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A Summative Program Evaluation of a Systemic Intervention on Student Achievement and AP Participation

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Walden University

COLLEGE OF EDUCATION

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Kristal Ayres

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2011

Abstract

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by

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Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Previous research demonstrates that a rigorous instructional environment positively impacts student achievement. Literature also documents that differential access to advanced curriculum is influenced by early development of core reading skills. A problem exists with enrollment patterns in the College Board's Advanced Placement (AP) courses within a moderately sized school district where disproportionately low numbers of minority students enroll in AP courses. The district implemented the SpringBoard curriculum as a systemic intervention to address the need for more equitable enrollment within advanced courses; however, little empirical evidence exists to assess the efficacy of the program. Guided by evaluation theory, a summative program evaluation investigated to what extent standardized FCAT reading scores, AP participation rates, and AP performance scores increased over the 4 year implementation period of the SpringBoard curriculum when matched to a historical comparison group. Archival pre/post intervention data for 5,059 students were analyzed using repeated measures ANOVA and one-way ANOVA to test for a significant interaction between the intervention and minority status on student performance criteria. Results indicated significant intervention effects and group X minority status interactions for FCAT reading scores and AP participation. It was concluded that SpringBoard program goals were largely substantiated through this program evaluation. The study positively impacts social change through empirically validating programs designed to increase academic achievement and college participation among minority students.

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Dedication

This capstone project is dedicated to my loving family who was patient with me during the doctoral journey process. Thank you to my husband, Jon, who provided the time that I needed to devote to the process and ensured that the family was cohesive and fully functional while I was obtaining this degree. I truly love, respect, and admire you for your unselfish actions and support. To my children, Tommy and Saira, thank you for your affection and encouragement as we did our homework together and became accountable to one another with the completion of our assignments. Hopefully, you are able to understand that perseverance is a necessary trait to obtain and possess in life. I love you very much and am grateful that we experienced this opportunity together.

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assisted me in refining and enhancing the study. With your proficiency, we were able to move this study throughout the various stages of the process in a short period of time.

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Section 1: The Problem

Introduction

One of the most unrelenting challenges confronting higher education nationally and locally is college participation among racial minority groups (U. S. Census Bureau, 2010). Florida's population has diversified over the past 2 decades. In 1980, the total population comprised 14.7% racial minority subgroups; in 2010, these subgroups were 37% of the total population (United States Census Bureau 2010). Theoretically, educational programs should reflect similar enrollment statistics. However, according to Spencer (2006), because minority students are historically placed in lower ability tracks than majority students in high school, they are unprepared to successfully participate in college.

According to the Florida Department of Education (2010), a disproportionate number of minority students are enrolled in the rigorous courses of Advanced Placement (AP); statistically, fewer than expected racial minority students are participating in AP courses. The numbers of AP tests have increased, the scores on the AP tests have increased, but the participation rate among minority and majority students continues to be disproportionate and exposes a racial gap for minority students' involvement in taking AP courses (Supiano, 2008). Minority student enrollment in advanced course work and college is a national issue because education is correlated with socioeconomic status (SES; Delgado, 2006). SES describes an individual's or family's hierarchical ranking.

Unequal representation in AP among minority students directly effects student achievement and may have future socioeconomic implications for the minority subgroups

because college graduates have more earning potential (Forsyth & Furlong, 2000). Additionally, college acceptance and degree attainment are affected among minority students who do not participate in AP courses, which may impact social mobility (Pizzolato, Podobnik, Chaudhari, Schaeffer, & Murrell, 2008). Although college participation has increased among minority students, significant disparities still remain regarding college readiness and enrollment. College readiness pertains to the specific skills needed to be successful in postsecondary education (Conley, 2007). Therefore, improving college readiness skills in urban high school students is imperative in obtaining higher college participation rates among low income and minority students (Vang, 2005).

A central strategy to improve college readiness is to ensure students leave high school with the academic skills needed to be successful in postsecondary education, meaning obtaining high test scores, achieving superior grades, and engaging rigorous coursework (Roderick, Nagaoka, & Coca, 2009). In this first section, the problem at the local level is defined and rationales for the steps taken are presented. Also provided is a review of professional literature addressing minority student academic achievement and AP participation.

Definition of the Problem

Currently, the school district under study has a 60% racial minority enrollment population of Hispanic, African American, and Haitian students and a 40% racial majority enrollment of European American students district wide. However, only 47.4% of the racial minority enrollment is enrolled in AP courses compared with 52.6% of the

racial majority (College Board, 2010).There exists a problem with cultural diversity in AP enrollment in a moderate sized school district in southwest Florida as there is a limited number of racial minority students in high school AP classes in the 10th, 11th, and 12th grades across this district. This discrepancy results in a disproportionate number of racial minority students as compared with the number of European American students engaging in the complex, rigorous coursework of AP.

The school district implemented a curriculum called SpringBoard, produced by the College Board, to address the need of cultural diversity in high school AP courses. SpringBoard is a comprehensive school reform model for grades 6 through 12 to improve student achievement with diverse populations. The program vertically aligns the curriculum to college standards for success in an effort to increase access for all students, beginning as early as sixth grade (Delgado, 2006). A summative program evaluation will investigate to what extent academic achievement, AP participation rates, and AP test scores increased among racial minority students over the 4 year implementation period of the SpringBoard curriculum.

Rationale

Evidence of the Problem at the Local Level

The number of minority students is limited in 10th, 11th, and 12th grade AP classes across this southwest Florida school district. Historically in this district, AP courses were only offered to those students who scored at the highest levels on the reading section of the state assessment. Teachers and guidance counselors traditionally decided how many students and which students were permitted to take part in AP. The

paradigm shifted to allow more students AP access when state government initiatives commanded public attention and funding to be directed to increase minority student participation in AP programs in order to meet annual yearly progress and narrow achievement gaps. Then the educational policy, No Child Left Behind (NCLB), was implemented in this district to ensure appropriate strategies were utilized to increase access for all students into advanced course pathways toward college and career readiness.

Promoting minority student success is a national problem and numerous initiatives are in place to address the need to reform current educational practices in order to meet the needs of all students. For example, the National Assessment of Educational Progress has documented the differences in academic achievement among minorities compared to their majority counter parts. Likewise, the National Task Force on Minority High Achievement researched and reported that achievement scores diverge as students proceed through school. The United States Commission on Civil Rights (2004) reported that there are marked disparities in the educational outcomes for Black and White students; Black students do not score as well on standard measures of achievement used in schools as compared to their White counterparts. In another study, the National Center for Education Statistics (2004) reported that White students surpass Black students in educational access, achievement, and attainment.

Evidence of the Problem from the Professional Literature

Racial minority students' participation in AP, as well as their scores, is disproportionate to the racial majority counterparts (College Board, 2009; Klopfenstein,

2004). The College Board (2008) compared graduating students by race to the percentage of students who took AP exams and found a divergence. Specifically, the African American students were underrepresented by 50% (Whiting & Ford, 2009). Likewise, a study was conducted by Ndura, Robinson, and Ochs (2003) that found inequity exists in AP enrollment of racial minority students, and Hispanic student participation was significantly lower than European American students in the district of this study.

Over the years, the federal government has allocated to states millions of dollars for minority and low SES students to fund AP exam fees, to support professional development, and to provide instructional resources; however, majority students are still enrolled in AP at twice the rate as minority students (Klopfenstein, 2004). Additionally, across the nation, educators are assisting more students to experience AP, but minority students are still underrepresented (College Board, 2009).

Access to AP courses impact educational outcomes for minority students as well as admittance to attend college (Solorzano & Ornelas, 2004). For example, students who complete AP courses in high school are prepared for college course work and receive financial and admissions considerations when applying to colleges (Moore & Slate, 2008). Improving college access and readiness for low income and minority students is imperative; therefore, increasing underrepresented students' enrollment in AP classes is essential (Ndura et al., 2003). Both majority and minority students should engage in rigorous curriculum involving higher order thinking to be prepared to participate in AP courses and succeed in college or a career.

Definitions

The following terms and phrases are defined as used in this study.

Advanced Placement (AP): AP is the College Board's official rigorous academic program providing students with the opportunity to learn and earn credit on the college level, offering 34 courses and exams (College Board, 2009, p. 3).

AP participation rate: The rate is calculated by the total number of students who took at least one AP exam divided by the total number of seniors (Florida Department of Education, 2010). For purposes of this study, the rate is calculated by the total number of students who took at least one AP exam within a given population segment divided by the total number of students within that sample segment.

Academic achievement: For the purpose of this project, academic achievement is defined by student increases on the annual state assessment (Florida Department of Education, 2010).

Challenge index: The index represents the total number of AP exams taken divided by the total number of seniors (Florida Department of Education, 2010).

College readiness: College readiness is defined as: "The level of preparation a student needs in order to enroll and succeed, without remediation, in a credit-bearing general education course at a postsecondary institution" (Conley, 2007, p.4). College readiness is operationalized in this study by students engaging in rigorous coursework, such as AP, to be able to succeed in postsecondary education.

English language learners (ELL): The term English language learner (ELL) refers to a person whose primary language is one other than English and who is in the process

of acquiring English (Vang, 2005, p. 9). ELL is operationalized in the study as students whose first language is not English.

Exceptional student education (ESE): Exceptional student education programs offer students with disabilities an appropriate public education in the least restrictive environment (Freedman, 2000).

Inclusion: The term inclusion means that the ESE student has "100% placement in age appropriate general education class or a range of learning opportunities both within and outside of the general education classroom" (Berry, 2006, p.489).

Special education: "Highly specialized and individualized academic instruction to promote growth in skills and content area in response to a cognitive impairment that has a demonstrable negative impact on academic achievement" (Krezmien, Mulcahy, & Leone, 2008, p.445). Special education is operationalized in the study as students that have an individualized education plan in order to provide accommodations towards academic success within the educational environment.

Socioeconomic status: The SES of a family is the economic measurement based on income levels, parent education, and social status within the community. "SES describes an individual's or a family's ranking on a hierarchy according to access to or control over some combination of valued commodities such as wealth, power, and social status" (Mueller & Parcel, 1981, p. 13). In this study, the indirect measure of household income as partial assessment of SES as operationalized by the free/reduced lunch status code is applied to the socioeconomic status of participants.

Significance of the Problem

A gap exists between minority students of various ethnicities and majority students in participation with advanced courses, thereby affecting earning a college degree. According to The Pathways to College Network (2010), more than one third of European American students have a bachelor's degree but only about 18% of African American students and 10% of Hispanic students have one. Social mobility and the median income for families are affected and directly impacted when minorities do not earn postsecondary degrees. According to Flowers (2008), Americans without college degrees may have lower earning power and job opportunities, may contribute far less in taxes, and may impose a net fiscal burden on society.

SES and the level of educational completion are related; therefore, a concentrated effort needs to be sustained to increase minority enrollment into higher education through access to the rigorous curriculum opportunities students need to participate while in high school to be college ready. The median income for families are affected and directly impacted when minorities do not earn postsecondary degrees (Jodry, Robles-Pina, & Nichter, 2005). Federal initiatives have been implemented to create programs in order to retain minorities in the educational system in part because of the correlation with social mobility.

According to Roderick et al. (2009), addressing the gap between ambitions and college completion is one of the most disturbing problems in education today. Significant gaps by race and ethnicity are present in the areas of high test scores, good grades, and rigorous coursework that align with the college standards for success.

Underrepresentation of minorities in advanced programs negatively affects the lives and future of minority students, school districts, communities, states, and the nation. For example, students who are unprepared for college must enroll in remedial courses. Students do not earn college credits while enrolled in remedial courses, but they are required to pay the college per credit hour fee for the course, causing additional financial burdens. Additionally, students taking remedial courses have a higher probability of leaving college without earning a degree (College Board, 2008). Ford (2010) stated that this problem hinders the ability of the United States to compete and thrive globally.

The data from the United States Census Bureau (2005) indicated there was a disproportionate representation of minority students ages 18 through 24 who were enrolled in higher education: 60% of Asians, 42.8% of European Americans, 32.7% of African Americans, and 24.8% of Hispanics. The College Board (2007) specified that students can be successful and enroll in higher education when they participate in the rigorous curriculum of AP courses. Districts must permit access and equity for all students to have the opportunity to engage in quality curriculum that promotes the skills necessary for college readiness (Conley, 2007). Additionally, students must explicitly be taught academic behaviors such as time management, metacognition, study skills, and stress management, which usually occurs in advanced courses. Conley (2007) emphasized that prioritizing to succeed and sustain advanced coursework and to develop these skills is instrumental to be successful in postsecondary education.

The percentage of minority students attending colleges is increasing according to Minorities in Higher Education 22nd Annual Status Report (2006) released in the

American Council on Education; however, the report documented that minorities still fall behind their European American peers in college participation. The high school graduation report during the years of 2002 through 2004 stated that 87.6% European American, 77.8% African American, and 64.4% Hispanic students successfully earned a high school diploma. Additionally, 47.3% European American, 41.1% African American, and 35.2% Hispanic students attended college. These results imply that there are a disproportionate number of minority students as compared to majority students that are graduating high school and attending college.

The core essential strategy to improve college access must be to ensure students leave high school with the academic skills needed to be successful in postsecondary education: high test scores, better grades, more rigorous coursework, improved study skills, and college knowledge (Conley, 2007). Success for learning and academic achievement depends upon the level of student engagement, that is the effort related to interaction with faculty and peers, participation in active learning environments, and amount of time students study and use college resources (Greene, Marti, & McClenney, 2008). All of these factors can be taught and achieved through systematic instruction.

The rigor of the high school curriculum indicates the extent to which students will have access and sustainability in college; therefore, it is imperative that all students have equal access to advanced curriculum and experience curricular intensity to increase the probability of minority students entering and completing college (Attewell & Domina, 2008). Curriculum intensity is shown to have a positive correlation to high school test scores that allow admittance into college. Reformers have called on schools to upgrade

their content, so that the curriculum is more demanding of the students. Positive outcomes of rigorous curriculum include higher test scores, college access, higher admittance into college, improved skills, and positive self-esteem (Attewell & Domina, 2008; Carter, 2006; Dolan, 2007; Greene et al., 2008; Roderick et al., 2009; The College Board, 2009). Upgrading high school curriculum to meet the requirements of college entrance is a significant factor towards student achievement.

Within the instructional environment, high school teachers and counselors need to do a better job of communicating college expectations to all of their students. Students need to know what will be expected of them to be successful in college level work. According to Venezia and Kirst (2005), parents of low SES students often do not understand college expectations with admission requirements; therefore, schools should provide parent education regarding the college procedural processes.

High school students need to understand the procedures necessary to be accepted into college, the placement testing conducted upon arrival to college, and the skills needed to sustain and succeed in college (Carter, 2006; Conley, 2007; Dolan, 2007; Roderick et al., 2009). Furthermore, tracking of students into different ability groups that offer various levels of preparation for college is inequitable in terms of SES, race, and ethnicity, and determines whether or not students have the confidence or not to attend college (Venezia & Kirst, 2005). These practices lead to achievement gaps and performance gaps among the various subgroups.

Major academic achievement gaps exist among low socioeconomic students, English language learners, and minority student due to unequal access to educational

opportunities such as highly qualified teachers and rigorous curriculum (Leach & Williams, 2007). Problems of inequality need to be addressed in order for all children to receive equal education and access to quality curriculum.

Achievement gaps negatively impact students and their families and can influence dropout and graduation rates, college attainment, and future SES depending on level of school completion. Educational inequalities have not disappeared since *Brown vs. Board of Education* simply because of desegregation. In fact, segregation occurs within the context of the school environment through tracking students based on perceived ability levels. Achievement gaps are prevalent when equating dropout rates, AP participation, honors participation, gifted identification, and college admittance (Ladson-Billings, 2006). Inequality still prevails in the 21st century and should be addressed for social change to occur.

One predominant viewpoint is that because schools in the United States are not segregated, education is equal for all students; therefore, the students are accountable if they are underachieving (Darling-Hammond, 1998). This argument does not account for the achievement gap described as the educational debt by Ladson-Billings (2006), whereby this country does not invest money and resources on the education of low SES students but instead devotes money toward paying for the ongoing social problems that accrue from poorly educated people (e.g. crime, welfare, delinquency). If resources were allocated to reduce the educational debt then the achievement gap could be closed (Landson-Billings, 2006). The achievement gap can be viewed as the educational debt that needs to be paid to minority communities.

The NCLB policy was established to promote educational equality by holding every school responsible for the yearly academic progress and achievement of all students (Forrest, 2004). Positive and negative ramifications occurred as a result of the policy; however, the intent of the policy was to make explicit that it is unacceptable to lower expectations for any children, that there should be an expectation that all students can learn, and that states must demonstrate whether or not every child is learning. According to Katsinas and Bush (2006), society must focus on factors, methods, and strategies that can increase opportunities for minorities and the poor to acquire equal educational opportunities for these students to be able to flourish.

The achievement gap between minority and majority students is related the academic achievement through student engagement and course placement. Educational inequality is still present because performance and attainment are disproportionate among majority and minority students (Carbonaro, 2005; Darling-Hammond, 1998; Lleras, 2008; Mickelson, 2003).

There are numerous reasons presented by researchers as to the causes of the achievement gap. Some possible reasons discussed in the literature include low expectations, large class size, ineffectual leadership, unqualified teachers, and poorly constructed curriculum offerings (Carbonaro, 2005; Darling-Hammond, 1998; Rothsetin, 2004).

According to Lleras (2008), three main relationships exist that contribute to the achievement gap: tracking, course placement, and effort. Students who are placed on a lower educational track will not have the prerequisites necessary to be enrolled in

advanced high school courses; therefore, tracking of students leads to a greater educational gap. Additionally, there is a correlation between advanced classes and academic achievement: more material is covered at an advanced level with high quality instruction, thus enrollment in challenging classes has a substantial influence on achievement. The third area pertains to student effort as students must engage with their materials and the educators presenting the course. Student effort and motivation are tied to academic achievement (Nichols, White, & Price, 2006). If students are placed within lower educational tracks, then the likelihood of getting out of the regular or remedial track to have access to courses such as AP in the advanced track is improbable.

Darling-Hammond (1998) established reasons for the achievement gap predominately pertaining to equitable access and ascertained that problems of inequality must be addressed and dismembered in order for all children to receive an equal education and access to quality curriculum. Students increase academically when educated in small schools (300 to 500 students), have small class sizes, and receive rigorous curriculum from highly qualified teachers. Many minority students are placed in lower ability classes that have large class sizes, low-quality curriculum, and teachers who may not be considered highly qualified. Teacher expertise, the extent in which they have their licenses and degrees, is the most distinct significant factor toward increasing student achievement (Darling-Hammond, 1998). Unequal access to educational opportunities such as highly qualified teachers and rigorous curriculum has a greater impact on achievement and contribute more to the achievement gap than the color of a person's skin and SES.

Guiding/Research Question

The school district implemented a curriculum called SpringBoard, produced by the College Board, to address the need of cultural diversity in high school AP courses. SpringBoard is a comprehensive school reform model to improve student achievement with diverse populations (Delgado, 2006). The program was developed as a pre-AP program based on the National College Board Standards for College Success with the mission to connect all students to college success and opportunity through an engaging, relevant, rigorous curriculum (Poston et al., 2010). According to The College Board (2009), the objectives of SpringBoard are to increase the level of rigor, accelerate learning, close the achievement gap, and prepare students for AP, college, and careers.

The guiding question is whether or not the implementation of SpringBoard has achieved results in raising the level of academic rigor to prepare students in this district to be successful in college. Additionally,the study seeks to examine if there has been an increase in diversity enrollment within AP classes in this district.

The research design used for this study is a quantitative summative program evaluation. Although program evaluations utilize a mixed methods research design, for the purpose of this project, only the quantitative components will be employed for the project analysis. A program evaluation will be used to ascertain the extent that the proposed outcomes of increasing academic achievement, increasing cultural diversity in AP classes, and increasing AP test scores with the minority populations occurred over the 4 year period of SpringBoard implementation in one school district.

