of 30 non-Challenge African American student scores for the graduating class of 2012.

Table 18

Means of Cumulative GPA Scores Challenge and African American Students 2012

Sample Group	Mean
Challenge Students	2.72
African American Students	1.99

Table 18 reflects an observed difference in mean scores of 0.73 with Challenge students scoring higher than non-Challenge African American students in the graduating class of 2012.

A z-test for differences in means was conducted. A critical value was determined to be plus or minus 1.96 for this two-tailed test. Table 19 shows the z-value was calculated to be 4.234056642.

Table 19

Z-test Challenge and African American Students 2012

<i>Cumulative GPA</i>	<i>2012 Challenge</i>	<i>2012 African American</i>
Mean	2.72	1.99
Variance	0.411281	0.467549
Observations	30	30
z Stat	4.234056642	
P(Z<=z) two-tail	2.295	
t Critical two-tail	1.9599	

The z-test revealed a significant difference between Challenge student cumulative GPA scores and non-Challenge African American student cumulative GPA scores. This difference rejected null hypothesis four.

Null hypothesis five. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating class of 2012.

The cumulative GPA scores were collected by the high school data specialist. The data specialist provided the researcher a random sample of 30 Challenge student scores and a random sample of 30 Caucasian student scores for the graduating class of 2012. Table 20 summarizes the mean for each group's scores.

Table 20

Means of Cumulative GPA Scores Challenge and Caucasian Students 2012

Sample Group	Mean
Challenge Students	2.72
Caucasian Students	3.38

A z -test for differences in means was conducted. A critical value was determined to be plus or minus 1.96 for this two-tailed test. Table 21 shows the z -value was calculated to be -3.90242385.

Table 21

Z-test Challenge and Caucasian Students 2012

<i>Cumulative GPA</i>	<i>2012 Challenge</i>	<i>2012 Caucasian</i>
Mean	2.72	3.38
Variance	0.411281	0.454968
Observations	30	30
z Stat	-3.90242385	
P($Z \leq t$) two-tail	9.52342	
z Critical two-tail	1.9599	

The z -test substantiated a significant difference between Challenge student cumulative GPA scores and Caucasian student cumulative GPA scores with Caucasian students scoring higher than Challenge students. This difference rejected null hypothesis five.

Null hypothesis six. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to non-Challenge African American students in the graduating class of 2012.

The 2009-2010 EOC exam scores for English II were collected by the high school data specialist. The data specialist provided the researcher a random sample of 30 Challenge student scores and a random sample of 15 non-Challenge African American student scores for the graduating class of 2012. Table 22 summarizes the mean for each group's scores.

Table 22

Means of English II EOC Exam Challenge and African American Students

Sample Group	Mean
Challenge Students	207.50
African American Students	183.93

A *t*-test for differences in means assuming unequal variances was conducted. A critical value was determined to be plus or minus 2.10 for this two-tailed test. Table 23 shows the *t*-value was calculated to be 3.077629.

Table 23

T-test Challenge and African American Students

<i>English EOC</i>	<i>Challenge</i>	<i>African American</i>
Mean	207.5	183.9333
Variance	197.1481	773.9238
Observations	28	15
t Stat	3.077629	
P(T<=t) two-tail	0.006489	
t Critical two-tail	2.100922	

The *t*-test substantiated a difference between Challenge student EOC English II scores and non-Challenge African American student EOC English II scores. This difference rejected null hypothesis six.

This same analysis was conducted using the 2010-2011 American History EOC exam scores. The exam scores were collected by the high school data specialist. The data specialist provided the researcher a random sample of 30 Challenge student scores and a random sample of 15 non-Challenge African American student scores for the graduating

class of 2012. Table 24 shows the mean for each group's scores. Challenge students had an observed higher mean score compared to non-Challenge African American students.

Table 24

Means of Am. History EOC Exam Challenge and African American Students

Sample Group	Mean
Challenge Students	192.63
African American Students	184.80

A *t*-test for differences in means assuming unequal variances was conducted. A critical value was determined to be plus or minus 2.06 for this two-tailed test. Table 25 shows the *t*-value was calculated to be 1.12233.

Table 25

T-test Challenge and African American Students

<i>History EOC</i>	<i>Challenge</i>	<i>African American</i>
Mean	192.6296	184.8
Variance	380.5499	518.6
Observations	27	15
<i>t</i> Stat	1.12233	
P(T<=t) two-tail	0.272386	
<i>t</i> Critical two-tail	2.059539	

The *t*-test revealed there was not a difference between Challenge student EOC American History scores and non-Challenge African American student EOC American History scores. This test failed to reject null hypothesis six.

Null hypothesis seven. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have

no significant difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

The 2009-2010 EOC exam scores for English II were collected by the high school data specialist. The data specialist provided the researcher a random sample of 30 Challenge student scores and a random sample of 30 Caucasian student scores for the graduating class of 2012. Table 26 summarizes the mean for each group's scores. This table revealed Caucasian students had an observed mean score higher than the Challenge students.

Table 26

Means of English II EOC Exam Challenge and Caucasian Students

Sample Group	Mean
Challenge Students	207.50
Caucasian Students	224.13

A z -test for differences in means was conducted to determine if there was a difference in achievement between the two groups. An alpha level of 0.05 was selected and a critical value was determined to be plus or minus 1.96 for this two-tailed test. Table 27 shows the z -value was calculated to be 4.59437.

Table 27

Z-test Challenge and Caucasian Students

<i>English II EOC</i>	<i>Caucasian</i>	<i>Challenge</i>
Mean	224.1333333	207.5
Known Variance	181.9816	197.1481
Observations	30	28
Z	4.594377733	
P(Z<=z) two-tail	4.34043E-06	
z Critical two-tail	1.959963985	

The z -test demonstrated a difference between Challenge student EOC English II scores and Caucasian student EOC English II scores. This difference rejected null hypothesis seven.

This same analysis was conducted using the 2010-2011 American History EOC exam scores. The exam scores were collected by the high school data specialist. The data specialist provided the researcher a random sample of 30 Challenge student scores and a random sample of 30 Caucasian scores for the graduating class of 2012. Table 28 summarizes the mean for each group's scores.

Table 28

Means of Am. History EOC Exam Challenge and Caucasian Students

Sample Group	Mean
Challenge Students	192.63
Caucasian Students	213.9

A z -test for differences in means was conducted to determine if there was a difference in achievement between the two groups. Table 29 shows the z -value was calculated to be 4.12603.

Table 29

Z-test Challenge and Caucasian Students

<i>American History EOC</i>	<i>Caucasian</i>	<i>Challenge</i>
Mean	213.9	192.6296296
Known Variance	374.4379	380.5498
Observations	30	27
Z	4.126032959	
P(Z<=z) two-tail	3.69074E-05	
z Critical two-tail	1.959963985	

The z -test demonstrated a difference between Challenge student EOC American History scores and Caucasian student EOC American History scores. This difference combined with the English II EOC test score difference rejected null hypothesis seven.

Null hypothesis eight. As measured by end of course exam scores in English II and American History, the Caucasian students in the graduating class of 2012 will have no difference in their academic achievement levels compared to non-Challenge African American students in the graduating class of 2012.

The 2009-2010 EOC exam scores for English II were collected by the high school data specialist. The data specialist provided the researcher a random sample of 30 Caucasian student scores and a random sample of 15 non-Challenge African American student scores for the graduating class of 2012. Table 30 summarizes the mean for each group's scores.

Table 30

Means of English II EOC Exam Caucasian and African American Students

Sample Group	Mean
Caucasian Students	224.13
African American Students	183.93

A *t*-test for differences in means assuming unequal variances was conducted. A critical value was determined to be plus or minus 2.10 for this two-tailed test. Table 31 shows the *t*-value was calculated to be 5.294014.

Table 31

T-test Caucasian and African American Students

<i>English II EOC</i>	<i>Caucasian</i>	<i>African American</i>
Mean	224.1333	183.9333
Variance	181.9816	773.9238
Observations	30	15
t Stat	5.294014	
P(T<=t) two-tail	5.95E-05	
t Critical two-tail	2.1009816	

The *t*-test substantiated a difference between Caucasian student EOC English II scores and non-Challenge African American student EOC English II scores. This difference rejected null hypothesis eight.