Although numerous factors contribute to the lack of minority student enrollment into AP courses: teacher expectations, student motivation and self- perception, parental support, language barriers, English Language Learner (ELL) implementation, and cultural bias in the classroom, only the SpringBoard curriculum evaluated. The intervention was evaluated to determine the effectiveness in regard to increased student achievement, increased participation in AP, and increased AP test scores among minority student populations from one school district. The data presented will display academic achievement as measured on the state assessment and AP participation rates and scores as reported from The College Board. No causal inferences were made.

The research questions guiding this study investigate to what extent academic achievement increased, AP participation rates increased, and AP test scores increased among racial minority students over the 4 year implementation period of the SpringBoard curriculum in one school district. Multiple hypotheses operationalized these questions by tracking SpringBoard's impact on reading scores on the state assessment, AP participation rates, and AP test scores. The hypotheses are as follows:

$H_1$1: There will be an increase in minority student academic achievement, as measured by the annual state reading assessment, throughout the 4 years of SpringBoard implementation.

$H_0$1: There will be no increase in minority student academic achievement, as measured by the annual state reading assessment, throughout the 4 years of SpringBoard implementation.

$H_2$2: There will be an increase in minority student enrollment in AP throughout the 4 years of SpringBoard implementation.

$H_0$2: There will be no increase in minority student enrollment in AP throughout the 4 years of SpringBoard implementation.

$H_3$3: There will be an increase in minority student AP performance throughout the 4 years of SpringBoard implementation, measured by AP student grades retained in the district's Data Warehouse.

$H_0$3: There will be no increase of minority student AP performance throughout the 4 years of SpringBoard implementation, as measured by AP student grades retained in the district's Data Warehouse.

My assumptions are that a rigorous curriculum can increase academic achievement and enrollment in AP courses. Students that engage in rigorous coursework will have academic gains thereby permitting access and success in AP courses. The positive outcomes associated with students participating in pre-AP and then AP curriculum pertains to social mobility opportunities, as students receive college credit as a result of passing AP exams.

Review of the Literature

The academic practices being implemented in today's classrooms reflect an instructional environment that is not meeting the academic needs of all students (College Board, 2010). Weak instructional environments are a national issue (National Center for Educational Statistics, 2009). Achievement gaps occur predominantly among minority

students because instructional environments are lacking for a variety of reasons (Greene et al., 2008; Roderick et al., 2009).

To better understand the problem surrounding the educational advancement of minority students into courses such as AP to attain college and career readiness, a review of literature was conducted that included information on AP access and instructional environments conducive to the academic success of minority students. Additionally, an analysis regarding the historical context revealed the timeline of events leading up to current studies and a critical review of research documents occurred until saturation was reached.

The strategies used to search for literature included the Internet and the use of the Walden University online library data bases of ERIC, Education Research Complete, Education: a SAGE full-text database, ProQuest Central, and Academic Search Premier. Searches were conducted around instructional environments of minorities using keywords such as *advanced placement, college readiness, advanced initiatives, minority education, teacher bias, culture, learning styles, inequality, gifted, special education, instructional environments,* and *advanced programs*; additionally, resources were downloaded from the Walden Library online site or from the Internet.

Conceptual Framework

The difference between program evaluation and research is that program evaluations are conducted for decision-making purposes, whereas research is used to inform practice (Spaulding, 2008).The conceptual framework for this study is based on the progressive logic model of the program evaluation theory. The researcher using the

logic model ensures that all stakeholders have the same understanding about the objectives and goals of the evaluated program before the investigation commences (Helitzer et al., 2010; Renger & Titcomb, 2002). The goals and objectives are identified, the problem is stated, and then the evaluation provides formative feedback based on the outcomes of the study.

The intervention associated with this project study stems from the cognitive learning theory. Therefore, the concentration described in this section explains the conceptual framework around the intervention.

Tolman, Vygotsky, Piaget, and James are the seminal researchers associated with the cognitive learning theory. Tolman (1925) is associated with the cognitive learning theory through the construct of goal seeking; that is, the motivation to obtain a goal results in cognition. Consequently, human learning is acquired through this goal setting (purpose) process and desire to achieve a goal. Additionally, the other three theorists: Vygotsky, Piaget, and James are associated with the cognitive learning theory through the constructs of metacognition and self-regulation (Fox & Riconscente, 2008). Metacognition is thinking about one's own thinking process and self-regulation is the act of planning and adapting personal goals (Fox & Riconscente, 2008). According to these three cognitive theorists, learning and development occur as a result of self- regulation of behavior and understanding one's own thinking processes (Piaget, 1976; Vygotsky, 1981).

The intervention for this project study is the SpringBoard curriculum, which is based on the cognitive learning theory, assuming students engage to a greater extent with

curriculum that meets a variety of learning styles and is relevant to today's world and future professional environments (Delgado, 2006; Poston et al., 2010). The principles of SpringBoard are based upon a strategic learning instructional framework (Poston et al., 2010, p. 13); that is, new information is built on prior knowledge, students are actively engaged and have ownership of their learning, and instruction is delivered according to strategic approaches within various learning styles. The instructional design engages students in challenging learning experiences that combine rigorous coursework with formative assessments (Matos-Elefonte & Li, 2010; Westat, 2008). The goal of SpringBoard is to prepare all students with the skills necessary to be successful in AP and in college, without remediation (Matos-Elefonte & Li, 2010).

Memory and language are integral components of cognitive learning and are key components in the learning processes associated with the SpringBoard curriculum (Delgado, 2006; Poston et al., 2010). The instruction is provided to students around learning goals and strategic learning processes to create numerous associations for long term memory. Additionally, the use of language involves the modalities of reading, writing, listenting, and speaking. Active learning takes place through cognitive, metacognitive, and affective strategies to enhance acquisition of essential skills and abilities necessary for academic success (Matos-Elefonte & Li, 2010; Poston et al., 2010; Westat, 2008). Therefore, students engaging in SpringBoard encounter memory and language components that are effective with their learning goals.

Historical Context

Historically, instructional environments were different between minority and majority students; therefore, court cases arose in the late 1800s regarding educational equity. In 1849, Benjamin Roberts filed a lawsuit on behalf of his daughter. She was denied admittance to a nearby public school in her neighborhood because of the segregation policy placed in affect within the state of Massachusetts (Feagin, 2004). Benjamin Roberts was a parent that challenged the educational system because the instructional environment was not beneficial toward necessary learning for his daughter, and the resources allocated were imbalanced compared to the resources in the White schools. Although Roberts argued for equal learning environments with trained teachers and equitable resources, the Supreme Court judge ruled that segregation was the best solution to obtain optimal learning environments among both races.

Another major court case involving equality and equity for minority students was in the1896 case of *Plessy v. Ferguson* in Louisiana. The case questioned if racial segregation was unconstitutional according to the 14th Amendment to the Constitution. The Court ruled that the state law of separate facilities for Blacks and Whites satisfied the 14th Amendment and was constitutional citing the "separate but equal" doctrine (IIT Chicago-Kent College of Law, 2010).

Public schools and colleges were separate for students of color, and schools were unequal with the quality of education, curriculum, class sizes, funding allocations, and amenities. Marshall, the NAACP legal advisor, and other NAACP attorneys assembled lawsuits from around the country to be used collectively regarding the unequal education,

and on May 17, 1954, the United States Supreme Court ruled unanimously that "separate but equal" should not be applied to the education of students in the law suit case of *Brown v. Board of Education* of Topeka (Jones & Hancock, 2005; Spencer, 2006).

The Civil Rights Act of 1964 was passed by Congress with the continuing effort to ban discrimination, and the 14th Amendment of the United States Constitution was cited with the "equal protection" clause to support the Civil Rights Act and to enforce freedom and liberties for all members of society in the United States. Without the Civil Rights Act, students would not have equal opportunities to participate in advanced courses such as AP or be permitted to attend college.

Although all 50 states and the United States government support this legislation, inequalities still exist in schools today. Racial minority students are not proportionately assigned and participating in advanced courses such as AP. In an effort to provide equal educational opportunities, President Bush signed NCLB in 2002. This national reformation act of educational accountability requires all K through 12 schools to measure the academic performance of students yearly and document progress (Forrest, 2004; Jones & Hancock, 2005; Katsinas & Bush, 2006; Spencer, 2006). NCLB is a continuation of using educational policy to increase opportunities beginning with the Elementary and Secondary Education Act (ESEA), passed on April 9, 1965. The ESEA was part of Lyndon Johnson's "War on Poverty." The act provided federal funds to help low income students, which resulted in the initiation of educational programs such as Title I and bilingual education. Additionally, Congress mandates that the National Center for Education Statistics (NCES) produce an annual report.

The NCES 2009 report presents new trends in the United States educational process and provides information on participation, learner outcomes, and educational progress. According to this report, students in the United States are still not receiving equitable educational experiences. There is a significant gap in the educational achievement levels between minority and majority students, resulting in disproportionate racial participation in AP and college (Lleras, 2008). Historical evidence demonstrates that there has been progress within the instructional environment toward academic gains, but equal access and equity for all students has not been perfected.

Students at Risk

The term *at risk* refers to students who are in danger of educational failure due to limited English proficiency, low SES, educational disabilities, or inequitable access (Vang, 2005). The term is widely debated and can imply that low SES and minority students are at risk but are responsible for their own learning due to desegration (Bemak, 2005). Additionally, according to Ladson-Billings (2006), another viewpoint is that society is responsible for at risk students because they are owed an educational debt based on the years of receiving imbalanced educational resources and substandard instructional environments. Students are not at risk of failing various subjects or dropping out of high school due to their SES, lack of English proficiency, or minority status; students are at risk when their instructional environments do not meet the diversity needs that exists within our society (Darling-Hammond, 1998).

Academic achievement levels among minority students are generally found to be lower than White students, resulting in achievement gaps. Moreover, underachieving

minority students are classified as being at risk of academic failure (O'Connor, Hill, & Robinson, 2009). There are a plethora of various reasons that have been hypothesized to explain this phenomenon that include family influences, SES, English as a second language, and students with disabilities (Battle & Pastrana, 2007; Bemak, 2005; Heilig & Darling-Hammond, 2008; Vang, 2005). Although these factors contribute to the gaps with academic success, Borko et al. (2003), indicated by implementing effective instruction and innovative curriculum, all students can exceed levels of achievement regardless of their racial status or SES. To understand the extent in which the instructional enviornment has to compensate for students' academic shortcomings, a brief description regarding some possible factors will be presented.

Student obligations to meet the family needs influence and may override student aspirations toward educational endeavors and may contribute to low enrollment in AP courses (Battle & Pastrana, 2007; Bemak, 2005). Hispanic students may be asked to interpret for their parents, involving them with the intimate concerns of the family that may distracted them from educational pursuits due to financial or legal obligations of the family (Battle & Pastrana, 2007; Bemak, 2005). Academic intensity found in courses such as AP requires time outside of school to be dedicated to studying. Therefore, many Hispanic students put the needs of their family above their educational goals, resulting in lower AP participation (Bemak, 2005). When educators are aware of the Hispanic culture, then a balance between educational aspriations and family obligations can be achieved. The responsibility for this knowledge is on the educators who teach in multicultural environments in the 21st century.

In addition to race, there is a correlation between SES and low academic performance. “Socioeconomic status (SES) describes an individual or a family’s ranking on a hierarchy according to access to or control over some combination of valued commodities such as wealth, power, and social status” (Mueller & Parcel, 1981, p. 13). SES is connected to racial or ethnic backgrounds and academic achievement (Brooks-Gunn & Duncan, 1997). High SES students generally have parent support that concentrates efforts on the academic achievement of their children and provides resources such as tutoring when their children have difficulties; whereas low SES students’ parents do not have the financial means to provide those same resources for their children (Battle & Pastrana, 2007; Bemak, 2005). A study conducted by Battle and Pastrana (2007) regarding the effects of academic achievement and SES supports this theory. As SES increased with the sample students during their first 2 years of college, test scores increased. The argument was affirmed that SES is a key element of educational achievement and is 10 times more dominant than race (Battle & Pastrana, 2007; Vang, 2005).

SES is an important aspect to consider; however, language minority students in the public schools are also considered to be in danger of academic failure. The Hispanic population is the nation’s largest racial minority group. ELL students are at a disadvantage in the American educational system because they are usually placed into lower academic tracks due to their language barriers (Vang, 2005). Lack of language skills, lack of academic background, and lack of English skills cause traditional educators problems toward academic success for ELL students; therefore, students usually do not

receive appropriate placement and instructional methods thus leading to low achievement, low test scores, and low quality curriculum (Helig & Darling-Hammond, 2008; Vang, 2005). Students placed in lower educational tracks have reduced access to advanced courses such as AP; therefore, they are at a disadvantage for college coursework. Again, a rigorous instructional environment that targets the specific needs for the ELL population will improve academic success, thereby assisting in closing the achievment gap (Landson-Billings, 2006).

Students who are part of exceptional student education (ESE) are another at risk subgroup. Special education programs were developed to assist students with disabilities either in the regular classroom receiving services through the inclusion model or in a self-contained setting. Students who are in special educational programs are placed in the least restrictive environment but may not be receiving a rigorous curriculum to ensure college readiness. When educational systems track students by perceived ability, social and class labeling are reinforced (Vang, 2005). In many cases, special education students are placed on low ability tracks making upward academic mobility into collegiate courses such as AP difficult.

Although these factors contribute to the gaps with academc success, Borko et al. (2003), indicated by implementing effective instruction and innovative curriculum, all students can exceed levels of achievement regardless of their racial status or SES. The instructional environment supports students to achieve at higher levels; however, students must first be permitted equivalent interactions to demanding curriculum. The College Board produced the SpringBoard curriculum in an effort to provide access to quality

instructional environments for all students; however, there are people and regulations at school sites that prohibit access to these types of environments for at risk students. From before the time of *Brown v. Board of Education*, unequal access to rigorous curriculum and quality instruction has been recognized as a contributing factor towards achevement gaps among minority students. Hilliard (2003) accredited that both curricular designs and instructional practices contribute to exceeding educational outcomes. Additionally, researchers have attributed that rigorous academic curriculum positively contributes to achevement among minority groups (Hoffer, Greely, & Coleman, 1985). Morris (2004) conducted an ethnographic study at two elementary schools to analyze the successful student acheivement of African American and low SES students. Morris documented that the instructional environment enabled the students to outperform other schools within that district on standarized tests.

The instructional environment promotes or diminishes academic success. Successful student achievement among racial minorities such as Latinos and African Americans are attributed to their instructional environment, as reported in a study conducted by Jodry, Robles-Pina, and Nichter (2005). In one study, six Hispanic students were purposively sampled from one high school's AP mathematics program and were interviewed to obtain information regarding why they were successful minority students. Data was analyzed using the grounded theory, categories were formed from the patterns, and themes were used to explain and describe the phenomena. Results indicated that students felt a sense of support from the faculty and staff at their school, and they felt that their teachers advocated for them and provided extended learning opportunities. Students

revealed that the faculty had high expectations for their achievement, the school offered programs to meet their needs, and the school personnel valued their language and culture.

The instructional environment formulates how students identify themselves. Every person who has engaged in the educational process at school develops an academic identity that shapes how he or she is defined (Hatt, 2007). The term *smart* is used synonymously with academic success; therefore, students define themselves as smart or dumb depending on the level of success they have in school. Hatt (2007) conducted a study using an ethnographic technique whereby participants were identified as adults ages 18 through 24 who did not complete high school, were of low SES, and were struggling with issues such as drug addiction. Eighteen participants were interviewed two different times over a 7 month period. Participants indicated there was a distinction between being book smart versus street smart, and participants placed a higher value on being street smart.

Children learn about their level of smartness while in school due to tracking and teacher expectations. Poor students and minorities are overrepresented in special education programs or low ability classes, and underrepresented in gifted programs; therefore, students' identity of intelligence is formulated on the educational track on which that they are placed (Carbonaro, 2005; Hatt, 2007; Jussim & Harber, 2005). Tracking may lead to lower achievement, lack of motivation, and academic failure as a result of the impact of self-fulfilling prophecy. Feelings of being incompetent leads to disengagement, low achievement, and the desire to drop out of school (Carbonaro, 2005; Hatt, 2007; Jussim & Harber, 2005). According to Hatt (2007), the instructional and

cultural environment of school produces intelligence; therefore, educational settings need to provide students with effective strategies, rigorous curriculum, and a positive identity in order to be successful after graduating from high school.

Advanced Placement

Rigorous instructional environments provide students with the necessary skills to succeed in college without remediation (College Board, 2009). AP is The College Board's official rigorous academic program that provides students with the opportunity to learn and earn credit on the college level (College Board, 2009). AP teachers assist students in developing the necessary skills and knowledge needed to be successful in college (College Board, 2009). All AP courses contain an end of course assessment created and scored by university staff. The range of scores is 0–5; students scoring a 3 or higher receive college credit for the course.

Schools create obstructions to enrollment in AP courses by connecting access to AP based on various measures such as only permitting students with the highest test scores, highest student grades, and highest teacher or counselor recommendatons (Attewell & Domina, 2008; Carter, 2006). By limiting access based on perceptual data, barriers of inequity are created. According to Carbonaro (2005), instructional environments that are not rigorous permit tracking of students to continue, whereby limiting access to advanced courses such as AP.

Access to AP should be equitable, as all students deserve an opportunity to take part in challenging programs toward college readiness (Conley, 2007). VanSciver (2006) confirmed that disadvantaged students are not enrolled in AP courses proportionately to

the school populations. For example, according to VanSciver (2006), in the state of Texas the rate of enrollment in AP for minorities is about half of the enrollment rate of White students.

Optimal learning environments can be created for highly motivated learners from multicultural backgrounds through AP courses (Kyburg, Hertberg-Davis, & Callahan, 2007). To create environments conducive for academic success of minority students, two key factors are present: a belief that all students can succeed, and the scaffolding to support students such as lunch time help, after school tutoring, financial aid counseling, and college visits. State government initiatives (NCLB) command public attention and funding be directed to increase minority participation in AP programs in order to meet annual yearly progress and narrow achievement gaps, as standards, assessments, and accountability are embraced by society (Brunner et al., 2005). According to Darling-Hammond (2004), there is a link between quality instruction and academic achievement; that is, as students engage in rigorous courses with high quality instruction, academic levels of achievement increase.

Based on the cognitive learning theory regarding levels of student engagement, the College Board (2007) indicated that students can be successful in AP if they receive rigorous curriculum before enrolling in AP courses. Smaller percentages of minority students are enrolled in AP courses (College Board 2007) with participation rates higher among females in AP literature and AP language. Boys score higher in AP math and science (Moore & Slate, 2008). All students have a right to a rigorous curriculum and access to AP, so that all students have equitable access to college attainment.

Earning college credit while in high school increases self-efficacy among all students, but particularly minority students because of the current AP participation gap (Klopfenstein, 2004). Successful completion of AP courses is beneficial to students financially, as tuition dollars are decreased; students can earn college credit and therefore do not have as much tuition to pay. Additionally, AP students display improved writing skills and are better prepared to engage in college courses (Klopfenstein, 2004).

Another positive attribute with minorities engaging in AP is that AP can be used as an intervention. When a group of eighth grade students were enrolled in AP Spanish rather than a remedial course, academic achievement prevailed (Kettler, Shiu, & Johnsen, 2006). Participating students who were Spanish speaking middle school students, placed in an AP Spanish course instead of an academic at risk program, increased self-efficacy toward academic achievement. The results of this quantitative study indicated that participating students earned qualifying scores on the AP Spanish exam and achieved a sense of belonging to the school system and their peers (Kettler, Shiu, & Johnsen, 2006). Additionally, educational aspirations were raised because AP courses are designed to provide the rigor of entry level college courses.

SpringBoard

In response to the significant need for all students to have success and access to AP and college through rigorous coursework, the College Board created a pre-AP curriculum called SpringBoard in 1996. The College Board claims that SpringBoard is a proven pre-AP program that increases participation in AP courses for all students. Additionally, the College Board asserts that the SpringBoard curriculum prepares all

students, regardless of socioeconomic status or race, for academic success in AP, college, and beyond without remediation. SpringBoard's design is based on the research of McTighe, which contains the philosophy of beginning with the end in mind, meaning students first unpack the embedded assessment and then engage in activities that scaffolds to the assessment. The College Board is attempting to provide access toward a quality instructional environment for all children (College Board, 2011). The problem in many districts pertains to the people who grant access to these types of environments.

The curriculum is vertically aligned for grades sixth through 12th in English Language Arts and is based on the National College Board Standards for College Success. Since the commencement, several studies have been conducted to assess its effectiveness. A self-study was conducted, following program review guidelines, in 2004 by the SpringBoard staff using Institutional Research, an external review team. Findings revealed that SpringBoard had a measurable impact on retention of information due to the dynamic learning activities. The Institutional Research Evaluators (2004) cited several strengths: the program content and design is learner centered, and the curriculum is personally relevant and challenging, resulting in increased confidence. The review provided by the audiors appeared to be valid and reliable due to the triangulation of data: review of study documents, interviews of personnel and university administrators, and the external report of summary findings and recommendations.

In 2008, The College Board contracted Westat to perform a longitudinal evaluation of the SpringBoard program. Westat collected and analyzed data based on an attitudinal survey of SpringBoard and non-SpringBoard teachers, case studies of selected

SpringBoard districts, and an analysis of student achievement related to SpringBoard paricipation. Westat (2008, p. 3) reported that the program supports the cognitive science learning theory through engaging all students in challenging learning and combining "rigorous course work with assessment and professional development." Furthermore, the survey findings indicated that SpringBoard teachers were similar with their responses with the following exception that 10% were more likely to agree that professional development is a significant component in the efforts to increase student academic achievement. In regard to the academic achievement impact, Westat analyzed four districts in the state of Florida using their state assessment (FCAT) to measure academic achievement. The results indicated that students at all levels, bottom quartile to top quartile, benefited significantly. The scale scores ranged from 2.5 to more than a year of additional growth for each year that a student was enrolled in a SpringBoard course.

From 2005 to 2010, Matos-Elefonte and Li conducted a 5 year "longitudinal evaluation investigating the impact of SpringBoard on the academic achievement of students" (2010, p. 1). The researchers examined AP participation and performance with 106 SpringBoard high schools in Florida. The report does not show causation but trends that emerged. The results showed that districts who participated with SpringBoard had an increase in the number of students enrolled in AP, as well as the number of students scoring a 3 or higher on the exam.

The most current research involves a 4 month audit by Phi Delta Kappa (2010) that investigated three data sources: SpringBoard documents, interviews, and site visits. The data was triangulated to reveal the extent that the curriculum was meeting its goals

and objectives. Overall, the auditors claimed that SpringBoard includes a "high quality curriculum, aligned to assessments with exemplary models of instructional practices" (para. 22). Additionally, the report cited that SpringBoard is a rigorous curriculum accessible for all students with the "intent of increasing the number of students from underrepresented groups to be academically prepared for AP and college courses" (Poston et al., 2010, p. 14). Some key strengths of the program include the spiraled activities with increasing levels of difficulty, as well as ongoing professional development to support teachers in meeting the needs of all the learners in their classroom.

Although these studies demonstrate the effectiveness of the SpringBoard curriculum, I wanted to conduct this study to specifically track cohorts of diverse students from middle through high school to access their levels of academic achievement and AP enrollment through engaging in a rigorous instructional environment using the SpringBoard curriculum.

Programs with Similar Approaches

Other programs offer strong instructional environments and target at risk students. The GEAR UP project is a federally funded grant initiated to increase postsecondary education participation among low income Hispanic students. Weither et al. (2006), described the program components: improving capabilities of teachers through professional development in AP strategies, increasing access to rigorous coursework by allowing all students access to AP courses, mentoring presentations to students to gain insight into various occupations, and improving student and parent communication about

college entrance requirements through college or career nights. A multivariate analysis of six school districts in Texas involved in this study from 1998 to 2005 indicated an increased rate of college attendance after exposure to interventions associated with the program.

Another federal initiative with the similar purpose is the Advanced Placement Initiative Program (APIP): to improve college readiness among low income, minority students. Jackson (2010) identified cohorts of students in Texas before and after APIP implementation to identify program effects. The APIP encourages teachers to allow more students access into AP and encourages students to participate in AP by awarding cash incentives for passing scores. Results revealed an increase in AP participation, AP scores, and college matriculation. A similar trend in both federal initiatives is the AP component.

Additionally, several programs that are not federally intiated, also include AP as a major part of their program. Advancement Via Individual Determination (AVID) originated in 1980 in San Diego, California by Mary Catherine Swanson, a high school English teacher. AVID was first established as an academic elective to support students with their rigorous courses. Currently, AVID's mission is to increase college readiness, admittance, and retention among underrepresented students (Black, Little, McCoach, Purcell, & Siegle, 2008). According to Black et al. (2008), AVID is a school wide reform initiative to increase college readiness and participation among underrepresented and economically deprived students through increased admittance in advanced courses such as AP.

In three separate reseach studies about the effectiveness of AVID, similar findings were reported. All districts involved increased AP participation, increased achievement as reported on the state assessment, and increased high school graduation rates (Black et al., 2008; Mendolia et al., 2010; Watt et al., 2006). Furthermore, these districts reported that AVID students were on track to be successful in college and had set obtainable goals as a result of utilizing the AVID strategies.

Although most intervention programs occur during the school day, Project EXCITE is one that supports students outside of school. This program promotes academic achievement in the areas of math and science beginning as early as third grade. The goal of the program is that students will be equipped for AP and college after participating with Project EXCITE (Lee et al., 2009; Olszewski-Kubilius, 2006). Closing the achievement gap among minority sub groups is a priority with this project. Findings in two separate studies of Lee et al. (2009), and Olszewski-Kubilius (2006) revealed increased access to advanced courses, increased diversity within AP courses, and increased academic achievement; however, this program has challenges that in school programs do not encounter, such as transportation and sustained motivation. Project EXCITE includes parents, teachers, and mentor students within their program in order to meet the additional needs of minority children and families.

Equivalent Programs to AP

Another platform that has the mission of advancing more students toward college readiness using a demanding instructional environment, but does not use AP as a component, is found in collegiate high schools. Once again, the themes of school wide

reform, access to rigorous courses, and advanced course participation are the focal points within the collegiate high schools. The central goal of a collegiate high school is to increase the number of students underrepresented in college by providing students with 2 years of college credit at the time of high school graduation (Edmunds et al., 2010; Ongaga, 2010).

Students at collegiate high schools take honors courses in ninth and 10th grades and college courses during 11th and 12th grades, in lieu of AP (Edmunds et al., 2010; Ongaga, 2010). Collegiate high schools, or early college high schools, target students who are underrepresented in college to provide them with college credit upon graduation in an attempt to increase motivation and self-efficacy toward completion of college (Edmunds et al., 2010). The main principles include the *three R's: rigor, relationship, and relevance*, which are also found within the description for AP courses.

Another program that encourages minority students to attend college is the instructional environment found in the Dual Enrollment Program. Students are permitted to take college courses while still enrolled in high school. The program is designed differently based on the college affiliation. Some colleges require students to attend the courses on college campus, whereas others will allow the college course to be taught by an accredited high school teacher on the high school campus.

Medvide and Blustein (2010) conducted a qualitative study focusing on minority students' attitudes after exposure to college coursework through Dual Enrollment. To assess perceptions, expectations, and impacts associated with this program, 12 minority students from poor and working class backgrounds, participating in Dual Enrollment,

were interviewed. The main theme that emerged was that all 12 students identified their future educational and professional goals and had an action plan of obtaining their goals.

The International Baccalaureate Program (IB) is a global curriculum alternative to AP with the same goals of access to rigorous coursework in an attempt to graduate students that will be successful in postsecondary education (Bunnell, 2009; Mayer, 2008; Schachter, 2008). IB was developed more than 40 years ago to provide highly academic curriculum for international diplomats' children (Schachter, 2008); however, the United States utilizes this diploma opportunity more than any other country.

The legislation involved with the NCLB act has raised awareness for districts to be more inclusive with access to IB with minority students (Mayer, 2008). One study evaluated the relationship between IB and the impact of academic success for minority students using a mixed methods approach. Quantitative data was collected on students by accessing the district's longitudinal transcript database and analyzing the collected records from 2000–2004. Qualitative data was collected by taking field notes during classroom observations and using Annotape to code and analyze the notes. Additionally, 63 school personnel, parents, and IB administrators were interviewed to inform understanding about the IB curriculum and student to teacher relationships. The results indicated that raising the achievement levels of these students and providing access to college coursework did strengthen their academic skills and self perceptions (Mayer, 2008). According to Mayer (2008) and Schachter (2008), the demands associated with increased rigor creates confidence in students about being successful in college.

Instructional Strategies

Increasing access and equity to AP can be met through a variety of programs, but implementing research based educational strategies with any current curriculum will also improve the instructional environment and may assist in raising minority students' AP participation rates (Mazano, 2009; Santangelo & Tomlinson, 2009). Classroom strategies are the tools used in order for students to gain knowledge; they are a means toward a positive impact on student achievement (Marzano, 2009; Minott, 2009; Santangelo & Tomlinson, 2009).

High yield strategies are used to increase academic achievement for all students (Marzano, 2009). School personnel should identify instructional strategies that have the highest probability of increasing student achievement and focus on those across the curriculum; however, simply focusing on a narrow range of strategies will not result in addressing the needs of all learners. Teaching is a complex endeavor and effective teaching practices utilize varied and numerous strategies that take into account the needs of a variety of learners. Marzano (2009) identified 41 different strategies that relate to effective teaching to maximize learning for the diverse populations in the classrooms today. According to Marzano (2009), Minott (2009), and Santangelo and Tomlinson (2009), effective strategies increase diversity for participation in AP and other rigorous courses needed to be college ready.

Teachers at all levels, elementary through college, should adapt instruction within the educational environment to meet the diverse needs of the students by providing an interactive, collaborative atmosphere aligned with students' interests (Tomlinson, 2009).

Educational practices and culture have not shifted to address the needs of the diverse populations now enrolled in the schools (Santangelo & Tomlinson, 2009). Students have diverse ways of learning, diverse interests, and diverse goals. Additionally, more diverse student populations are pursuing higher education. Classrooms should be student centered to promote learning, not teacher-centered that inhibits learning.

Differentiation of instruction (DI) is a process of adjusting the content, process, or product of a learning task to accommodate for the needs of the learners (Minott, 2009; Santangelo & Tomlinson, 2009; Tomlinson, Gould, Schroth, & Jarvis, 2006). Teachers should be flexible and modify the curriculum rather than expect the students to adjust themselves to the curriculum. Differentiated instruction has a positive impact on student learning, as students feel challenged and find relevance in the activities (Santangelo & Tomlinson, 2009). DI is an effective way to meet the needs of the diverse populations within the schools, so that all students have the opportunity to achieve academic excellence, thereby allowing access to AP and other rigorous high school courses that are essential to be successful in postsecondary education.

Creating a college culture on high school campuses and increasing the rigor of the courses are strategies that researchers have found to be effective toward this end (Colon, 2008; Darity et al., 2001; Geddes, 2010; Oakes, 2003;). Colon (2008) reported that one high school opened AP to all of their students and created a culture that encouraged all students to discover their talents and focus on their personal academic pursuits. Teachers, students, and parents embraced the collegiate attitude and AP opportunities for rigorous coursework. Academic achievement and self efficacy dramatically increased, as students

learned more in advanced courses due to the rigor of the curriculum (Oakes, 2003). According to Darity et al. (2001), identifying students with academic potential while in middle school and then placing them in advanced courses in high school with mentor support, increases enrollment and success in AP courses. This report confirmed that tracking is detrimental for racial minorities, as moving academic tracks once enrolled in high school is extremely challenging because honors courses build to AP courses. When students are exposed and permitted to enroll in rigorous courses such as honors and AP with support, they are more likely to believe that college is attainable.

High School Connections to Create AP Access

The main goals of high school education toward academic success for all students should contain information about the instructional environment: how to inform instruction, guide the assessment process, and articulate the overall design of the curriculum (Wiggins & McTighe, 2008). High schools should recognize their challenges of trying to overcome student boredom, passivity, and apathy to engage students. Additionally, students must know how to apply new material, not simply know it on a factual level. They must engage themselves into the curriculum in order to find relevance and meaning because students fail to learn when the application of content is removed from the learning process (Attewell & Domina, 2008; Wiggins & McTighe, 2008). AP coursework is both relevant and engaging for students; therefore, as students find meaning in the course academic achievement increases.

Teaching skills and knowledge without the focus of transfer does not achieve the primary purpose for learning content. Additionally, trying to simply cover the content for

the sake of acquisition fails to achieve the purpose of effective use of content (Wiggins & McTighe, 2008). High school curriculum must reflect one central mission of learning and understanding throughout the syllabi, instruction, and assessment and should be relevant in that knowledge gained can be applied to issues and problems that will be faced later in life (Weiher & Tedin, 2006; Wiggins & McTighe, 2008). High school curriculum should have the long term goal of making and transferring learning.

The rigor of the high school curriculum indicates the extent to which students will have access and sustainability in college; therefore, it is imperative that all students have equal access to advanced curriculum, such as AP, and experience curricular intensity in order to increase the probability of minority students entering and completing college (Attewell, 2008).

There is disproportionate and unexplainable denied access to AP courses for lower SES and racial minority students (Attewell, 2008). A longitudinal study was conducted by Attewell in 2007 using a sample population of 12th graders. Curriculum intensity was shown to have a positive correlation to high school test scores that allow admittance into college. Disparities were found among Black and Hispanic students; they faced less intensive curriculum for unknown reasons. That is, lower SES and minority students were overrepresented in less demanding classes in ways that were not justified by prior academic performance. Reformers have called schools to upgrade their content so that the curriculum is more demanding for students. Positive outcomes of rigorous curriculum include higher test scores, college access, improved skills, and positive self-esteem.

Upgrading high school curriculum for all students to have access to AP courses and to meet the requirements of college entrance is a significant factor toward student achievement. NCLB requires schools to be accountable to the state regarding the effectiveness of their educational programs (Larocque, 2007). Curriculum must be evaluated to assess effectiveness. Qualitative methodology is an effective means to evaluate programs designed for minority retention and academic success through the data collection, analysis, and reporting that enables the researcher to sort out biases against legitimate claims and assumptions (Green, 2007). Programs developed and used at schools must promote academic excellence among all students. In order for students to be prepared for higher education, quality curriculum must be utilized; therefore, programs must be assessed for effectiveness.

Instructional Delivery, Intelligence, and Multicultural Education

The teaching force is predominately White (Picower, 2009), but minority students are rapidly entering schools (Picower, 2009); therefore, a change with instructional delivery, identification of the gifted process, and multicultural education is paramount within the educational environment in order for access and equity to exist among all students. The classrooms within the schools today are multicultural; therefore, the instructional approaches should utilize the new pedagogies of global literacies to engage and provide all learners with access to AP. The predominant curriculum in most classrooms across America is overwhelmingly mono culturally text based (Taylor, 2008). Racial minority students have the right to receive multilingual pedagogy and dual language identity texts in order for successful assimilation to occur (Bhavnagri &

Prosperi, 2007; Taylor, 2008). Many pathways lead to the same end result of academic achievement; therefore, empowering students in their cultural experiences allows for globalization to occur within the school walls and validates the experiences of all students (Taylor, 2008). Multicultural education is paramount to allow all students to succeed in school today, have opportunities to engage in AP, and graduate prepared for college.

A relationship exists between emotional factors and other cognitive abilities in the instructional environment. EI is the ability to understand and manage one's emotions. Teachers, school leaders, and students should all attempt to become more emotionally aware of one another; self- awareness will bring about a climate conducive for learning (Barchard & Hakstian, 2004; Goleman, 2006). Students' abilities will improve as a result of emotional and social intelligence.

Emotions can either improve or hinder the brain's ability to learn. AP courses require a tremendous amount of emotional and mental fortitude (College Board, 2011). The school culture is an environment that can create an atmosphere conducive to learning or prohibitive of learning based on the emotional connections made between students and faculty. Instructional goals for school improvement that promote student learning can be enhanced with the development of a positive, warm, nurturing school climate (Cohen & Hamilton, 2009). Brain studies have illuminated the relationship between emotions and the capacity to think and learn (Goleman, 2006). Situations that are stressful can cause the brain to function at an inferior level; the more intense the pressure, the weaker the ability to decipher, analyze, and solve problems. In contrast, environments that are

nurturing, warm, respectful, and trusting inspire students to achieve at higher levels because the brain is ready to learn due to a receptive state of mind (Goleman, 2006).

Effective leaders assist staff and students with a strong emotional state of mind so that an instructional atmosphere of positive rapport is created whereby optimal learning can occur (Goleman, 2006). Teachers must have awareness that they can motivate or demotivate students by means of the classroom climate. Additionally, programs such as AP can be negatively or positively influenced through climate because emotional interactions influence student behavior and achievement (Goleman, 2006).

In an effort to increase minority student participation in advanced high school courses and college entrance requirements, new programs have been launched by states and the national government. The programs are designed to promote the academic skills needed for successful completion of high school and acceptance into and retention of college. Access to equitable opportunities should be afforded to all citizens in the United States, not simply to the privileged (Clasen, 2006; Ford, 2010; Tomlinson et al., 2006). Minority students are underrepresented in the gifted educational programs (Olszewski-Kubilius, 2006), and until schools learn how to identify and develop academic potential of low SES minorities, students will continue to be denied access to honors and AP courses, which can in turn negatively impact college retention. Gifted programs provide the instructional environment that is engaging and rigorous. When minority students are identified into gifted programs, there is an increase with minority student participation in honors and AP courses (Olszewski-Kubilius, 2006).

In addition to alternative instructional delivery approaches, teaching to a variety of intelligences, and identifying minorities into gifted programs, multicultural education is paramount for academic success in the 21st century (Johnson, 2006). The number of students from various ethnic backgrounds entering United States schools has significantly increased over the past decade (Bureau, 2010). Instructional environments must be inclusive with multicultural education. Each sociocultural group has different patterns of behavior, belief systems, and value instilled based on their cultural background (source, publication date). In showing appreciation for other cultures, students feel valued, respected, and appreciated (Lee & Dallman, 2008). Multicultural education is a means to acclimate all students to the different cultures represented in the classrooms today.

Multiliteracies pedagogy is the theory that many pathways lead to the same end result of academic achievement; therefore, empowering students through their cultural experiences allows for globalization to occur at school and validates the experiences of all students (Meyer & Rhoades, 2006; Taylor, 2008). Students are able to feel respected and valued regarding their culture, and educational opportunities can be enhanced through multicultural education.

Multicultural education may be instituted within the classroom even though it is not a topic tested on state assessments because of the benefits towards academic achievement (Taylor, 2008). Culturally responsive leaders strive to understand the racial achievement gap in their schools and model how to incorporate cultural knowledge into the school curriculum and assessment practices (Johnson, 2006). When the cultural background of students is understood, a deeper level of appreciation prevails (Lee &

Dallman, 2008). Students are able to experience the sensation of being part of the educational community and educational opportunities such as advanced coursework, honors, and AP can be accessed.

The community and parents can also assist with understanding diversity and bring local cultural knowledge into the classroom. Vygotsky (1981) emphasized that numerous semiotic systems are utilized within people to make meaning and develop higher order thinking skills. Children's thinking processes are embedded within their own culture; therefore, teachers must first connect to students' background knowledge and culture before new learning takes place (Kanu, 2006). School failure can be attributed to the disconnection between school curriculum and students' culture. Educators must possess the knowledge of school curriculum and connect knowledge to the home cultures of the students in order to make learning meaningful (Johnson, 2006; Katsinas & Bush, 2006; Kanu, 2006; Lee & Dallman, 2008; Vygotsky, 1981). Numerous community resources are available to enhance the multicultural education process.