This same analysis was conducted using the 2010-2011 American History EOC exam scores. The exam scores were collected by the high school data specialist. The data specialist provided the researcher a random sample of 30 Caucasian student scores and a random sample of 15 non-Challenge African American student scores for the graduating class of 2012. Table 32 summarizes the mean for each group's scores.

Table 32

Means of Am. History EOC Exam Caucasian and African American Students

Sample Group	Mean
Caucasian Students	213.9
African American Students	184.80

A t-test for differences in means assuming unequal variances was conducted. A critical value was determined to be plus or minus 2.06 for this two-tailed test. Table 33 shows the *t*-value was calculated to be 4.242208.

Table 33

T-test Caucasian and African American Students

<i>American History EOC</i>	<i>Caucasian</i>	<i>African American</i>
Mean	213.9	184.8
Variance	374.4379	518.6
Observations	30	15
t Stat	4.242208	
P(T<=t) two-tail	0.000285	
t Critical two-tail	2.063899	

The *t*-test revealed there was a difference between Caucasian student EOC American History scores and non-Challenge African American student EOC American History scores. This difference combined with the English II EOC test score difference rejected null hypothesis eight.

Null hypothesis nine. As measured by ACT scores, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

ACT scores for Caucasian students and Challenge students in the graduating class of 2012 were collected by the high school data specialist. The data specialist considered ACT scores reported to the high school from September, 2010 through September, 2011. The data specialist provided the researcher a random sample of 30 Challenge student scores and a random sample of 30 Caucasian student scores for the graduating class of 2012. Table 34 summarizes the mean for each group's scores.

Table 34

Means of ACT Scores Caucasian and Challenge Students

Sample Group	Mean
2012 Caucasian Students	25.83
2012 Challenge Students	18.20

A z-test for differences in means was conducted at an alpha level of 0.05. With a critical value of plus or minus 1.96 for this two-tailed test, the z-value was calculated to be 3.7836 as shown in Table 35.

Table 35

Z-test Caucasian and Challenge Students

<i>ACT</i>	<i>Caucasian</i>	<i>Challenge</i>
Mean	25.83333333	18.2
Known Variance	20.4195	12.7172
Observations	30	30
Z	7.263069953	
P(Z<=z) two-tail	3.78364E-13	
z Critical two-tail	1.959963985	

This result provided evidence to support a significant difference in ACT exam scores between the Caucasian students and Challenge students in the graduating class of 2012. Due to this difference the researcher rejected null hypothesis nine.

Summary

Null hypothesis one through three. Cumulative GPA's were tested to accept or reject the first three null hypotheses. Null hypothesis one analyzed the cumulative GPA for the 2012 graduating class Challenge students with the cumulative GPA for African American students in the graduating classes of 2007 through 2011. Null hypothesis two

analyzed the cumulative GPA for the 2012 graduating class Caucasian students with the cumulative GPA for Caucasian students in the graduating classes of 2007 through 2011. Null hypothesis three analyzed the cumulative GPA for the 2012 graduating class Challenge students with the cumulative GPA for Caucasian students in the graduating classes of 2007 through 2011. The researcher failed to reject each of these null hypotheses.

Null hypothesis four through eight. Cumulative GPA scores were analyzed for null hypotheses four and five. Cumulative GPA scores between sample groups of Challenge students and non-Challenge African American students in the graduating class of 2012 were analyzed for null hypothesis four. The Challenge students demonstrated a statistically higher achievement level compared to non-Challenge African American students. This test outcome rejected null hypothesis four. Cumulative GPA scores for sample groups of Challenge students and Caucasian students in the graduating class of 2012 were analyzed for null hypothesis five. The Caucasian students demonstrated a statistically higher achievement level compared to the Challenge students. This test outcome rejected null hypothesis five.