Academic success for minority students is multifaceted. A quality curriculum must be used and evaluated for effectiveness (Attewell & Domina, 2008; Green, 2007; Larocque, 2007), and students must be taught using research based strategies to meet their individual needs (Marzano, 2009; Minott, 2009; Santangelo & Tomlinson, 2009; Wiggins & McTighe, 2008). Student assessment should target the instruction (McTighe & O'Connor, 2005), and teachers need to connect on a social level with students (Greene et al., 2008; Severiens & Wolff, 2008; Tomlinson et al., 2006). To this end, minority students can achieve academic success in a stimulating instructional environment.

Implications

This review provides a strong rationale with which to evaluate current programs in order to assess to what extent all students are receiving a rigorous instructional environment. As my district chose a College Board curriculum designed to meet the needs of all learners and provide equitable access to AP courses through the scaffolded curriculum, I conducted a program evaluation of the SpringBoard curriculum to assess to what extent the implementation of the curriculum is increasing minority student academic achievement and enrollment into AP courses. Based on the findings of the program evaluation, the district may choose to endorse, discontinue use, request professional development, or pursue other avenues toward the pursuit of academic achievement. All students may not choose to attend college, but all students deserve to have the option; a rigorous curriculum with highly qualified teachers will allow students to make that choice for themselves, instead of external factors influencing that decision for them.

After reviewing the findings from the program evaluation, the district may choose to further investigate the extent to which SpringBoard is increasing academic achievement, increasing AP participation, and increasing AP scores among minority students in this local area. A second evaluation that includes school by school analyses may generate additional findings that support or reject the findings from the first tier program evaluation.

Summary

College participation has increased but significant disparities remain among racial minorities in college readiness and enrollment; therefore, improving college access and

readiness for low income and minority students in urban high schools is important. One central strategy to improve college access must be to ensure students leave high school with the academic skills needed to be successful in postsecondary education, meaning high test scores, superior grades, and rigorous coursework. AP participation is one vehicle to ensure college readiness. Disproportionate representation in advanced courses among racial minority and majority students directly impacts student achievement and may have future socioeconomic implications for the minority subgroups. Additionally, college acceptance, test scores, and degree attainment are affected (Shippen et al., 2009), which may impact social mobility. All students should receive the same opportunities to advance themselves. Section 2 will present a description of the methodology used in this study. An introduction to the quantitative design approach, including the type of evaluation, justification for using this type of evaluation, and the overall evaluation goals will be disclosed. Additionally, the setting and sample, instrumentation and materials, data collection instrument, and analysis method will be presented. The quantitative results will be discussed, as well as the assumptions, limitations, scope, and delimitations involved in the program evaluation.

Section 2: The Methodology

Introduction

This doctoral study research project had the goal of providing quantitative evidence about the extent that using the SpringBoard curriculum increases academic achievement, enrollment into AP courses, and AP performance scores among the racial minority students in one southeastern school district. Nationally, AP participation is lower among minority students than majority students (The College Board, 2010); therefore, the College Board created a curriculum to provide equity and access into the rigorous courses of AP for all students by aligning the curriculum to identified National College Board Standards for College Success (College Board, 2009).

Section 2 provides information about the research design and approach, the rationale for using a program evaluation design, a description of the setting and sample, instrumentation and materials, and data collection and analysis. It also describes the measures that were taken to ensure protection of rights for the participants in this study.

The research questions guiding this study investigate to what extent academic achievement increased, AP participation rates increased, and AP performance scores increased among racial minority students over the 4 year implementation period of the SpringBoard curriculum in one school district. I used multiple hypotheses to operationalize these questions and track SpringBoard's impact on reading scores on the state assessment, AP participation rates, and AP performance scores. These hypotheses first assessed the specific impact of the SpringBoard intervention on increasing AP foundational skills, engagement, and performance among minority students. Additionally,

in keeping with the SpringBoard logic model, these analyses were also used to examine the global impact of the program across all students.

$H_1$1: There will be an increase in minority student academic achievement, as measured by the annual state reading assessment, throughout the 4 years of SpringBoard implementation.

$H_0$1: There will be no increase in minority student academic achievement, as measured by the annual state reading assessment, throughout the 4 years of SpringBoard implementation.

$H_2$2: There will be an increase in minority student enrollment in AP throughout the 4 years of SpringBoard implementation.

$H_0$2: There will be no increase in minority student enrollment in AP throughout the 4 years of SpringBoard implementation.

$H_3$3: There will be an increase in minority student AP performance throughout the 4 years of SpringBoard implementation, measured by AP student grades retained in the district's Data Warehouse.

$H_0$3: There will be no increase of minority student AP performance throughout the 4 years of SpringBoard implementation, as measured by AP student grades retained in the district's Data Warehouse.

Research Design and Approach

I used applied research to study the effectiveness and usefulness of the SpringBoard curriculum by employing deductive reasoning and the underlying logic model of the SpringBoard intervention to isolate key performance metrics that define

success. The research design was a quantitative summative-based program evaluation of the curriculum objectives. According to Spaulding (2008), evaluators use the objective or summative-based approach to assess the extent that the objectives of the program are being satisfied. Evaluators focus on key performance indicators matched to program objectives and collect evaluation data to assess the degree to which those objectives are achieved (Spaulding, 2008). Spaulding indicated that program evaluations are used to determine effectiveness, to provide indicators of the overall evaluation, to make informed decisions, and to make recommendations.

This school district implemented SpringBoard because of the disproportionate representation of racial minority students to majority students enrolled in AP courses. SpringBoard has two main objectives: increasing academic achievement and increasing AP enrollment among all students (College Board, 2011). A summative-based quantitative program evaluation was the most logical design to use for this study because it provides a direct assessment of achieving the outcomes of the SpringBoard program within the school district.

Using a program evaluation based on the student achievement, AP enrollment, and AP performance scores over the duration of the SpringBoard implementation period, I assessed the extent to which the local application of this curriculum was impacting students within the district. Key performance indicators include scores reported from the Florida Comprehensive Assessment Test (FCAT) state assessment, the AP enrollment statistics reported from the district's Data Warehouse, and the AP performance scores reported from the district's Data Warehouse. The reported scores include cohorts of

students in this district from 2003 through 2010 to capture comparative data before and during SpringBoard implementation.

Summative performance (annual student test scores) measurements were analyzed and compared to the program objectives, as summative evaluations measure outcomes related to the judgment of the program and its achievements (Spaulding, 2008). The current study examined to what extent utilizing the SpringBoard curriculum increased reading test scores on the state assessment, which would then allow student access and increased enrollment of minority students into AP courses.

This capstone project is a first tier examination of the district wide concern of the disproportionate representation of minority students compared to nonminority students enrolled in AP courses. With this first examination, a longitudinal panel analysis was used to examine the achievement levels measured on the state reading assessment, AP participation, and AP performance.

Description of the Setting and Sample

The school district studied is located in southwest Florida and contains nine high schools and 10 middle schools. Per the District School Board (2011), the school district has a racial minority population of 60% with 61% of the district receiving free/reduced lunch, and 60.7% of students being identified as ELL. The population includes all of the middle schools and high schools in the entire school district. The middle and high schools in this district use SpringBoard with their students as the core curriculum in the English/Language Arts classes, which makes all students from these schools eligible to participate.

The statistics reported in the U.S. Census data (2010) illustrate the sharp contrast between national demographic profiles when compared to characteristics of the current setting and sample. The demographic profiles of this district contain a minority student population different from the national norms in that the minority populations are the numerical majority in the region (see Table1). Moreover, individual schools within this district report a wide range of demographic profiles related to the diversity in race, ethnicity, SES, and ELL subgroups. For example, Table 1 represents the current national and state averages of populations based on the 2010 U.S. Census and local data as reported through the local district's 2011 Data Warehouse.

Table 1

National and Local Population Percentages

Populations	European Americans	Hispanics	African Americans	Haitians
National	72%	16%	13%	.3%
State	79%	21%	16%	Not reported
Local	40%	44%	6%	7%

Note. 2010 U.S. Census

I sampled four subgroups: African American, Haitian Creole, Hispanic, and European American. European American students are the numerical majority in only three of the nine high schools and five of the 10 middle schools. A three-stage stratified random sampling was used and included proportional and nonproportional elements. First, in order to assess the sequential additive effect of the SpringBoard program, only

students with uninterrupted attendance across the longitudinal time frame that defines each group were included in the sampling frame. Then, the sample drew proportionately across all schools in the district. I conducted a deliberate over sampling of three of the minority subgroups: African Americans, Hispanics, and Haitian Creoles. This disproportionate sampling ensured adequate statistical power within each subgroup and allowed for more detailed between groups analyses within the proposed designed. The availability from the data extraction allowed a more extensive over sampling examination to occur than previously anticipated. The data extraction yielded additional cases to further align the representative sample to the target sample. The potential interpretation of this over sampling becomes apparent in the descriptive analyses section.

According to Krejcie and Morgan's (1970) table for determining sample size, a middle school population of 9,000 students should have a minimum sample size of 368 students, and a high school population of 15,000 students should have a minimum sample size of 375 students to ensure the external validity of the sample to the population. To determine sample size to support internal statistical conclusion validity, I used the G Power 3 analyses to find the appropriate threshold of statistical power; according to Lipsey (1990), the sample also provides adequate power to detect small to moderate effects on the outcome resulting from the implementation of SpringBoard.

The statistical power to calculate for internal validity using repeated measures ANOVA (including tests for within, between, and interaction effects) is .95 based on an effect size of .10, error probability (α) of .05, power ($1-\beta$) of .95, number of groups being 4, number of measurements being 4, correspondence of measures being .5 and

nonsphericity correction of 1. The effect size was set at .10 to afford the ability to detect a small effect of the intervention due to the relatively brief deployment of the intervention. The combination of these specifications indicated a minimum requirement of 300 students in the sample.

Based on these analyses, this study included a middle school sample size of over 400 students and a high school sample size of over 400 students to provide additional data to compensate for the potential list-wise effect of missing data. Specifically, the middle school and high school sample sizes included over 200 students for the SpringBoard intervention group and over 200 students for the historical control group. Each group included a minimum of 65 European American, 65 Hispanics, 35 African Americans, and 35 Haitian Creole students. The overall sampling frame included 97% of all students enrolled in the district across the years sampled from the archival data.

Instrumentation and Materials

According to Trochim (2006), report scores use instrument that are reliable and valid. Data analyzed in this study are collected by the school district using two normed and validated instruments. First, in the state of Florida, students take an annual state assessment test called the FCAT, which is a criterion referenced test that measures individual student performance of the state standards identified through the reading, math, writing, and science benchmarks (Florida Department of Education, 2010). Students take the test in the school setting under the administration of school personnel following standardized FCAT testing procedures. Tests are sent to the Department of Education in Tallahassee for scoring and reported to the district approximately 3 months

later. Scale scores are reported for each grade level ranging from 100 to 500, which are transformed into proficiency levels ranging from 1 to 5 reported for individuals (with 1 representing the lowest and 5 the maximum performance). Internal consistency reliabilities using Cronbach's alpha coefficients authenticate the reliability of the FCAT (The Florida Department of Education, 2004). The FCAT has internal consistency and is highly reliable based on the findings that the reliability coefficient using Cronbach's alpha is .90.

The validity of the FCAT instrument is based on content, criterion, and construct related evidence as reported in the Assessment and Accountability Briefing Book produced by the Florida Department of Education (2004). According to the report, instructional specialists judge the standards and skills to validate the content. Concurrently, criterion related validity compared the criterion referenced portion of the FCAT with scores on the norm referenced portion. Finally, convergent and discriminant analyses established the construct validity (The Florida Department of Education, 2004).

For the purpose of this study, I used the raw reading scores on the FCAT to assess the SpringBoard program's objective of increasing academic achievement. This metric was selected as the key indicator because passing scores on this test assist in determining eligibility towards AP course placement. Traditionally in this district, counselors only admitted students scoring a 4 or 5 on a scale of 1 to 5 to enroll in AP courses.

In addition to using the FCAT results reported by the Department of Education, participation rates and performance scores in the AP program were included. I compared schools by AP course enrollment and AP performance before and after the

implementation of SpringBoard. The district's Data Warehouse and the College Board's score report provided AP course enrollment. For the purpose of this evaluation, student AP performance was measured using end-of-course grades obtained through the district's Data Warehouse.

The FCAT results reported by the Florida Department of Education, the AP enrollment reported by the district's Data Warehouse, and the AP student performance scores reported using the district's Data Warehouse provided the data for this study. Variables in this study include FCAT reading scores, minority and nonminority status, minority/ nonminority SpringBoard participation, minority/nonminority historical data, ELL/non-ELL coding, low SES/non low SES status, AP participation, and AP performance scores.

Data Collection and Analysis

Performance measures for this study used archival data extracted and reported for FCAT reading, AP participation, and AP performance from 2003 to 2010. I acquired a data use agreement signed by the superintendent of the school district that granted permission to collect and analyze the data using the district's Data Warehouse; furthermore, I obtained campus approval through the IRB process. Because only de-identified archival student data was analyzed, and there was not any student interaction, parental and student permission was unnecessary. De-identification occurred at the point of data extraction when unique subject identification numbers replaced student names.

Researchers should use both descriptive and inferential statistics when analyzing data to make informed reports (Gravetter & Wallnau, 2000). Descriptive statistics

summarize data to describe the overall performance and the characteristics of the sample (Lodico, Spaulding, & Voegtle, 2010). Descriptive analyses used in this study included tabular analysis of baseline stability, trends, and differences across units on all key indicators over the school years from 2003-2010.

Inferential data were reported using repeated measures ANOVA to test main effect for the condition codes and minority/nonminority factors. ANOVA is a measure that evaluates the mean differences between populations (Lodico et al., 2010). The tests analyzed the difference between the independent variable of minority and nonminority sample students receiving the same amount of SpringBoard curriculum in their English/Language Arts course and the dependent variable of the extent of student achievement as measured on the FCAT. Two dichotomous independent variables include treatment condition and minority status, and significant interaction effects between the intervention condition and minority/nonminority status were examined.

The FCAT reading scores, AP participation rates, and AP performance scores of the sample population cohort in 2003 to 2006 established the historical control group before implementation of SpringBoard. The FCAT reading scores, AP participation rates, and AP performance scores of the sample population cohort in 2007 to 2010 established the intervention group to test hypotheses related to the impact of the implementation of SpringBoard on performance as defined by these key indicators. In addition to repeated measures ANOVA, one-way ANOVA, Pearson correlations, independent sample *t* tests, trend lines, and descriptive statistics were used to analyze and report the data.

Based on the logic model for program evaluation, the research questions guiding this study investigated to what extent academic achievement increased, AP participation rates increased, and AP performance scores increased among racial minority students over the 4 year implementation period of the SpringBoard curriculum in one school district. Multiple hypotheses operationalized these questions by tracking SpringBoard's impact on reading scores on the state assessment, AP participation rates, and AP performance scores. Different analyses were used for each hypothesis as follows:

$H_1$1: There will be an increase in minority student academic achievement, as measured by the annual state reading assessment, throughout the 4 years of SpringBoard implementation.

$H_0$1: There will be no increase in minority student academic achievement, as measured by the annual state reading assessment, throughout the 4 years of SpringBoard implementation. The null hypothesis was tested through the main and interaction effects of multivariate repeated measures ANOVA, univariate two-way ANOVA, or one-way ANOVA analyses of the reading performance criteria.

$H_2$2: There will be an increase in minority student enrollment in AP throughout the 4 years of SpringBoard implementation based on the AP participation reports produced by the district's Data Warehouse.

$H_0$2: There will be no increase in minority student enrollment in AP participation throughout the 4 years of SpringBoard implementation based on the AP participation reports produced by the district's Data Warehouse. The null hypothesis was tested through the main and interaction effects of multivariate repeated measures ANOVA,

univariate two-way ANOVA, or one-way ANOVA analyses of the enrollment performance criteria.

$H_3$3: There will be an increase in minority student AP performance throughout the 4 years of SpringBoard implementation, measured by AP student grades retained in the district's Data Warehouse.

$H_0$3: There will be no increase in minority student AP performance throughout the 4 years of SpringBoard implementation, as measured by AP student grades retained in the district's Data Warehouse. The null hypothesis was tested through the main and interaction effects of multivariate repeated measures ANOVA, univariate two-way ANOVA, or one-way ANOVA analyses of the score performance criteria.

I used additional analyses to construct a comprehensive presentation and understanding of these data. Tabular and graphic presentations of descriptive statistics portrayed trends and patterns in the performance criteria over time. These descriptive analyses validated that the statistical assumptions that the higher order inferential analyses were met. Pearson correlations mapped the associations linking the variables measured in the study to affirm the theoretical linkages between reading performance and AP participation, and explored unanticipated connections that may illuminate the main results.

The district invested funding for the SpringBoard intervention to increase academic achievement for racial minority students. This program evaluation provided statistical evidence necessary for the district to make formative decisions. The following

section outlines specific tests that I conducted to realize the impact of the intervention on student achievement.

Assumptions

Several assumptions were present during this study. I assumed that all English Language Arts teachers using the SpringBoard curriculum received 4 days of professional development training before implementation, per this district's protocol. Second, it was assumed that all English Language Arts teachers were using the SpringBoard curriculum as their core curriculum and with fidelity, as recommended by the district. Finally, I assumed that all test scores used in this study were correct based on the retrieval process from the Department of Education, the district Data Warehouse, and the College Board.

Limitations

Potential limitations for this study include the extent to which teachers implemented the SpringBoard program, teachers received appropriate professional development, teachers believed in the program and implemented with fidelity, and teachers presented materials to the students regarding motivation, efficacy, and engagement. Additionally, there are limitations to the access in some school sites to AP courses. Teachers and counselors admit or exclude students into AP courses based on unrelated factors to FCAT student achievement. Threats imposed on internal validity due to student mobility within the district were partially controlled through the longitudinal panel research design. Also, I controlled for potential contamination of the control group

by the historical control group and used the longitudinal panel design to control for the contamination of the intervention groups.

Scope

The scope of this study was one local school district that has approximately 42,000 students for Kindergarten through 12th grade. The purpose was to provide high external and internal validity within this scope while addressing the local question investigated. The research questions guiding this study investigated to what extent academic achievement increased, AP participation rates increased, and AP performance scores increased among racial minority students over the 4 year implementation period of the SpringBoard curriculum.

The population of this study contains a unique demographic composition of 47% non-English speaking students and 61% low SES students. Additionally, the district is unlike neighboring counties and state demographic percentages. As previously referenced, Table 1 provided the national, local, and state populations to display the extent that this district has a unique demographic representation.

Delimitations

This research study is a first tier analysis reporting the effects of the SpringBoard curriculum implementation as it pertains to academic achievement, AP participation rates, and AP performance scores for minority students in this district. The focus of the first analyses was district wide efficacy of the intervention. The boundaries include limited analyses regarding the success of the program within individual schools that have

diverse student demographics. However, more detail school by school contrasts will be performed in later analyses of these data and fall outside the scope of the current study.

Limitations of the Evaluation

The main limitation is that this initial assessment of the SpringBoard instrument is purely quantitative. Most program evaluations contain both qualitative and quantitative data; however, for the purpose of this study, only quantitative analyses were performed and reported. The research questions guiding this study did not include beliefs or attitudes about the intervention from administrators, teachers, or students. Additionally, I only used state assessment data to measure the increase of minority student academic achievement. Other variables that might increase academic achievement were not controlled in this study.

Participant Protection

Measures were taken to protect human rights from harm in compliance with the National Institute of Health (NIH) guidelines and as stipulated by Walden University policies and procedures. I acquired a data use agreement, signed by the superintendent of the project school district that granted permission to collect and analyze the data using our district Data Warehouse. The data release agreement between the researcher and the school district included confidentiality, anonymity, and protection from harm. Furthermore, campus approval was obtained through the IRB process (Walden University IRB approval # 06-22-11-0154587). Because only de-identified archival student data was analyzed and no interactions occurred with students, it was unnecessary to obtain permission from the students or parents. De-identification occurred at the point of data

extraction when student names were replaced with unique subject identification numbers. Protection from harm is an ethical obligation of the researcher (Lodico et al., 2010) and ensuring confidentiality was the focus to protect the participants.

Descriptive and Additional Preliminary Analyses

Analyses of Middle School

Student data is displayed on Tables 2 through 11 representing the years of 2003 to 2010 for the SpringBoard intervention and historical control groups, as well as the minority/nonminority middle school groups. The FCAT state assessment mean reading scores are reported (see Table 2) by experimental condition groups and demographic subgroups for the middle school students in this study (N = 4,208). The data included the FY10 eighth grade minority and nonminority intervention group that used SpringBoard during FY07 to FY10 (n = 2,140), and the FY06 eighth grade minority and nonminority historical control group (not using SpringBoard) during FY03 to FY06 (n= 2,068).

Table 2

Mean Reading Scores by Experimental Condition Groups for Eighth Graders

Group	Subgroup	*N*	Fifth grade reading	Sixth grade reading	Seventh grade reading	Eighth grade reading
Overall		4,208	300.03 (60.60)	306.55 (61.39)	312.30 (58.21)	307.72 (49.47)
SpringBoard		2,140	311.01 (55.31)	313.52 (57.39)	322.15 (53.44)	314.23 (46.51)
Historical Control		2,068	288.67 (63.67)	299.33 (64.50)	302.10 (61.13)	300.98 (51.51)
SpringBoard	Male	1,111	308.75 (55.55)	311.97 (59.71)	319.85 (55.22)	309.87 (46.70)
	Female	1,029	313.44 (54.96)	315.19 (54.75)	324.62 (51.36)	318.94 (45.86)
Historical Control	Male	1,009	285.08 (64.97)	295.75 (67.30)	294.26 (62.80)	294.48 (53.22)
	Female	1,059	292.10 (62.25)	302.75 (61.55)	309.57 (58.55)	307.19 (49.05)
SpringBoard	Minority	1,189	291.80 (53.94)	296.26 (54.89)	307.14 (51.25)	302.41 (46.36)
	Nonminority	951	335.02 (47.01)	335.10 (53.01)	340.91 (50.10)	329.01 (42.30)
Historical Control	Minority	1,002	258.84 (59.93)	269.72(61.14)	279.30 (60.37)	281.45 (51.29)
	Nonminority	1,066	316.72 (53.55)	327.17 (54.40)	323.53 (53.65)	319.35 (44.50)
SpringBoard	ELL	121	227.75 (59.15)	247.52 (53.51)	262.97 (49.08)	270.26 (47.07)
	non-ELL	2,019	316.00 (50.93)	317.47 (55.17)	325.69 (51.58)	316.87 (45.15)
Historical Control	ELL	164	213.71 (47.36)	233.43 (52.10)	255.84 (52.51)	262.19 (47.82)
	non-ELL	1,904	295.13 (60.71)	305.01 (62.28)	306.09 (60.19)	304.33 (50.45)
SpringBoard	ESE	302	260.82 (59.31)	262.30 (58.46)	275.39 (55.13)	272.83 (51.42)
	non-ESE	1,838	319.25 (50.03)	321.93 (52.66)	329.83 (49.08)	321.04 (41.92)
Historical Control	ESE	260	233.14 (59.42)	243.49 (57.95)	246.96 (53.06)	253.01 (57.05)
	non-ESE	1,808	296.66 (60.20)	307.37 (61.35)	310.03 (58.06)	307.88 (46.79)
SpringBoard	Free/reduced Lunch	1,191	294.92 (54.49)	297.57 (55.35)	308.87 (51.69)	302.79 (46.20)
	Non Free/reduced Lunch	949	331.20 (49.40)	333.53 (53.53)	338.81 (50.88)	328.59 (42.78)
Historical Control	Free/reduced Lunch	940	256.41(59.69)	266.97 (61.80)	274.81 (58.92)	278.07 (51.27)
	Non Free/reduced Lunch	1,128	315.56 (53.62)	326.31 (53.34)	324.85 (53.12)	320.08 (43.26)

The overall reading mean for the SpringBoard intervention group was higher than the overall mean of the historical control group across all four grade levels. Additionally, the standard deviation was lower in the SpringBoard intervention group across the four grade levels. The results of the overall mean and standard deviation suggest that the SpringBoard intervention positively impacted student achievement as reported on the FCAT reading test results. Additionally, I compared data to various subgroups: male/female, minority/nonminority, ELL/non-ELL, ESE/non-ESE, free or reduced lunch/non-free or reduced lunch. In all subgroups, the mean was greater for students who received the SpringBoard intervention, as opposed to students not receiving intervention of SpringBoard in the historical control group.

Furthermore, I calculated the mean FCAT reading scores by ethnic groups and experimental conditions. Table 3 displays the data for the reading means of the FY10 eighth grade SpringBoard intervention group by ethnicity and condition code for FY07to FY10, as well as the reading means of the FY06 eighth grade historical control group by ethnicity and condition code for FY03 to FY06.

Table 3

Mean Reading Scores by Ethnic Groups for Eighth Graders

Ethnic Group	Condition	*N*	Fifth grade reading	Sixth grade reading	Seventh grade reading	Eighth grade reading
African American	SpringBoard	141	293.88 (46.07)	297.12 (53.58)	302.93 (47.38)	303.79 (45.68)
	Historical Control	174	261.39 (52.60)	273.41 (56.37)	279.15 (51.70)	284.14 (41.92)
Haitian Creole	SpringBoard	221	293.67 (50.70)	296.85 (54.04)	310.78 (50.79)	305.24 (41.68)
	Historical Control	186	265.34 (64.04)	278.20 (60.81)	289.11 (63.50)	291.20 (53.99)
Hispanic	SpringBoard	827	290.95 (56.02)	295.95 (55.39)	340.91 (50.10)	301.42 (47.65)
	Historical Control	642	256.26 (60.48)	266.26 (62.25)	276.50 (61.40)	277.89 (52.44)
European American	SpringBoard	951	335.02 (47.01)	335.10 (53.01)	340.91 (50.10)	329.01 (42.30)
	Historical Control	1,066	316.72 (53.55)	327.17 (54.40)	323.53 (53.65)	319.35 (44.50)

The patterns observed in the more granular analysis by individual ethnic groups directly mirrored the aggregated minority grouping, thus confirming the argument to use the aggregate classification. Across all ethnic groups, the mean was greater for the SpringBoard intervention group as opposed to the historical control group. The Hispanic population showed the greatest mean gains across the ethnic groups.

I also assessed associations linking comparison condition codes and demographic subgroups with FCAT reading scores using Pearson correlations. Significant correlations

linking reading score to condition code and all demographic factors were observed at the .01 levels (see Table 4). As hypothesized, a significant correlation existed between the groups ($p < .001$) as reported using the Pearson product-moment correlation.

Table 4

Pearson Correlation Between Condition Codes for Eighth Graders

		Condition Code	Minority Status	ELL	ESE	Free and Reduced Lunch	Gender
Fifth grade read	Pearson C.	.184**	-.401**	-.358**	-.337**	-.369**	.042**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.006
	N	4,208	4,208	4,208	4,208	4,208	4,208
Sixth grade read	Pearson C.	.116**	-.381**	-.295**	-.339**	-.371**	.038*
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.014
	N	4,208	4,208	4,208	4,208	4,208	4,208
Seventh grade read	Pearson C.	.172**	-.320**	-.247**	-.338**	-.321**	.080**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	4,208	4,208	4,208	4,208	4,208	4,208
Eighth grade read	Pearson C.	.134**	-.314**	-.229**	-.350**	-.324**	.105**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	4,208	4,208	4,208	4,208	4,208	4,208

Analyses of High School

I also analyzed high school student FCAT scores, AP participation rates, and AP performance scores. Reported in Table 5 are the FCAT state assessment mean reading scores by experimental condition groups and demographic subgroups ($N = 851$). The data for the SpringBoard intervention group ($n = 545$) includes the reading score means of the FY10 12th grade minority and nonminority students that used SpringBoard in the high schools during FY07 to FY10 (only three high schools used SpringBoard during this timeframe). The data for the historical control group ($n = 306$) includes the reading means of the FY06 12th grade minority and nonminority students (not using SpringBoard) in those same high schools during FY03 to FY06.

Table 5

Mean Reading Scores by Experimental Condition Groups for 12th Graders

Group	Subgroup	*N*	Ninth grade reading	10th grade reading
Overall		851	284.91	281.56
			(51.74)	(54.63)
SpringBoard		545	290.07	282.81
			(51.26)	(57.10)
Historical Control		306	275.71	279.33
			(51.40)	(49.94)
SpringBoard	Male	257	289.64	285.81
			(52.07)	(56.79)
	Female	288	290.45	280.13
			(50.61)	(57.34)
Historical Control	Male	133	268.88	273.95
			(52.64)	(51.93)
	Female	173	280.97	283.46
			(49.94)	(48.09)
SpringBoard	Minority	461	285.27	276.70
			(50.82)	(54.29)
	Nonminority	84	316.43	316.33
			(45.58)	(60.75)
Historical Control	Minority	256	272.13	275.16
			(51.56)	(49.35)
	Nonminority	50	294.04	300.64
			(46.80)	(47.86)
SpringBoard	ELL	70	242.91	243.90
			(50.71)	(52.59)
	non-ELL	475	297.02	288.55
			(47.59)	(55.52)
Historical Control	ELL	23	201.70	211.26
			(43.25)	(39.66)
	non-ELL	283	281.73	284.86
			(47.20)	(46.54)
SpringBoard	ESE	54	264.17	245.11
			(45.27)	(64.76)
	non-ESE	491	292.92	286.96
			(51.12)	(54.70)
Historical Control	ESE	34	249.53	242.56
			(51.32)	(45.61)
	non-ESE	272	279.00	283.92
			(50.55)	(48.60)
SpringBoard	Free/reduced Lunch	419	285.34	277.20
			(51.62)	(57.25)
	Non Free/reduced Lunch	126	305.80	301.48
			(46.89)	(52.64)
Historical Control	Free/reduced Lunch	197	269.03	272.12
			(51.63)	(50.42)
	Non Free/reduced Lunch	109	287.80	292.36
			(48.92)	(46.50)

Similar to the results found with the middle school students, the overall mean for the SpringBoard intervention group was higher than the overall mean of the historical control group for ninth and 10th graders. Additionally, data among all subgroups (male/female, minority/nonminority, ELL/non-ELL, ESE/non-ESE, free or reduced lunch/non-free or reduced lunch) demonstrated that the mean was greater for all students who received the SpringBoard intervention as opposed to the historical control group. The results of the overall mean and standard deviation indicated that the intervention had a positive impact on student academic achievement as reported on the FCAT reading test results.

Furthermore, I calculated the mean FCAT reading scores by ethnic groups and experimental conditions. Table 6 displays the data for the reading means of the FY10 12th grade SpringBoard intervention group by ethnicity and condition code for FY07 to FY10, as well as the reading means of the FY06 12th grade historical control group by ethnicity and condition code for FY03 to FY06.

Table 6

Mean Reading Scores by Ethnic Groups for 12th Grade

Ethnic Group	Condition	*N*	Ninth grade reading score	Tenth grade reading score
African American	SpringBoard	69	273.32 (52.38)	261.26 (52.72)
	Historical Control	33	280.52 (48.61)	285.03 (41.56)
Haitian Creole	SpringBoard	66	260.83 (59.44)	254.00 (62.75)
	Historical Control	53	272.21 (50.20)	269.45 (46.44)
Hispanic	SpringBoard	326	292.75 (46.55)	284.57 (50.84)
	Historical Control	170	270.48 (52.67)	275.03 (51.53)
European American	SpringBoard	84	316.43 (45.58)	316.33 (60.75)
	Historical Control	50	294.04 (46.80)	300.64 (47.86)

The patterns observed in the more granular analysis by individual ethnic groups directly mirrored the aggregated minority grouping, thus confirming the argument to use the aggregate classification. The ethnic groups that showed mean gains were the Hispanic and European American populations.

In addition to mean reading score analyses, associations linking comparison condition codes and demographic subgroups with FCAT reading scores were assessed using Pearson correlations (see Table 7).

Table 7

Pearson Correlations Between Condition Codes for 12th Grade

		Condition Code	Minority Status	English Language Learner Status	Exceptional Student Education Status	Lunch Status	Gender Status
Ninth grade read	Pearson Correlation	.133**	-.194**	-.354**	-.173**	.150**	.042
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.224
	N	851	851	851	851	851	851
10th grade read	Pearson Correlation	.031	-.229**	-.293**	-.233**	.178**	-.004
	Sig. (2-tailed)	.372	.000	.000	.000	.000	.918
	N	851	851	851	851	851	851

Significant correlations linking reading score to condition code and all demographic factors were observed at the .01 levels (Table 7). The ninth grade reading scores were significantly correlated with the condition code, minority status, ELL status, ESE status, free/reduced lunch status, but not gender status. The 10th grade reading scores were significantly correlated with minority status, ELL status, ESE status, free/reduced lunch status, but not condition code or gender status.

In addition to Pearson Correlation analyses, I used SPSS to calculate the total number of AP courses taken for 12th graders of FY10 during their high school years (*N* =

441). Table 8 provides the number of AP courses in each grade level for the historical control group (n = 103), as well as the SpringBoard intervention group (n = 338).

Table 8

Number of AP Courses for FY10 12th Graders by Condition Code

Group	Subgroup	*N*= Total AP courses	Ninth grade	10th grade	11th grade	12th grade
Overall		441	6	33	164	238
SpringBoard		338	3	19	135	181
Historical Control		103	3	14	29	57
SpringBoard	Male	121	0	3	47	71
	Female	217	3	16	88	110
Historical Control	Male	27	1	3	6	17
	Female	76	2	11	23	40
SpringBoard	Minority	282	2	14	106	160
	Nonminority	56	1	5	29	21
Historical Control	Minority	80	3	11	21	45
	Nonminority	23	0	3	8	12
SpringBoard	ELL	31	0	3	12	16
	non-ELL	307	3	16	123	165
Historical Control	ELL	2	0	0	0	2
	non-ELL	101	3	14	29	55
SpringBoard	ESE	8	0	0	3	5
	non-ESE	330	3	19	132	176
Historical Control	ESE	2	0	0	0	2
	non-ESE	101	3	14	29	55
SpringBoard	Free/reduced lunch	247	2	13	94	138
	Non free/reduced lunch	91	1	6	41	43
Historical Control	Free/reduced lunch	55	3	7	15	30
	Non free/reduced lunch	48	0	7	14	27

AP participation rates showed a progressive increase within the years of SpringBoard implementation among all subgroups. By the 12th grade, the overall participation rates more than tripled among the male and female, minority and nonminority, ELL and non-ELL, ESE and non-ESE, and the free and reduced lunch subgroups.

In addition to participation rates, the means for AP performance scores were reported by experimental condition groups and demographic subgroups (see Table 9). The data for the SpringBoard intervention group included the means of AP performance scores for the FY10 12th grade minority and nonminority cohort that used SpringBoard in the high schools during FY07 to FY10. Also, the means of AP performance scores were reported for the historical control group for the FY06 12th grade minority and nonminority cohort (not using SpringBoard) in the high schools during FY03 to FY06.

Table 9

Mean AP Performance Scores for FY10 12th Graders by Condition Code

Group	Subgroup	Ninth grade	10th grade	11th grade	12th grade	Ninth-12th Average
Overall		3.5	3.21	3.07	2.93	2.94
		(.55)	(.86)	(.86)	(.78)	(.79)
SpringBoard		3.67	3.00	2.97	2.92	2.89
		(.58)	(.94)	(.89)	(.78)	(.79)
Historical Control		3.33	3.50	3.53	2.97	3.09
		(.58)	(.65)	(.50)	(.80)	(.76)
SpringBoard	Male	0.00	2.67	2.86	2.72	2.73
		(.00)	(1.53)	(1.05)	(.86)	(.87)
	Female	3.67	3.06	3.03	3.05	2.83
		(.58)	(.85)	(.79)	(.70)	(.75)
Historical Control	Male	4.00	3.00	3.50	3.29	3.25
		(.00)	(1.00)	(.55)	(.83)	(.78)
	Female	3.00	3.64	3.54	2.83	3.03
		(.00)	(.50)	(.50)	(.75)	(.76)
SpringBoard	Minority	3.50	2.93	2.94	2.93	2.88
		(.71)	(.99)	(.90)	(.77)	(.80)
	Nonminority	4.00	3.20	3.07	2.83	2.98
		(.00)	(.84)	(.85)	(.88)	(.77)
Historical Control	Minority	3.33	3.63	3.50	2.90	3.06
		(.58)	(.50)	(.50)	(.79)	(.79)
	Nonminority	0.00	3.0	3.62	3.21	3.20
		(.00)	(1.0)	(.52)	(.78)	(.67)
SpringBoard	ELL	0.00	3.33	3.46	3.06	3.18
		(.00)	(1.15)	(.58)	(.75)	(.68)
	non-ELL	3.67	2.93	2.92	2.91	2.86
		(.58)	(.93)	(.90)	(.78)	(.80)
Historical Control	ELL	0.00	0.00	0.00	3.00	3.00
		(.00)	(.00)	(.00)	(.00)	(.00)
	non-ELL	3.33	3.50	3.53	2.96	3.10
		(.58)	(.65)	(.50)	(.81)	(.78)
SpringBoard	ESE	0.00	0.00	2.33	3.10	2.81
		(.00)	(.00)	(.58)	(.74)	(.75)
	non-ESE	3.68	3.00	2.98	2.92	2.90
		(.58)	(.94)	(.89)	(.78)	(.79)
Historical Control	ESE	0.00	0.00	0.00	3.00	3.00
		(.00)	(.00)	(.00)	(0.00)	(0.00)
	non-ESE	3.33	3.50	3.53	2.97	3.10
		(.58)	(.65)	(.50)	(.81)	(.78)
SpringBoard	Free/reduced lunch	3.50	2.92	2.99	2.99	2.74
		(.71)	(.86)	(.87)	(.75)	(.83)
	Non free/reduced lunch	4.00	3.17	2.92	2.70	2.95
		(0.00)	(1.17)	(.93)	(.84)	(.77)
Historical Control	Free/reduced lunch	3.33	3.57	3.43	3.07	3.22
		(.58)	(.53)	(.50)	(.83)	(.77)
	Non free/reduced lunch	0.00	3.43	3.64	2.85	2.94
		(.00)	(.79)	(.50)	(.76)	(.75)

As displayed in Table 9, the AP performance score means were higher among the historical control groups in all areas. However, the increased AP participation rates among all subgroups may have some influence on the decrease in AP performance scores.

In addition to reporting the participation rates and performance scores from the three pilot high schools before and during SpringBoard implementation, I analyzed the other six high school participation rates and performance scores in this district for 11th graders during FY10 (SpringBoard intervention group) and FY07 (historical control group). A frequency distribution was used to examine the total number of AP courses taken for 11th graders during these 2 years based on their condition code. Table 10 provides the number of AP courses for the historical control group, as well as the SpringBoard intervention group.