EOC 2009-2010 English II and 2010-2011 American History exam scores were analyzed for null hypothesis six, seven, and eight. Exam scores for sample groups of Challenge students and non-Challenge African American students in the graduating class of 2012 were analyzed for null hypothesis six. The Challenge students demonstrated a statistically higher achievement level compared to non-Challenge African American students when analyzing English II EOC scores but failed to demonstrate a statistical difference when analyzing American History EOC exam scores. Therefore, null

hypothesis six was rejected when analyzing English II EOC exam scores but was not rejected when analyzing American History EOC exam scores. Exam scores between sample groups of 2012 Caucasian students and 2012 Challenge students were analyzed for null hypothesis seven. The Caucasian students demonstrated a statistically higher achievement level in both English II and American History scores. Therefore, null hypothesis seven was rejected. Exam scores between sample groups of Caucasian students and non-Challenge African American students in the graduating class of 2012 were analyzed for null hypothesis eight. The Caucasian students again demonstrated a statistically higher achievement level in both English II and American History scores. Therefore, null hypothesis eight was rejected.

Null hypothesis nine. ACT scores were analyzed for sample groups of Challenge students and Caucasian students in the graduating class of 2012 for null hypothesis nine. The Caucasian students demonstrated a statistically higher achievement level in their ACT scores compared to the Challenge student ACT scores. Therefore, null hypothesis nine was rejected.

Chapter 5 provides a detailed discussion of the findings and how these results might impact the future direction of the Challenge Program for this high school. This chapter also outlines recommendations for other high school's consideration when implementing a like program to reduce an academic achievement gap.

Chapter Five: Conclusions

Educators and researchers in the U.S. have struggled for decades to find effective ways to eliminate the academic achievement gap between African American and Caucasian students (Education Week, 2011). Research pointed to a variety of factors that contributed to the achievement gap. Environmental factors including socioeconomic status and cultural background were daunting challenges many educators argued could not be remedied through school interventions. Other researchers pointed specifically to school factors such as a lack of quality leadership, few high quality teachers for minority students, course tracking practices in high school, and limited minority parent involvement in education as the main causes for the persistence in the gap.

While it was important to understand there were multiple causes for the achievement gap, school administrators needed to seek solutions to reduce and, ultimately, eliminate this gap. This research found two large high school reform initiatives designed to address academically at-risk minority students. Early College High Schools (ECHS) and High Schools that Work (HSTW) utilized many of the same principles and academic strategies to reach challenging students. Ongoing teacher collaboration and professional development, integrated academic programs, comprehensive support systems for struggling students and use of assessment data to drive the curriculum were a few of these practices used by both reform initiatives.

The purpose of this study was to analyze a reform initiative in a public high school located in the Midwest. This initiative, known as the Challenge Program, began in the 2008-2009 school year. The goal of the program was to reduce the achievement gap between African American students and Caucasian students. As discussed in this

research, the Challenge Program strategies revealed many similarities between this initiative and the strategies used in ECHS and HSTW.

The researcher established the following research question for this dissertation, “Is there evidence that participation in the Challenge program contributed to a decrease in the disparity in academic performance between participating African American students in the graduating class of 2012 and Caucasian students in the graduating class of 2012 at the high school, as measured by cumulative grade point average, ACT, and end of course exam scores in English II and American History?”

Review of Methodology

To determine the effectiveness of the Challenge Program, the researcher collected from the high school data specialist multiple achievement data for three groups of students. Cumulative GPA scores for Challenge students, non-Challenge African American students, and Caucasian students in the graduating class of 2012 were collected. Cumulative GPA scores for African American students and Caucasian students in the graduating classes of 2007 through 2011 were also collected to establish achievement levels before implementation of the Challenge Program compared to achievement levels after implementation of the program. The researcher completed multiple chi-square goodness-of-fit tests were completed to determine if there was a difference in average cumulative GPA when comparing the various groups. Two-tailed z-tests for differences in means were also completed for a random sample of 30 Challenge students, 30 non-Challenge African American students, and 30 Caucasian students in the graduating class of 2012.

EOC exam scores in English II and American History were randomly collected for 30 Challenge students, 15 non-Challenge African American students, and 30 Caucasian students in the graduating class of 2012. Z-tests for differences in means and *t*-tests for differences in means assuming unequal variances were conducted to determine if there were achievement differences between the group scores.

ACT scores were randomly collected for 30 Challenge students and 30 Caucasian students in the graduating class of 2012. The researcher conducted a *z*-test for differences in means to determine the difference in student achievement.

Discussion of Cumulative GPA

This study analyzed cumulative GPA for multiple student groups to test the following null hypotheses:

Null hypothesis one. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to African American students in the graduating classes of 2007 through 2011.