Table 10

Number of AP Courses for 11th Graders by Condition Code

Group	Subgroup	*N*= Total AP Tests
Overall		1,132
SpringBoard		608
Historical Control		524
SpringBoard	Male	250
	Female	358
Historical Control	Male	228
	Female	296
SpringBoard	Minority	164
	Nonminority	444
Historical Control	Minority	110
	Nonminority	414
SpringBoard	ELL	18
	non-ELL	590
Historical Control	ELL	13
	non-ELL	511
SpringBoard	ESE	13
	non-ESE	595
Historical Control	ESE	6
	non-ESE	518
SpringBoard	Free/reduced lunch	117
	Non free/reduced lunch	491
Historical Control	Free/reduced lunch	52
	Non free/reduced lunch	472

AP participation rates among the SpringBoard intervention 11th grade students revealed an increase in all subgroups. Most noteworthy were the minority, ELL, and lunch status groups. AP participation rates for minority students increased by 54 courses, and both the ELL and Low SES (free/reduced lunch) AP participation rates more than doubled.

Additionally, I analyzed the AP performance scores for these same 11th grade students. In Table 11, the means for the end of course AP grades are reported by experimental condition groups and demographic subgroups. The data for the SpringBoard intervention group included the AP performance score means of the FY10 11th grade minority and nonminority students that used SpringBoard in the high schools during FY07 to FY10. The data for the historical control group included the AP performance score means of the FY06 11th grade minority and nonminority students (not using SpringBoard) in the high schools during FY03 toFY06.

Table 11

Mean AP Performance Scores for FY10 11th Graders by Condition Code

Group	Subgroup	11th grade Averages
Overall		3.14 (.79)
SpringBoard		3.25 (.78)
Historical Control		3.01 (.78)
SpringBoard	Male	3.13 (.81)
	Female	3.34 (.76)
Historical Control	Male	2.84 (.84)
	Female	3.14 (.72)
SpringBoard	Minority	3.19 (.83)
	Nonminority	3.28 (.77)
Historical Control	Minority	2.96 (.73)
	Nonminority	3.02 (.80)
SpringBoard	ELL	3.31 (.96)
	non-ELL	3.25 (.78)
Historical Control	ELL	3.23 (.73)
	non-ELL	3.01 (.79)
SpringBoard	ESE	3.54 (.52)
	non-ESE	3.25 (.79)
Historical Control	ESE	3.17 (.75)
	non-ESE	3.01 (.79)
SpringBoard	Free/reduced lunch	3.25 (.81)
	Non free/reduced lunch	3.26 (.78)
Historical Control	Free/reduced lunch	2.90 (.69)
	Non free/reduced lunch	3.02 (.79)

Although there is not a significant difference between the means, the intervention cohort increased performance using the SpringBoard intervention. The results indicated that the mean AP performance scores increased across all subgroups. The most significant gains occurred among the low SES population (free/reduced lunch) and the ESE population.

The descriptive statistical analyses provided evidence that the SpringBoard cohorts improved their academic achievement using the intervention. The middle and high school intervention groups scored higher on the FCAT reading test based on the overall reading mean. Additionally, all subgroups (male/female, minority/nonminority, ELL/non-ELL, ESE/non-ESE, free or reduced lunch/non free or reduced lunch) obtained a higher reading mean on the FCAT. The middle school students showed mean gains across all ethnic groups (African American, Haitian Creole, Hispanic, European American), and the high school students showed mean gains with the Hispanic and European American populations. Pearson correlations revealed significant correlations for middle and high school students linking reading scores to condition code and all demographic factors were observed at the .01 levels. Also, AP participation rates showed a progressive increase, as well as AP mean performance scores increased across all subgroups within the years of the SpringBoard implementation.

Inferential Analyses

Using inferential tests, I assessed the guiding research questions and hypotheses of this capstone project based on the proposed problem. The problem pertains to cultural diversity in AP enrollment, as there are a limited number of racial minority students

participating in high school AP classes within this district. The research questions guiding this study investigated to what extent academic achievement increased, AP participation rates increased, and AP performance scores increased among racial minority students over the 4 year implementation period of the SpringBoard curriculum in one school district. Multiple hypotheses operationalized these questions by tracking SpringBoard's impact on reading scores on the state assessment, AP participation rates, and AP performance scores. Different analyses were used for each hypothesis as follows:

Preliminary Analyses for First Hypothesis Test

I performed a series of tests to explore significant violations of normality and homoscedasticity that might interfere with interpretation of the multivariate analyses used to examine the hypotheses. These tests included Box's test of equality of covariance matrices, Mauchly's test of sphericity, and Levene's test of equality of error variances.

Visual analyses performed facilitated understanding the relative contribution of skew and kurtosis to the statistically significant and practical violations of normality because the very large sample size (n= 4,208) would increase the likelihood that minor to moderate deviations would reach the threshold for statistical significance. Skew and kurtosis provide central information about the shape of distribution and assessment of normality (DeCarlo, 1997). Figures 1 to 4 display histograms of the FCAT reading scores for each grade level by the intervention of SpringBoard and the historical control group that did not receive the intervention.

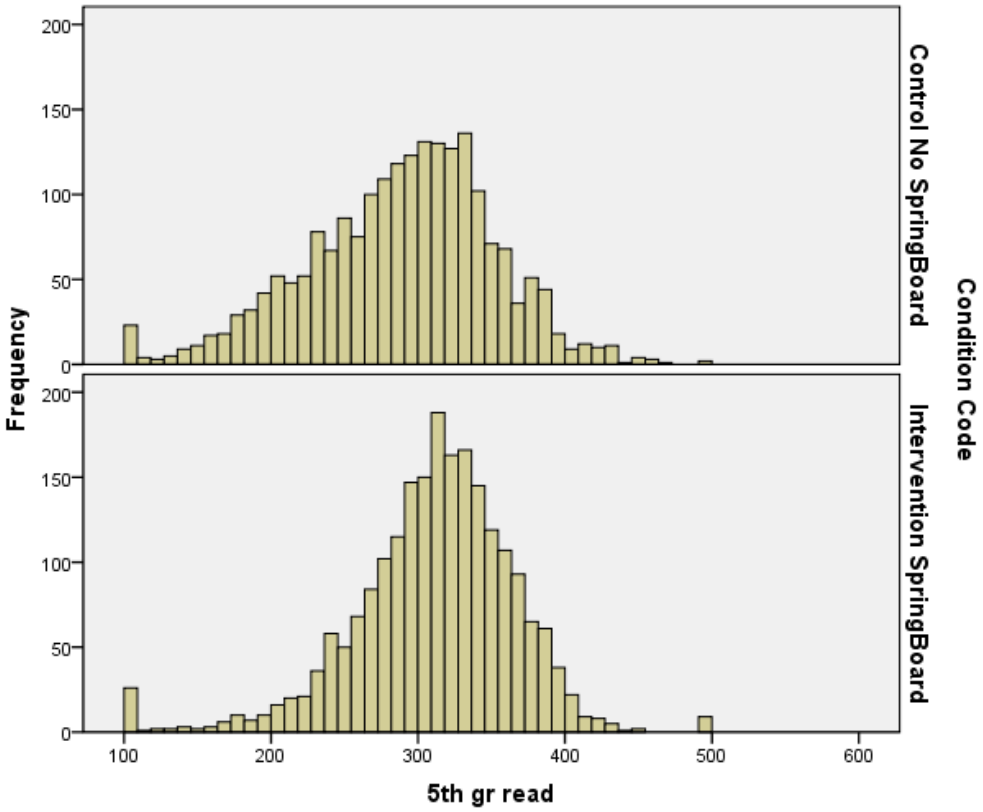

Figure 1. Histogram of fifth grade FCAT scores with condition codes

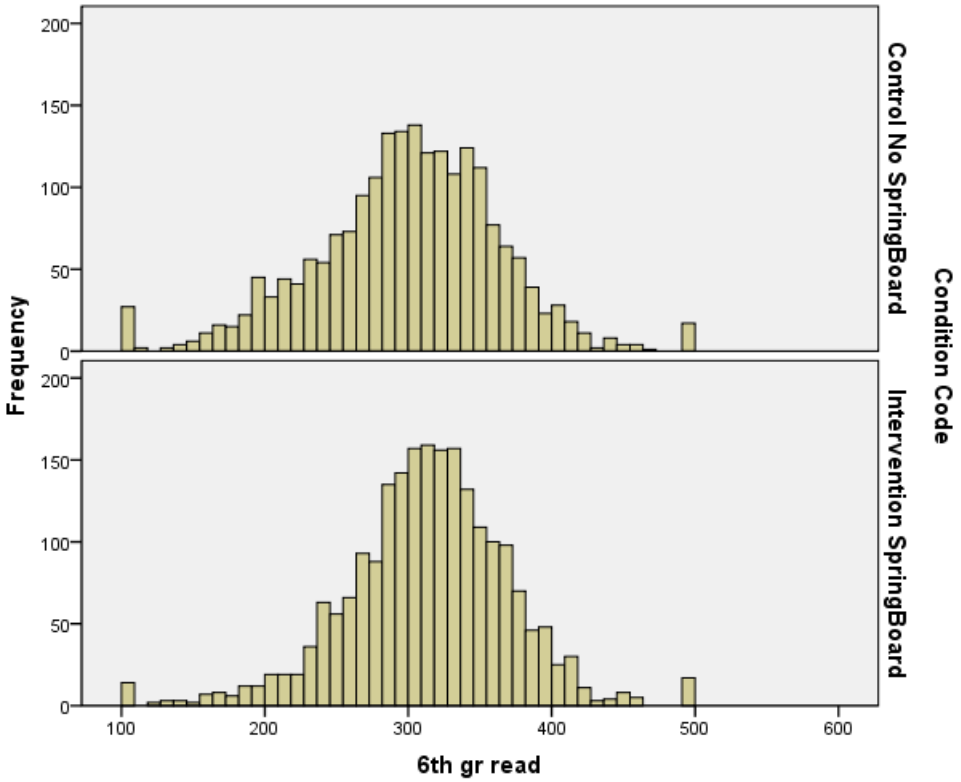

Figure 2. Histogram of sixth grade FCAT scores with condition codes

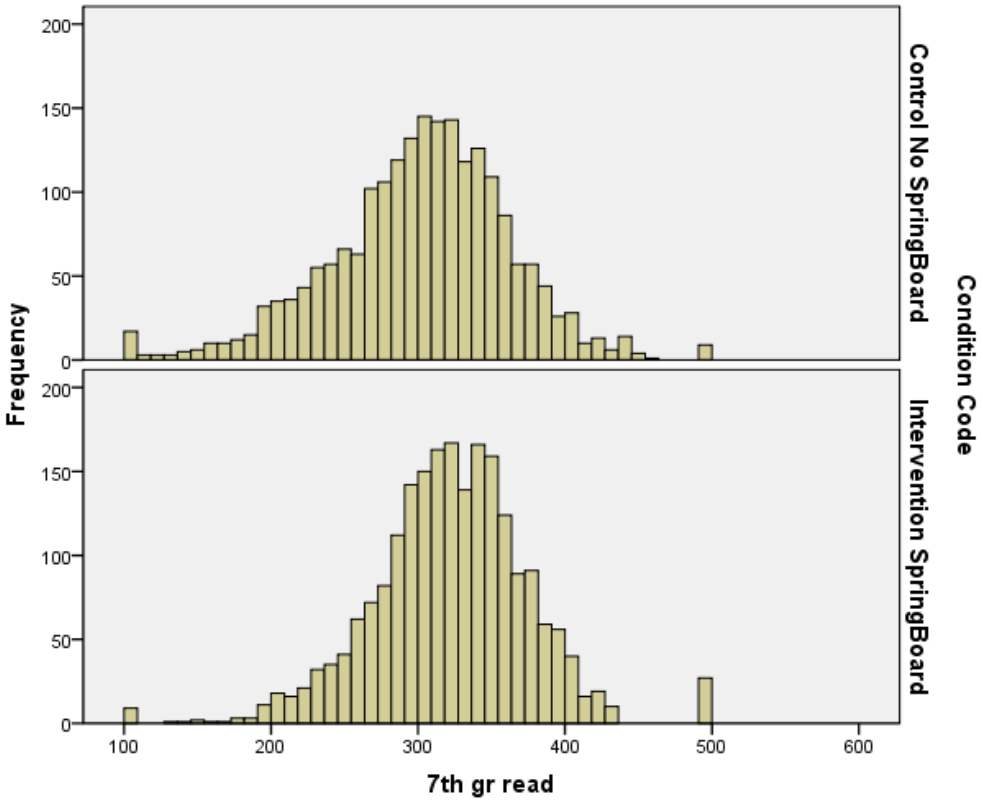

Figure 3. Histogram of seventh grade FCAT scores with condition codes

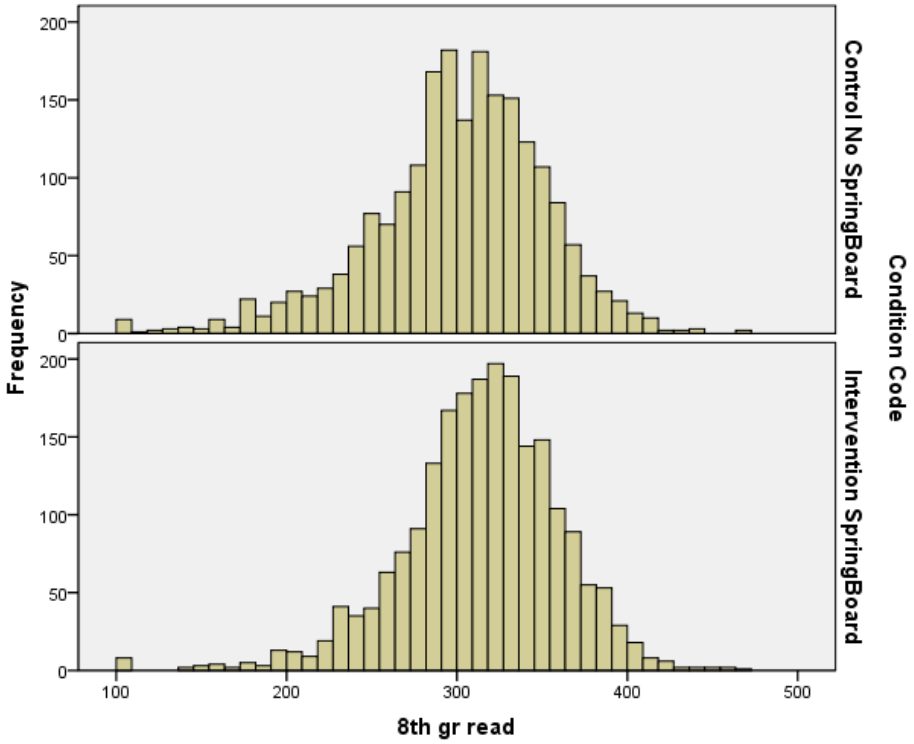

Figure 4. Histogram of eighth grade FCAT scores with condition codes

A recommended strategy to assess normality is to use Kolmogorov-Smirnov and Shapiro-Wilk tests of skew and kurtosis (DeCarlo, 1997). Table 12 displays the results of these analyses and validates departures from normality. The reported data confirmed that the deviations of skew and kurtosis were statistically significant ($p < .01$) across testing at all four grade levels.

Table 12

Tests of Normality for Condition Codes and Grade Levels

Grade	Condition Code	Mean	Range	Variance	Skewness	Kurtosis	Kolmogorov-Smirnov		Shapiro-Wilk	
							df	sig	*df*	sig.
Fifth	SpringBoard	311.01 (1.20)	400	3058.78 (55.31)	-.77 (.05)	2.31 (.11)	2,140	.00	2,140	.00
	Control No SpringBoard	288.67 (1.40)	400	4054.06 (63.67)	-.36 (.05)	.27 (.11)	2,068	.00	2,140	.00
Sixth	SpringBoard	313.52 (1.24)	400	3293.58 (57.39)	-.30 (.05)	1.54 (.11)	2,140	.00	2,140	.00
	Control No SpringBoard	299.33 (1.42)	400	4159.59 (64.50)	-.27 (.05)	.84 (.11)	2,068	.00	2,140	.00
Seventh	SpringBoard	322.15 (1.16)	400	2855.34 (53.44)	-.15 (.05)	1.86 (.11)	2,140	.00	2,140	.00
	Control No SpringBoard	302.10 (1.34)	400	3736.86 (61.13)	-.36 (.05)	.85 (.11)	2,068	.00	2,140	.00
Eighth	SpringBoard	314.23 (1.01)	369	2163.07 (46.51)	-.67 (.05)	1.89 (.11)	2,140	.00	2,140	.00
	Control No SpringBoard	300.98 (1.13)	369	2652.89 (51.51)	-.64 (.05)	1.17 (.11)	2,068	.00	2,140	.00

Previous investigations established that repeated measures demonstrate a reasonable robustness to moderate violation of normality (Tabachnick & Fidell, 2000). However, repeated measures are less robust to violations of homoscedasticity.

Tests such as Box's test of equality of covariance matrices, Levene's test of equality of error variances, and Mauchly's test of sphericity were developed to understand the effect of equality of variances (DeCarlo, 1997). The Box, Mauchly, and Levene tests were each significant ($p < .01$); therefore, I established a series of precautionary adjustments to compensate for Type I error in the tests of the hypotheses. Also, I set the Bonferroni correction to $p < .01$ for the hypothesis test to be conservative,

and employed Greenhouse-Geisser and Huynh-Feldt corrections in interpreting multivariate results related to the hypotheses.

Inferential Analyses for Hypothesis #1

$H_1$1: There will be an increase in minority student academic achievement, as measured by the annual state reading assessment, throughout the 4 years of SpringBoard implementation.

I used repeated measures ANOVA to test the first hypothesis and cross sectional ANOVAs validated the multivariable analyses. Descriptive statistics' results are reported in Table 13 by means for each grade level, minority status, and condition code for intervention and control groups.

Table 13

Means of Condition Code, Minority Status, and Grade Levels

Group	Subgroup	*N*	5th grade reading	6th grade reading	7th grade reading	8th grade reading
Overall		4,208	300.03	306.55	312.30	307.72
			(60.60)	(61.39)	(58.21)	(49.47)
SpringBoard		2,140	311.01	313.52	322.15	314.23
Intervention			(55.31)	(57.39)	(53.44)	(46.51)
Historical		2,068	288.67	299.33	302.10	300.98
Control			(63.67)	(64.50)	(61.13)	(51.51)
SpringBoard	Minority	1,189	291.80	296.26	307.14	302.41
			(53.94)	(54.89)	(51.25)	(46.36)
	Nonminority	951	335.02	335.10	340.91	329.01
			(47.01)	(53.01)	(50.10)	(42.30)
Historical	Minority	1,002	258.84	269.72	279.30	281.45
Control			(59.93)	(61.14)	(60.37)	(51.29)
	Nonminority	1,066	316.72	327.17	323.53	319.35
			(53.55)	(54.40)	(53.65)	(44.50)

The overall sample size was 4,208 students comprising the intervention group (n = 2,140) and the control group (n = 2,068). The intervention sample size contained minority students (n = 1,189) and nonminority students (n = 951), and the historical group included minority students (n = 1,002) and nonminority students (n = 1,066).

The mean for the SpringBoard intervention cohorts progressively increased and was higher than the mean of the historical control cohorts. Additionally, the mean scores were higher for the minority students across each grade level that engaged in the intervention as opposed to the control group.

I performed multivariate analyses to test main effect and interactions. The variables under consideration included gender, minority status, and condition code when compared to the scores reported on the FCAT for the students in this study (see Table 14).