Null hypothesis two. As measured by cumulative grade point average, the Caucasian students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating classes of 2007 through 2011.

Null hypothesis three. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating classes of 2007 through 2011.

Null hypothesis four. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to other African American students in the graduating class of 2012.

Null hypothesis five. As measured by cumulative grade point average, the Challenge students in the graduating class of 2012 will have no difference in their cumulative grade point average compared to Caucasian students in the graduating class of 2012.

Chi-Square Goodness-of-Fit tests were completed for the first three null hypotheses. Each test failed to reject the null hypothesis. These results indicated the cumulative GPA achievement for Caucasian and African American students in the previous graduation classes for the past five years were consistent with the cumulative GPA achievement of Caucasian and African American students in the graduating class of 2012. Determining no difference in cumulative GPA scores provided assurance achievement levels for the African American and Caucasian students in the graduating class of 2012 were not unusual.

Two-tailed z -tests for differences in means were completed for null hypothesis four and null hypothesis five. The mean scores for these two-tailed z -tests revealed the sample Challenge students had an observed 0.73 higher cumulative GPA compared to sample non-Challenge African American students mean score. The mean score for the sample Caucasian students cumulative GPA was 1.10 higher than the sample Challenge student cumulative GPA mean. The z -score for both z -tests supported the same outcome. Challenge students had a higher difference compared to non-Challenge African American

students which rejected null hypothesis four but these same students had a lower difference compared to Caucasian students which rejected null hypothesis five. While the increase in GPA scores for Challenge students compared to non-Challenge students in the graduating class of 2012 provided encouragement for the high school administration and faculty, there continued to be an overall observed 0.57 achievement gap in cumulative GPA scores between Challenge students and Caucasian students in the graduating class of 2012.

Strategies used for the Challenge Program students did produce higher cumulative GPA scores. Individual attention provided by teachers and student mentors afforded immediate and direct responses when student coursework or test scores began to slip. High school teachers, administrators, and mentors met frequently with Challenge students to encourage them to succeed. The early and frequent encouragement positively influenced the student's self-perception and his or her sense of belonging. The reduction in the cumulative GPA gap between Caucasian and Challenge students indicated high school administrators and teachers were helping these students to break through the negative racial stereotypes. Providing professional development for high school teachers to help African American students feel confident about learning was also essential to the Challenge Program progress. Sustaining this intense level of involvement must continue to see ongoing progress.

The use of cumulative GPA in this study was a potential concern. High school teachers used both summative and formative assessments to calculate the GPA. To address this potential limitation the cumulative GPA for the students in the graduating class of 2012 was calculated based upon seven semesters involving multiple teachers

using the same calculation method. The cumulative GPA for students in the graduating classes of 2007 through 2011 was based upon eight semesters involving multiple teachers using the same calculation method. In addition, two additional achievement data instruments, EOC exam scores and ACT scores, were used to triangulate results.

Discussion of EOC exam scores in English II and American History

A random sample of EOC exam scores in English II and American History for Challenge students, non-Challenge African American students, and Caucasian students in the graduating class of 2012 were tested to accept or reject the following null hypotheses:

Null hypothesis six. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to non-Challenge African American students in the graduating class of 2012.

Null hypothesis seven. As measured by end of course exam scores in English II and American History, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

Null hypothesis eight. As measured by end of course exam scores in English II and American History, the Caucasian students in the graduating class of 2012 will have no difference in their academic achievement levels compared to non-Challenge African American students in the graduating class of 2012.

Z-tests for difference in means and *t*-tests for difference in means assuming unequal variances were calculated for each null hypothesis. The Caucasian students demonstrated higher achievement levels on the EOC English II and American History

exams compared to Challenge students and non-Challenge African American students in the graduating class of 2012. These test results substantiated the existence of the achievement gap at this high school and enabled the researcher to reject null hypotheses seven and eight. Caucasian student scores demonstrated the home, school, and societal benefits a majority of these students enjoy compared to their African American peers.