Table 14

Multivariate Tests for FCAT Scores, Gender, Minority Status, and Condition Code

Effect		Value	*F*	Hypothesis *df*	Error *df*	Sig.	Partial Eta Sq
FCAT scores	Pillai's Trace	.036	53.028[a]	3.000	4201.00	.000	.036
	Wilks' Lambda	.964	53.028[a]	3.000	4201.00	.000	.036
	Hotelling's Trace	.038	53.028[a]	3.000	4201.00	.000	.036
	Roy's Largest Root	.038	53.028[a]	3.000	4201.00	.000	.036
FCAT	Pillai's Trace	.009	12.650[a]	3.000	4201.00	.000	.009
scores *	Wilks' Lambda	.991	12.650[a]	3.000	4201.00	.000	.009
Gender	Hotelling's Trace	.009	12.650[a]	3.000	4201.00	.000	.009
	Roy's Largest Root	.009	12.650[a]	3.000	4201.00	.000	.009
FCAT	Pillai's Trace	.026	36.843[a]	3.000	4201.00	.000	.026
scores *	Wilks' Lambda	.974	36.843[a]	3.000	4201.00	.000	.026
Condition	Hotelling's Trace	.026	36.843[a]	3.000	4201.00	.000	.026
Code	Roy's Largest Root	.026	36.843[a]	3.000	4201.00	.000	.026
FCAT	Pillai's Trace	.072	108.245[a]	3.000	4201.00	.000	.072
scores *	Wilks' Lambda	.928	108.245[a]	3.000	4201.00	.000	.072
Minority	Hotelling's Trace	.077	108.245[a]	3.000	4201.00	.000	.072
	Roy's Largest Root	.077	108.245[a]	3.000	4201.00	.000	.072
FCAT	Pillai's Trace	.004	5.079[a]	3.000	4201.00	.002	.004
scores *	Wilks' Lambda	.996	5.079[a]	3.000	4201.00	.002	.004
Condition	Hotelling's Trace	.004	5.079[a]	3.000	4201.00	.002	.004
Code *	Roy's Largest Root	.004	5.079[a]	3.000	4201.00	.002	.004
Minority							

Partial Eta square is not dependent on how many factors there are, but provides the contribution of each factor as if it were the only variable (Tabachnick & Fidell, 2001). The analyses were used to document a significant main effect and interactions. The overall main effect of the FCAT scores were F= 53.03, $p < 01$, and $\eta_p^2 = .036$ (see Table

14). Additionally, differences in the means with gender and minority variables among the two condition codes had significant interactions.

ANOVAs are not robust for violations of sphericity, but can be corrected using certain statistical adjustments, such as Partial Eta Squared analyses (Tabachnick & Fidell, 2001). I performed within subject tests and used Partial Eta Squared (see Table 15) to document that the interaction between condition code and minority status was significant, as the minority student scores were consistently lower than nonminority student scores. However, results indicated that condition code influenced the interaction. The within subject factors revealed a positive interaction effect of gender and minority status between condition codes as significant ($p < .01$). The Greenhouse-Geisser and Huynh-Feldt corrected values for effects involving all variables were significant ($p < .01$) for gender, minority status, and condition codes.

Table 15

Tests of Within-Subjects Effects for FCAT, Gender, Minority Status, and Condition Code

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
FCAT scores	Sphericity Assumed	112274.79	3	37424.930	56.321	.000	.013
	Greenhouse-Geisser	112274.79	2.970	37800.351	56.321	.000	.013
	Huynh-Feldt	112274.79	2.975	37734.793	56.321	.000	.013
FCAT	Sphericity Assumed	26752.48	3	8917.495	13.420	.000	.003
scores *	Greenhouse-Geisser	26752.48	2.970	9006.948	13.420	.000	.003
Gender	Huynh-Feldt	26752.48	2.975	8991.328	13.420	.000	.003
FCAT	Sphericity Assumed	70177.69	3	23392.564	35.204	.000	.008
scores *	Greenhouse-Geisser	70177.69	2.970	23627.222	35.204	.000	.008
Condition	Huynh-Feldt	70177.69	2.975	23586.245	35.204	.000	.008
Code							
FCAT	Sphericity Assumed	223955.54	3	74651.848	112.345	.000	.026
scores *	Greenhouse-Geisser	223955.54	2.970	75400.702	112.345	.000	.026
Minority	Huynh-Feldt	223955.54	2.975	75269.933	112.345	.000	.026
FCAT	Sphericity Assumed	10631.09	3	3543.695	5.333	.001	.001
scores *	Greenhouse-Geisser	10631.09	2.970	3579.243	5.333	.001	.001
Condition	Huynh-Feldt	10631.09	2.975	3573.035	5.333	.001	.001
Code *							
Minority							
Error	Sphericity Assumed	8378538.81	12609	664.489			
(FCAT	Greenhouse-Geisser	8378538.81	12483.772	671.154			
scores)	Huynh-Feldt	8378538.81	12505.460	669.990			

In addition to Partial Eta Square, I observed the overall pattern of between subjects effects within the study (see Table 16) with particular attention concentrated on the condition code and minority status interaction. Tests of between subject effects provided evidence of a significant effect ($p < .01$) between gender, condition code, and minority status. There was a positive interaction effect ($p < .01$) between the condition code and minority status.

Table 16

Tests of Between Subject Effects

Source	Type III Sum of Squares	df	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	7.758E8	1	7.758E8	86044.982	.000	.953
Gender	258857.019	1	258857.019	28.711	.000	.007
Condition Code	1744254.088	1	1744254.088	193.461	.000	.044
Minority	7536736.261	1	7536736.261	835.926	.000	.166
Condition Code * Minority	199774.360	1	199774.360	22.158	.000	.005
Error	3.789E7	4203	9016.036			

To compensate for potential effect of the multivariate normality issues, I performed independent ANOVAs for each FCAT grade level. A sequence of four cross sectional ANOVAS were tested for each grade level and findings were used to confirm the results from the multivariate tests.

The inferential analyses performed yielded results confirming a mean increase of student achievement as reported on the reading section of the FCAT across all four grade levels for the SpringBoard intervention groups. The inferential analyses provided the support to reject the first null hypothesis that there would not be a difference with student academic achievement after the intervention. Thus, it appears that the SpringBoard intervention contributes a modest positive effect on reading performance.

Preliminary Analyses for Second Hypothesis Test

Following the approach used in testing the first hypothesis, I once again performed Box's test of equality of covariance matrices, Mauchly's test of sphericity, and Levene's test of equality of error variances to explore violation of normality and homoscedasticity that might interfere with the interpretation of multivariate analyses. All three tests were significant ($p < .01$). Paralleling the previous analyses, as well as employing all of the previous adjustments applied in testing the first hypothesis, the data confirmed that the deviations of skew and kurtosis were statistically significant ($p < .01$) across the 4 years of AP participation.

Inferential Analyses for Hypothesis #2

$H_2$2: There will be an increase in minority student enrollment in AP throughout the 4 years of SpringBoard implementation based on the AP participation reports produced by the district's Data Warehouse.

I created charts for visual analyses of AP participation for Grades 9 through 12. Student enrollments in AP courses are depicted in Figures 5 through 9 by the intervention and control group for minority and nonminority students. The intervention group is about

3 times larger than control group due to the enrollment and demographic characteristics of the three project high schools; therefore, I used percentage of participation for graphical displays and visual analyses segmented by condition code and minority status.

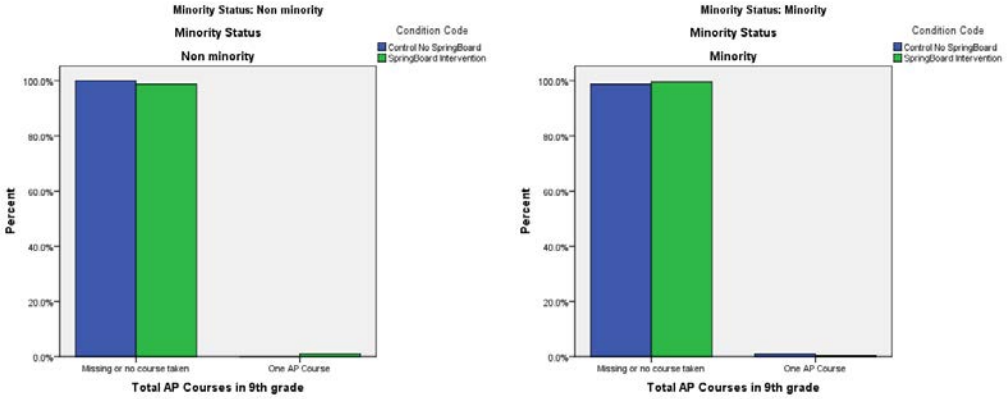

Figure 5. AP participation of ninth grade by minority status

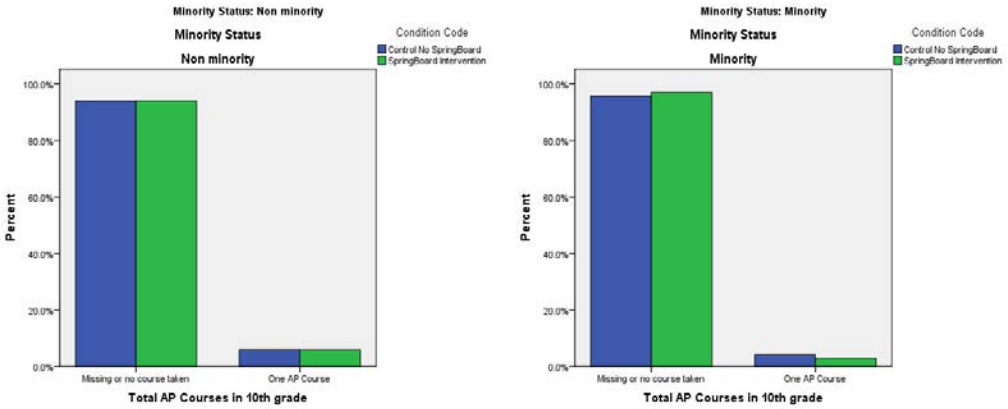

Figure 6. AP participation of 10th grade by minority status

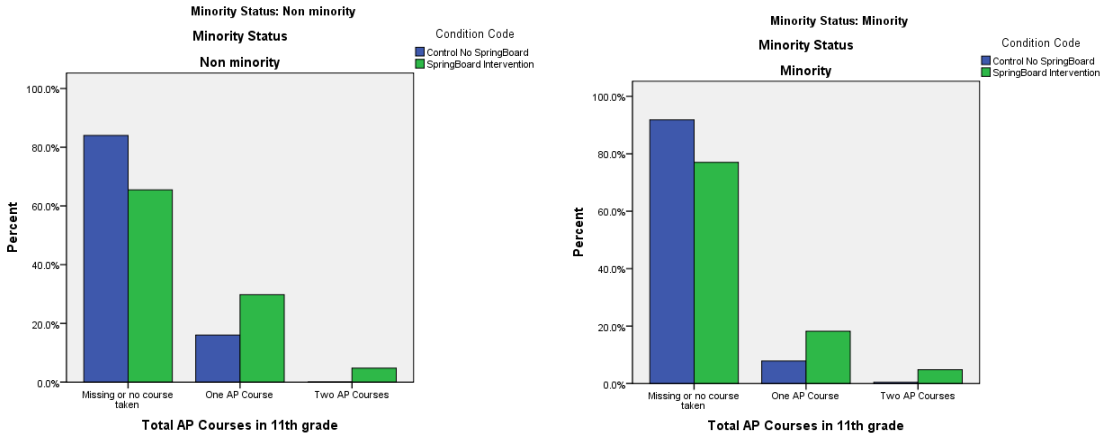

Figure 7. AP participation of 11th grade by minority status

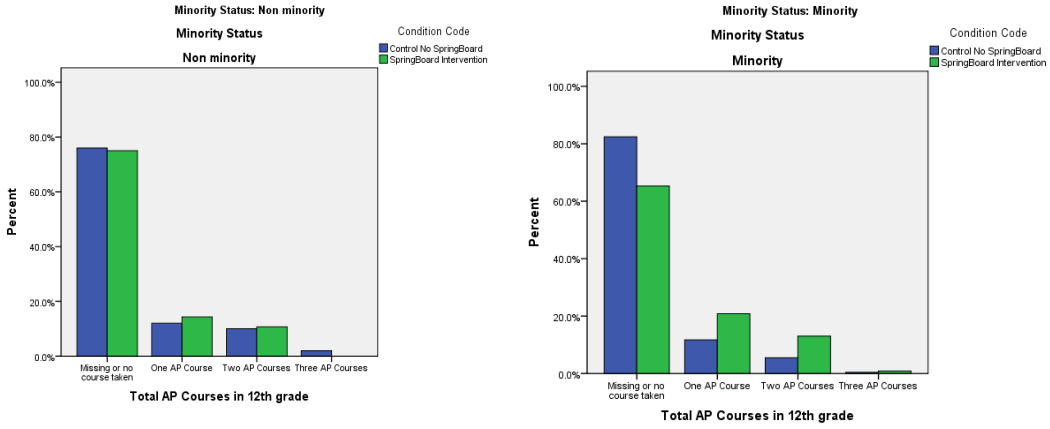

Figure 8. AP participation of 12th grade by minority status

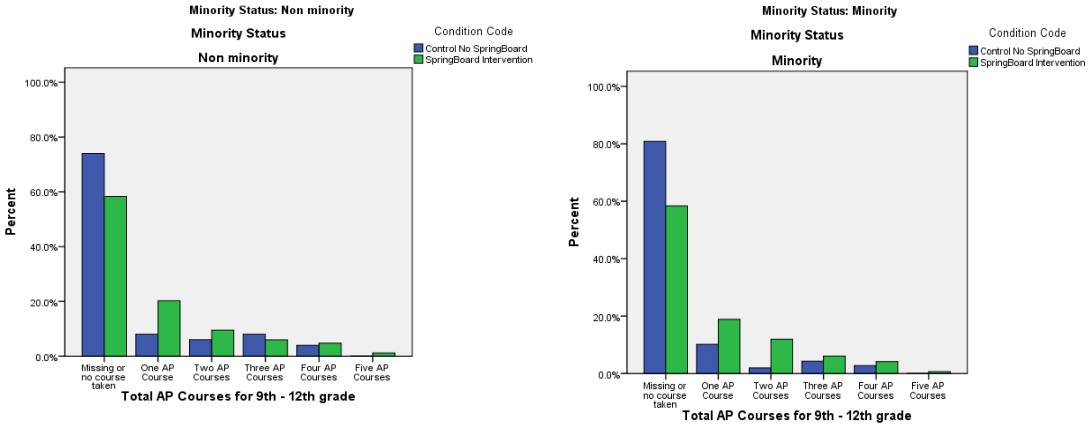

Figure 9. Total AP participation of ninth through 12th grades by minority status

The charts (Figures 5 - 9) show the degree to which students were enrolled in AP courses during their high school years. During the ninth and 10th grade years, students in this study participated in AP courses at the same rate regardless of the control or intervention. However, Figure 7 indicates confirmation to support that approximately 10 to 15% more students engaged with AP courses among minority students and nonminority students using SpringBoard during the 11th grade year. Additionally, AP participation continued to increase during the 12th grade year for minority students but remained the same for nonminority students. The overall AP participation rate for ninth through twelfth grade intervention group increased for minority and nonminority students by approximately 15%, as visually demonstrated in Figure 9.

I reported the descriptive statistic results (see Table 17) by number of AP courses taken for each grade level, minority status, and condition code of intervention or control groups. The overall sample size included 441 students encompassing the intervention group (n = 338) and the control group (n = 103). The intervention sample size included

minority status (n = 282) and nonminority status (n = 56), and the historical control group contained minority status (n = 80) and nonminority status (n = 23). The nonminority group (n = 23) was a small sample size, and even with the over sampling of students in this study, there were only 23 nonminority students that participated in AP courses at these high schools during the control group years.

Based on the descriptive analyses, the number of AP courses taken by minority students within the intervention group was higher than the control group and progressively increased from ninth grade through 12th grade. The most noticeable increase of AP participation occurred with the 12th grade minority intervention group (n = 160) as compared to the 12th grade minority control group (n = 45).

I performed multivariate tests (see Table 18) for AP participation to test for effects of condition code and minority status. Repeated measures ANOVA tested the second hypothesis and a sequence of 4 cross sectional ANOVAs tested each grade level. Findings from the cross sectional ANOVAs confirmed the results from the multivariable analyses. The analyses for the multivariate overall main effect for AP participation, Wilks Lambda = .97, $p < .01$, $\eta p2 = .028$, displayed a significant interaction for AP participation among all students; however, there was not a significant condition code X minority status interaction.

Furthermore, within subject tests were performed (see Table 19) and observed using Partial Eta Squared. Tests of within subjects documented a significant interaction between AP participation and condition code ($p < .01$), and a significant interaction between AP participation, condition code, and minority status ($p < .01$). Although the

interaction between AP participation and minority status was not significant, the condition code still revealed a significant interaction ($p < .01$) for all students in this study (Note; in this case a significant interaction would have been observed if the assumption of a normal distribution had been valid; however, the interaction failed to achieve significance once corrections were made for violations of normality and homoscedasticity). The Greenhouse-Geisser and Huynh-Feldt corrected values for effects involving all variables were significant for AP participation and condition code ($p < .01$) but not for AP participation, condition code, and minority status.

In addition to within subject tests, I observed the overall patterns of between subject effects (see Table 20) within the study, with particular attention concentrated on the condition code and minority status interaction. Tests of between subject effects provided evidence of a significant effect with condition code ($p < .01$) but not between subject effects for condition code X minority status interaction.

Furthermore, I performed univariate ANOVAs to test for significant effect of condition code that indicated an overall conditional effect; however, this effect is believed to be due to the list-wise panel sample size reduction. Also, there was not a significant interaction by condition code with the minority group.

Univariate ANOVAs demonstrated significant condition code and minority status interactions with 11th and 12th grades ($p < .01$). The 11th grade intervention group had significant main effects for condition code but not a main effect for minority status. Also, there was not a significant interaction between condition code and minority status.

With the 12th grade intervention group, a main effect was present for condition code but the interaction by condition code was not significant at the $p < .01$ level. Although the between subjects did not show significant effect with 12th grade, the univariate tests captured the effect between subject condition and showed this effect for the minorities in their 12th grade year.

A conspicuous lag effect was apparent in the visual inspection of Tables 17 through 20 indicating that the benefit of the intervention on AP participation was not realized until the 11th and 12th grade years. Additional one-way ANOVA analyses confirmed that the SpringBoard intervention exerted a lagged effect where significant differences between conditions began to emerge during the 11th grade. The lagged effect appeared to be further delayed within the minority condition. For example, Figure 8 illustrates that within the 12th grade students, more of an effect for condition was apparent within the minority group. The charts illustrate an overall increase of approximately 15 % with AP participation among the minority students.