Mixed results were discovered when analyzing the achievement levels between Challenge students and non-Challenge African American students. Challenge students demonstrated higher achievement levels compared to non-Challenge African American students on the EOC English II exam. This result was encouraging news and indicated progress in the high school administration and faculty's effort to reduce the achievement gap. While Caucasian students still outperformed all African American students on EOC exams, Challenge students did make significant strides to reduce the gap. The Caucasian student mean score was 224.13 out of 250, compared to the Challenge student mean score of 207.5 and the non-Challenge African American student mean score of 183.9. The significant difference in the Challenge student mean score and the non-Challenge student mean score demonstrated a decrease in the achievement gap of 23.6 points. This corresponded to a 58% reduction in the achievement gap for this exam.

When considering the results for American History test scores, while Challenge students maintained a slightly higher mean score, no difference in achievement levels was found. One possible conclusion as to why Challenge students performed better than non-Challenge African American students on the English II EOC exam but not on American History EOC exam might be linked to the graduation requirements. The high school administration required full year English courses all four years of student

attendance. Four credits in English were required for graduation. Less emphasis was placed on American History courses for this high school. U.S. Government was a required .5 credit (one semester course) and US History required one credit (one full school year course) to meet graduation requirements.

Null hypothesis six was rejected due to Challenge students demonstrating higher achievement levels compared to non-Challenge African American students in EOC English II exam scores but failed to be rejected when analyzing American History EOC exam scores.

The use of state mandated tests as well as federal and state implementation of significant penalties forced school administrators to take a hard look at how they educate students of color. These exams are a measurement of academic progress and often used as a basis for ranking students. While the tests are useful to help educators better align the curriculum and focus existing resources, teachers need diagnostic, real-time data regarding individual student abilities and skills. The EOC exams should not be used to define student academic ability.

Maturation was a limitation identified in this study. To minimize this threat, test scores for students no longer attending the high school or who enrolled in the high school after the first semester of school year 2008-2009 were discarded.

Discussion of ACT scores

This study analyzed ACT test scores for a random group of Caucasian students and a random group of Challenge students in the graduating class of 2012 to test the following null hypothesis:

Null hypothesis nine. As measured by ACT scores, the Challenge students in the graduating class of 2012 will have no difference in their academic achievement levels compared to Caucasian students in the graduating class of 2012.

Caucasian students recorded a 25.33 ACT mean score compared to the Challenge student mean score of 18.20. A two-tailed Z-test for difference in means revealed there was a significant difference with a z -score of 7.26 compared to the critical value of plus or minus 1.96. This test result rejected null hypothesis nine. The significant difference in ACT scores between Caucasian and Challenge students reaffirmed the high school's existing achievement gap. The researcher was disappointed this analysis could not be extended to Challenge students and non-Challenge African American students in the graduating class of 2012. An insufficient number of non-Challenge African American students completed the ACT test to be included in this study. This analysis would have provided data to determine if the Challenge student scores demonstrated a decrease in the achievement gap between Caucasian and African American students in the graduating class of 2012. The Challenge student ACT composite score of 18.2 was one full point higher than the class of 2011 ACT African American composite score of 17.2 for Missouri (ACT, 2011d). This comparison suggested the high school administration and faculty have made some progress in preparing African American students for college.

Table 36

Summary of Null Hypotheses

Null Hypotheses	Rejected	Failed to Reject
Null Hypothesis 1		(Cumulative GPA) X
Null Hypothesis 2		(Cumulative GPA) X
Null Hypothesis 3		(Cumulative GPA) X
Null Hypothesis 4	(Cumulative GPA) X	
Null Hypothesis 5	(Cumulative GPA) X	
Null Hypothesis 6	(English II) X	(American History) X
Null Hypothesis 7	(Eng.II & Am. His) X	
Null Hypothesis 8	(Eng.II & Am. His) X	
Null Hypothesis 9	(ACT) X	

This researcher anticipated finding an achievement gap at the high school going into this study. The expectation was to determine if the achievement gap was reduced through the efforts of the Challenge Program. Strategies used in the Challenge Program enabled Challenge students to reduce the achievement gap in cumulative GPA by 22% and English II EOC exam scores by 58%. Development and monitoring of individual course plans, frequent positive contacts with Challenge students and their parents, and interventions when grades, attendance or behavior concerns warranted were important initiatives cited by high school administrators.

Implications Regarding the Challenge Program

This high school should be commended for researching and developing a program to address the achievement gap. While this study produced mixed quantitative results, the

researcher believes there is sufficient evidence to encourage the continuation of the program. Challenge students recorded higher cumulative GPA scores and higher English II EOC exam scores compared to non-Challenge African American students in the graduating class of 2012. Challenge students also scored higher on the ACT test compared to the Missouri composite score for African American students in 2011. The high school administrators had a goal of reducing the achievement gap by 50% by the time the Challenge Program pilot students graduated in May, 2012 (using cumulative GPA scores as the measure). Unfortunately, this goal will not be realized within the intended timeframe when looking specifically at the pilot students in the graduating class of 2012. The data in this research did provide evidence the Challenge Program was providing a decrease in the achievement gap. The most encouraging data were Challenge student cumulative GPA and EOC English II test scores compared to non-Challenge African American students.

The students involved in the Challenge Program volunteered to participate in this initiative. The high school administrators eventually will need to consider how to incorporate successful components of the Challenge Program to all African American students including students who have specifically chosen not to participate. Ongoing monitoring of assessment data and other key factors such as attendance rates and behavior referrals should provide ongoing guidance to administrators as they look to implement this initiative for all African American students in the future.

Recommendations for Future Study

There were other goals established by the high school administrators for the Challenge Program that were not analyzed in this study. One of these goals was to

achieve an attendance rate of 95%. Another goal outlined by the high school administrators was for every Challenge student to be involved in at least one extracurricular activity each school year. Analysis of attendance rates and extracurricular participation should be monitored and further research should be conducted to determine success of the initiative beyond achievement.

This study was a quantitative analysis of performance levels between Challenge students, Caucasian students, and non-Challenge African American students in the graduating class of 2012. The researcher encourages the high school administration to complete further quantitative analysis of achievement data for students in the graduating classes of 2013, 2014, and 2015. This analysis would provide further guidance to the high school administrators in determining if there is a decrease in the achievement gap across multiple grades at the high school.

A qualitative study of student and faculty perceptions regarding the program would also be useful. Do Challenge students feel more pride in their academic performance compared to non-Challenge African American students? How do Caucasian students feel about the Challenge Program? Will this program have any adverse impact on Caucasian student achievement in the future? What are the high school faculty perceptions regarding the Challenge Program and does it academically impact their opinion of students participating in the Challenge Program or of the non-Challenge African American students choosing not to participate in the program? Does this opinion impact the climate within the classroom?

This study was limited to students in the graduating class of 2012 attending a medium size public high school in St. Louis County, Missouri. Educators considering

implementation of similar initiatives would need to carefully consider the different school demographics between this research and their school environment.

Discussion

The achievement gap is one of the most perplexing and difficult challenges educators face in schools today. There is no single cause for the persistence of this academic gap. Multiple, complex environmental factors and school factors have consumed the educational system resulting in lower performance levels for African American students. With the passage of NCLB, policy-makers now hold schools accountable for achievement without regard for factors over which schools have little control. As willing as some teachers and schools are to address the achievement gap, it is a daunting challenge to eliminate inequalities that have roots outside the school-house doors.

The literature review of this dissertation outlined researchers, like Ogbu, (as cited in Lee, 2002), who argued African Americans must accept responsibility for their own culture imposing negative consequences for academic success. Pressure to not “act white” encouraged African American students to avoid performing up to their academic potential (Lee, 2002). This pressure hurt not only the student but the educational system and society as a whole. Berliner (2009) argued social and economic policies needed to be modified to deal with inequities for low socioeconomic families before schools could effectively eliminate the achievement gap. Poor families lacked the same financial opportunities as middle and upper class parents to provide adequate resources and emotional support for their children to excel academically.

Other researchers insisted institutional factors must be remedied to reduce the gap. African American students in urban, low-income neighborhoods were often faced with ineffective school leaders and a lack of high quality teachers in their classrooms (Chenoweth, 2010). Ferguson (2002) found teachers that developed positive relationships with African American students provided a strong motivation for academic success. Burris and Welner (2005) researched African American students in school settings where they were the minority and found many struggling African American students were tracked into lower level academic courses. This action sent a negative message to struggling students that the school would settle for low expectations and would limit a student's ability to experience challenging curriculum.

Most high schools encouraged communication and teamwork between teachers and parents to motivate student learning. While parental influence could be a strong factor in student academic outcomes, many African American parents felt uncomfortable participating in school related events. Low income parents of color often felt uncomfortable in a white middle-class school environment (Cowhey, 2009). School leaders needed to be willing to confront these institutional factors to assure an equitable academic climate for all students. Empowering parents and teachers to cooperatively work with African American students needed to be a priority.

Conclusion

The emphasis of this study was to examine one Midwest high school's effort to reduce the achievement gap. High school leaders and teachers in this medium size school combined various strategies to support the learning of voluntary groups of African

American students at each grade level. Many of these strategies were similar to strategies found in ECHS and HSTW programs.

This research quantitatively analyzed the academic performance of a pilot group of 53 African American students in the graduating class of 2012, known as the Challenge students. Their performance was compared to the academic performance of Caucasian students and other non-Challenge African American students in the graduating class of 2012. The analysis of performance scores in cumulative GPA, EOC exams in English II and American History, and ACT exams revealed mixed performance results for the program.

Challenge students in the graduating class of 2012 demonstrated a higher cumulative GPA compared to non-Challenge African American students in the graduating class of 2012. Challenge students in the graduating class of 2012 also scored higher than non-Challenge African American students in the graduating class of 2012 on the EOC English II exam but not on the EOC American History exam. Caucasian students in the graduating class of 2012 demonstrated higher performance levels for all academic measures considered in this study (cumulative GPA, EOC English II and American History exams, and ACT) compared to the performance levels of Challenge students and non-Challenge African American students in the graduating class of 2012.

The results, while mixed, answered the research question: Is there evidence that participation in the Challenge program contributed to a decrease in the disparity in academic performance between participating African American students in the graduating class of 2012 and Caucasian students in the graduating class of 2012 at the high school, as measured by cumulative grade point average, ACT, and end of course

exam scores in American History and English II? While Caucasian students in the graduating class of 2012 still outperformed all African American students in the graduating class of 2012, the researcher determined the Challenge students reduced the achievement gap as defined by cumulative GPA scores and EOC English II exam scores. These results were encouraging and should assist the leaders at this high school with objective data to establish ongoing measures for further analysis. The researcher also believed the analysis supported continuation of strategies used in the Challenge Program. Similar to the ongoing success found in HSTW and ECHS schools, the effective use of data to measure and modify strategies should ultimately improve student achievement.

This research demonstrated high school leaders, staff, and students could make positive strides to reduce the achievement gap between Caucasian students and African American students. This process required time, patience and a willingness to confront an emotionally and politically difficult topic. Public school leaders throughout the U.S. must recognize the need to research initiatives and integrate these programs into their schools. Not all staff will be supportive of these initiatives and leaders must be prepared to lead by example.

Researchers and scholars will continue to debate the causes of the achievement gap for many years. Educators cannot remedy environmental factors like poverty or family background. These educators do have opportunities to create a school climate that embraces high expectations and instructional equity for all students. School leaders must insist upon high quality teachers collaborating together to differentiate instruction for students. Teachers must be willing to embrace and understand other cultures to recognize their own bias. Educators must not stand on the side-lines waiting for someone else to

eliminate the achievement gap. Blaming environmental factors will not address the glaring differences in academic performance between Caucasian students and African American students. All students, regardless of their race or economic status, deserve a high quality education and the opportunity to reach their academic potential.

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Vitae

Diane Moore attended Oklahoma Baptist University and received a Bachelor of Art degree in fine arts. She was employed with the Missouri Department of Elementary and Secondary Education, first as the Director of Desegregation Services, and later as the Assistant to the Commissioner of Education. During this time, she completed a Master of Public Administration degree at the University of Missouri.

In 1996 Diane accepted the position of Business Manager in a medium size suburban school district. For the past 15 years she has supervised the business operations for the school district. She currently holds the position of Assistant Superintendent, Chief Operations Officer and oversees all technology, facilities, food service, transportation, and security functions in addition to the business and finance activities. Diane is actively involved in several state and national education and school business associations.