Table 17

Number of AP Courses by Grade, Minority Status, and Condition Code

Group	Subgroup	*N*= Total AP courses	Ninth grade	10th grade	11th grade	12th grade
Overall		441	6	33	164	238
SpringBoard		338	3	19	135	181
Historical Control		103	3	14	29	57
SpringBoard	Minority	282	2	14	106	160
	Nonminority	56	1	5	29	21
Historical Control	Minority	80	3	11	21	45
	Nonminority	23	0	3	8	12

Table 18

Multivariate Tests for AP Participation, Minority Status, and Condition Code

Effect		Value	*F*	Hypothesis df	Error df	Sig.	Partial Eta Sq
AP Participation	Pillai's Trace	.143	46.972[a]	3.00	845.00	.000	.143
	Wilks' Lambda	.857	46.972[a]	3.00	845.00	.000	.143
	Hotelling's Trace	.167	46.972[a]	3.00	845.00	.000	.143
	Roy's Largest Root	.167	46.972[a]	3.00	845.00	.000	.143
AP Participation *	Pillai's Trace	.028	8.043[a]	3.00	845.00	.000	.028
Condition Code	Wilks' Lambda	.972	8.043[a]	3.00	845.00	.000	.028
	Hotelling's Trace	.029	8.043[a]	3.00	845.00	.000	.028
	Roy's Largest Root	.029	8.043[a]	3.00	845.00	.000	.028
AP Participation *	Pillai's Trace	.008	2.144[a]	3.00	845.00	.093	.008
Minority	Wilks' Lambda	.992	2.144[a]	3.00	845.00	.093	.008
	Hotelling's Trace	.008	2.144[a]	3.00	845.00	.093	.008
	Roy's Largest Root	.008	2.144[a]	3.00	845.00	.093	.008
AP Participation *	Pillai's Trace	.009	2.419[a]	3.00	845.00	.065	.009
Condition Code *	Wilks' Lambda	.991	2.419[a]	3.00	845.00	.065	.009
Minority	Hotelling's Trace	.009	2.419[a]	3.00	845.00	.065	.009
	Roy's Largest Root	.009	2.419[a]	3.00	845.00	.065	.009

Table 19

Within Subject Tests of AP Participation, Minority Status, and Condition Code

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Sq
AP Participation	Sphericity Assumed	35.263	3	11.754	80.060	.000	.086
	Greenhouse-Geisser	35.263	1.869	18.865	80.060	.000	.086
	Huynh-Feldt	35.263	1.880	18.758	80.060	.000	.086
AP Participation	Sphericity Assumed	3.410	3	1.137	7.741	.000	.009
* Condition	Greenhouse-Geisser	3.410	1.869	1.824	7.741	.001	.009
Code	Huynh-Feldt	3.410	1.880	1.814	7.741	.001	.009
AP Participation	Sphericity Assumed	.635	3	.212	1.442	.229	.002
* Minority	Greenhouse-Geisser	.635	1.869	.340	1.442	.237	.002
	Huynh-Feldt	.635	1.880	.338	1.442	.237	.002
AP Participation	Sphericity Assumed	1.829	3	.610	4.153	.006	.005
* Condition	Greenhouse-Geisser	1.829	1.869	.978	4.153	.018	.005
Code * Minority	Huynh-Feldt	1.829	1.880	.973	4.153	.018	.005
Error	Sphericity Assumed	373.064	2541	.147			
(AP	Greenhouse-Geisser	373.064	1583.249	.236			
participation)	Huynh-Feldt	373.064	1592.240	.234			

Table 20

Tests of Between Subject Effects for AP Participation, Minority Status, and Condition

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Sq
Intercept	44.746	1	44.746	144.328	.000	.146
Condition Code	2.776	1	2.776	8.955	.003	.010
Minority	.365	1	.365	1.178	.278	.001
Condition Code	.281	1	.281	.906	.341	.001
* Minority						
Error	262.596	847	.310			

Another repeated measure ANOVA was performed using only junior and senior year data to avoid the severe list-wise reduction in panel sample size caused by universally low AP participation in the freshman and sophomore years (see Table 21). There was a significant condition code X minority status interaction for junior and senior AP participation, Wilks Lambda = .99, $p < .01$, $\eta p2 = .008$. Furthermore, within subject tests were performed (see Table 22) and observed using Partial Eta Squared. Tests of within subjects documented the junior and senior AP participation as having significant interaction ($p < .01$) with the condition code X minority status.

Table 21

Multivariate Tests for Junior and Senior AP Participation

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Jun Sen AP	Pillai's Trace	.024	21.167[a]	1.000	847.000	.000	.024
	Wilks' Lambda	.976	21.167[a]	1.000	847.000	.000	.024
	Hotelling's Trace	.025	21.167[a]	1.000	847.000	.000	.024
	Roy's Largest Root	.025	21.167[a]	1.000	847.000	.000	.024
Jun Sen AP *	Pillai's Trace	.003	2.524[a]	1.000	847.000	.113	.003
ConditionCode	Wilks' Lambda	.997	2.524[a]	1.000	847.000	.113	.003
	Hotelling's Trace	.003	2.524[a]	1.000	847.000	.113	.003
	Roy's Largest Root	.003	2.524[a]	1.000	847.000	.113	.003
Jun Sen AP *	Pillai's Trace	.003	2.364[a]	1.000	847.000	.125	.003
Minority	Wilks' Lambda	.997	2.364[a]	1.000	847.000	.125	.003
	Hotelling's Trace	.003	2.364[a]	1.000	847.000	.125	.003
	Roy's Largest Root	.003	2.364[a]	1.000	847.000	.125	.003
Jun Sen AP *	Pillai's Trace	.008	7.086[a]	1.000	847.000	.008	.008
ConditionCode	Wilks' Lambda	.992	7.086[a]	1.000	847.000	.008	.008
* Minority	Hotelling's Trace	.008	7.086[a]	1.000	847.000	.008	.008
	Roy's Largest Root	.008	7.086[a]	1.000	847.000	.008	.008

Table 22

Within Subject Tests of Junior and Senior AP Participation

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Jun Sen AP	Sphericity Assumed	4.034	1	4.034	21.167	.000	.024
	Greenhouse-Geisser	4.034	1.000	4.034	21.167	.000	.024
	Huynh-Feldt	4.034	1.000	4.034	21.167	.000	.024
	Lower-bound	4.034	1.000	4.034	21.167	.000	.024
Jun Sen AP *	Sphericity Assumed	.481	1	.481	2.524	.113	.003
Condition	Greenhouse-Geisser	.481	1.000	.481	2.524	.113	.003
Code	Huynh-Feldt	.481	1.000	.481	2.524	.113	.003
	Lower-bound	.481	1.000	.481	2.524	.113	.003
Jun Sen AP *	Sphericity Assumed	.450	1	.450	2.364	.125	.003
Minority	Greenhouse-Geisser	.450	1.000	.450	2.364	.125	.003
	Huynh-Feldt	.450	1.000	.450	2.364	.125	.003
	Lower-bound	.450	1.000	.450	2.364	.125	.003
Jun Sen AP *	Sphericity Assumed	1.351	1	1.351	7.086	.008	.008
Condition	Greenhouse-Geisser	1.351	1.000	1.351	7.086	.008	.008
Code *	Huynh-Feldt	1.351	1.000	1.351	7.086	.008	.008
Minority	Lower-bound	1.351	1.000	1.351	7.086	.008	.008
Error	Sphericity Assumed	161.420	847	.191			
(Jun Sen AP)	Greenhouse-Geisser	161.420	847.000	.191			
	Huynh-Feldt	161.420	847.000	.191			
	Lower-bound	161.420	847.000	.191			

The small participation size of this cohort (minority and nonminority students engaging in AP courses) was challenging due to the demographics of the schools sampled. Even with the small sample size, there was consistent overall substantiation that provided evidence to question the validity of the null hypothesis; therefore, the null hypothesis was rejected. Inferential analyses performed resulted in data that demonstrated a progressive increase of AP participation for minorities, as reported across the high

school grade levels for the SpringBoard intervention groups. The inferential tests applied in this study did not lead to the definitive rejection of the null hypothesis regarding an increase of AP participation among the minorities in this cohort. However, there was consistent evidence with small but significant effect of an increase of AP participation through the visual analyses of the descriptive data, as well as significant interactions with junior and senior AP participation.

Inferential Analyses for Hypothesis #3

$H_3$3: There will be an increase in minority student AP performance throughout the 4 years of SpringBoard implementation, measured by AP student grades retained in the district's Data Warehouse.

To analyze AP performance scores, I used a sample population of 851 students encompassing the intervention group (n = 545) and the control group (n = 306). As previously noted, all controls for violations of normality were followed as described in the preceding sections.

I created charts for visual analyses of AP performance scores for Grades 9 through 12. The AP performance scores are depicted in Figures 10 through 14 by intervention and control group based on passing scores (students end of course score is 70% or higher) or failing scores (students end of course score is 69% or lower). Performance scores during the ninth through 12th grades did not display significant differences between the intervention group and control group. The 11th graders did exhibit a slight increase in the visual analyses; however, the trend did not continue, as the

pass and fail AP performance scores were equal for the 12th grade students within both cohorts.

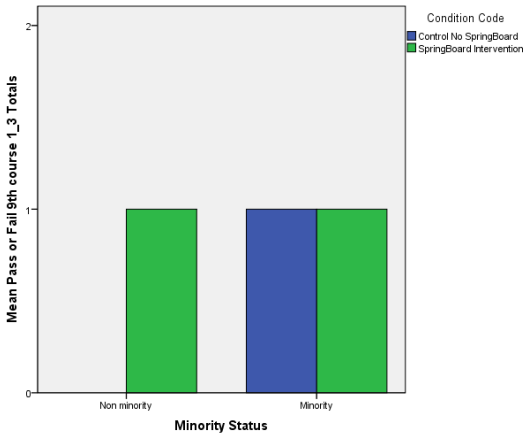

Figure 10. AP performance for ninth grade by condition code

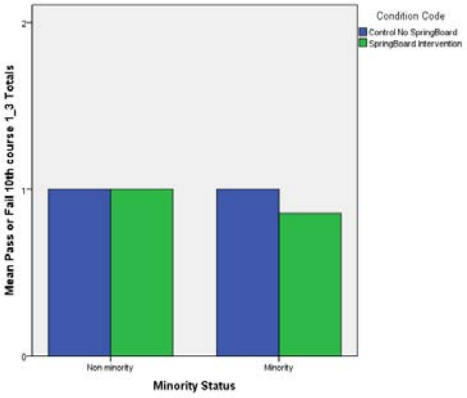

Figure 11. AP Performance for tenth grade by condition code

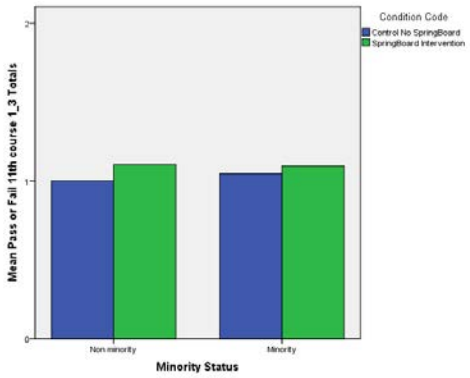

Figure 12. AP performance for 11th grade by condition code

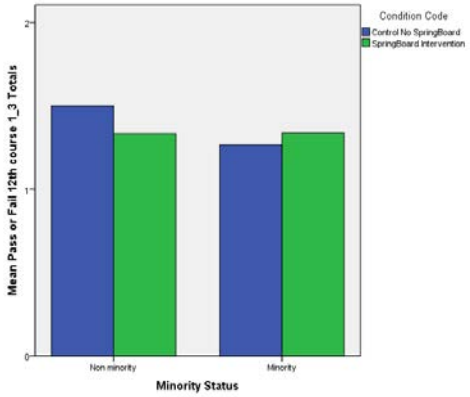

Figure 13. AP performance for 12th grade by condition code

Due to the low overall participation in AP courses in the ninth and 10th grades, I graphed the average number of successful AP completions across the 11th and 12th grades (see Figure 14). Although the differences are small, the following patterns are apparent. The minority and nonminority SpringBoard intervention group illustrate an overlap, indicating the consistent increase of AP performance from 11th to 12th grades within the intervention. Additionally, the intervention minority group showed consistently better

performance for AP passed courses than the control minority group. It should be noted that the control nonminority group (red line) is likely the least reliable expression of change due to the limited number of subjects (pre-post n = 8 and 12 respectively).

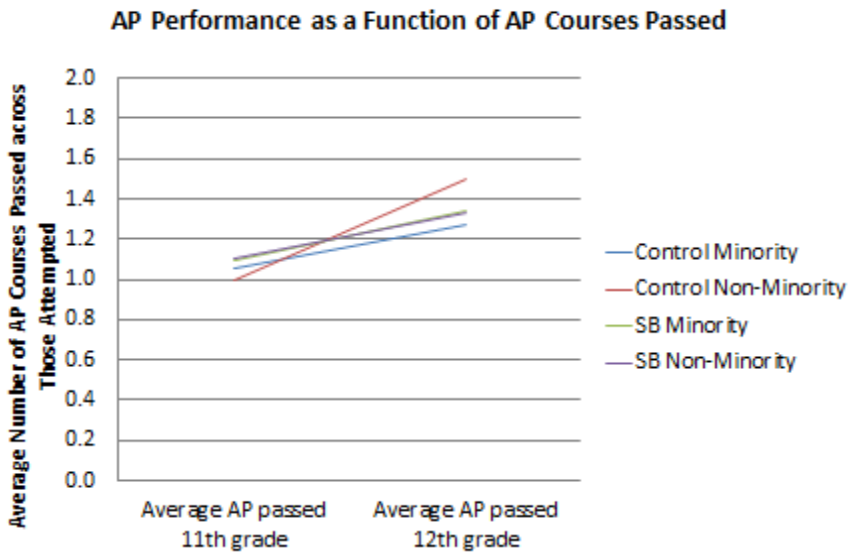

Figure 14. Junior and senior AP performance patterns

I performed multivariate tests for AP performance scores to test for effects of condition code. The analyses for the multivariate overall main effect for AP performance were not displayed because of insufficient residual degrees of freedom. Furthermore, within subject tests were performed and observed using Partial Eta Squared. Tests of within subjects were used to document the interaction between AP performance scores and condition codes. Similarly, to the previous findings, partial eta squared could not be calculated due to insufficient data.

In addition to within subject tests, the overall patterns of between subject effects were calculated to provide evidence of a significant effect with condition code. However, due to the low participation, significant results were not demonstrated.

Furthermore, I performed independent ANOVAs for each AP performance level to compensate for potential effect of the multivariate normality issues. The findings confirmed that there was not a significant difference for AP performance scores between the control group and intervention group.

Finally, I performed an Independent Samples *t* Test (see Table 23) to test the effects for AP participation and condition code. The results indicated that there was not any significant difference between the two groups. Although a greater percentage of the intervention students were attempting AP courses, no significant difference regarding AP performance between the two groups was observed.

Table 23

Independent Samples t Test for AP Performance and Condition Code

		Levene's Test for Equality of Variances		*t*-Test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pass or Fail tenth course 1-3 Totals	Equal variances assumed	7.949	.008	1.244	31	.223	.105	.085	-.067	.278
	Equal variances not assumed			1.455	18.000	.163	.105	.072	-.047	.257
Pass or Fail 11th course 1-3 Totals	Equal variances assumed	10.647	.001	-.694	162	.489	-.062	.089	-.238	.114
	Equal variances not assumed			-1.161	113.600	.248	-.062	.053	-.167	.044
Pass or Fail 12th course 1 to 3 Totals	Equal variances assumed	.916	.339	-.255	236	.799	-.021	.083	-.185	.143
	Equal variances not assumed			-.239	84.994	.812	-.021	.089	-.198	.156
Pass or Fail 9th - 12th course 1 to3 Totals	Equal variances assumed	3.709	.055	1.031	287	.304	.162	.157	-.147	.470
	Equal variances not assumed			.970	89.741	.335	.162	.167	-.169	.492

Because of the number of students who took AP courses within this project study and the requirements for the multipanel design analyses, repeated measures' tests could not be performed and reported. Due to the relatively low AP participation within the cohort high schools, insufficient data was available to perform multivariate repeated measures tests. Therefore, with subsequent evaluations, the AP participation and AP performance hypotheses will need to have a larger population with sufficient statistical power to effectively analyze data. Although the inferential tests applied in this study did not indisputably lead to the rejection of the null hypothesis regarding an increase of AP

performance scores among minority intervention students, the visual trend analysis provided sufficient evidence to question the validity of the null. Therefore, the null for hypothesis 3 was rejected due to lack of statistical power for the longitudinal panel analyses.

Summary of Analyses

The foundational structure for academic achievement begins with successfully passing the state baseline reading test, as reading is fundamental to all areas of academic endeavors. Without the basic structure being intact, students are unable to obtain higher levels of advanced curriculum that enables them to successfully complete their postsecondary education. Statistical analyses in this study support the claim made by the College Board that SpringBoard increases academic achievement with regard to reading proficiency. In this district, the implementation of the SpringBoard intervention did increase academic achievement, as measured by the FCAT state reading test. Across all subgroups (male/female, minority/nonminority, ELL/non-ELL, ESE/non-ESE, free or reduced lunch/non free or reduced lunch) the mean was greater for all students who received the SpringBoard intervention as opposed to the historical control group.

The complexity of requisite factors underlying success increases as students move from fundamental skills (foundational skills assessed on the FCAT) to college readiness skills (higher level thinking skills essential for college). The next step in this progression is engaging in coursework to be prepared for college. Participation in advanced courses such as AP is critical to ensure successful completion of college. The overall AP participation rate for the ninth through 12th grade intervention group increased for

minority and nonminority students by approximately 15%. More students attempted AP after the intervention, thus supporting the College Board claim that the use of SpringBoard increases AP participation.

In the final question of this study, I wanted to measure AP performance scores. Following the logic model for incremental increases, AP performance follows the participation of AP and would indicate mastery of the college readiness skills. Due to the relatively low participation of the three cohort high schools sampled, no significant data was found for the third hypothesis regarding AP performance. However, with the scores obtained, there was a lack of statistical evidence regarding the difference between minority and nonminority pass/fail grades.

The SpringBoard curriculum is too complex to assess all aspects of change model within one study. This first tier analysis illuminates the opportunity for student development as indicated with the positive progression from improved reading scores to increased AP participation to enhanced AP performance for racial minority students. At the foundational level, the intervention was successful, as academic achievement increased. The intervention is producing the desired results after the 4 year implementation period, as opportunities for improvement in AP participation and AP performance are relative to students' levels of academic achievement.

Section 3: The Project

Introduction

Description of Project

This project is a summative program evaluation of a curriculum produced by the College Board entitled SpringBoard. SpringBoard is a pre-AP curriculum designed to increase academic achievement, student participation in AP, and successful completion of postsecondary education without remediation (College Board, 2011). The project was conducted to ascertain whether the program's objectives were being obtained. Student data on the reading section of the state assessment, AP course participation, and AP performance scores from one school district before and after implementation of SpringBoard determined the effectiveness of the program.

The lack of knowledge regarding the effectiveness of the curriculum prompted the study. The district utilized the SpringBoard curriculum to increase student achievement and AP participation among racial minority students. An evaluation of student data required assessment of the curriculum's effectiveness. To accomplish this evaluation, I collected performance scores for all middle and high school students in the district before and after the implementation of SpringBoard. The data in the years of 2003 through 2006 represent scores before the SpringBoard intervention, and the data in the years of 2007 through 2010 represent the scores during the implementation of the SpringBoard intervention.

This doctoral project study was designed to evaluate the SpringBoard's program efficacy in one district in Florida. The College Board recommends a systematic

implementation design that includes initial and ongoing professional development for the teachers and administrators, as well as maintaining the instructional fidelity of SpringBoard's curriculum design. All teachers and administrators using SpringBoard in this district participated in the College Board's professional development. In keeping with the fidelity of the program, the district's curriculum maps outlined the pacing of SpringBoard necessary for teachers to use with their students.

To determine if the goals of increasing student academic achievement, AP participation, and AP performance scores improved among the minority student populations, evaluating student data before and after the implementation of SpringBoard was necessary. To accomplish this, I used the computer program SPSS to perform quantitative analyses of student data and evaluated the results to report student performances.

Goals

The goal of this project study was to evaluate and determine to what extent the implementation of the SpringBoard curriculum improved educational outcomes as measured by the FCAT state reading assessment. The scores on the state assessment largely determine access to AP courses; therefore, a score of 3, 4, or 5 (with 1 representing the lowest and 5 the maximum performance) must be achieved on the FCAT in order for students to be considered eligible to participate in AP opportunities.

Furthermore, the project attempted to evaluate whether this curriculum has increased minority students' participation and success in AP courses. The district chose to use this curriculum as a means of increasing racial minority students' academic

achievement on the state assessment, whereby permitting students to participate in AP. The goal was to ascertain through a program evaluation whether an increase in AP participation and performance was obtained after implementing the program during a 4 year period of time.

Rationale of Project Genre

A problem of cultural diversity in AP enrollment is prevalent in this district as there are a limited number of racial minority students in high school AP classes. SpringBoard was chosen to be the curriculum vehicle to address the problem by increasing academic achievement for all students beginning in middle school. Administrators, teachers, parents, and students can be informed as to whether the SpringBoard curriculum is achieving the desired outcomes of promoting a rigorous instructional environment for the minority student population. To this end, I conducted a quantitative summative-based program evaluation to assess the academic achievement levels, AP participation rates, and AP performance to obtain formative feedback to provide the district regarding the findings.

A quality curriculum must be evaluated for effectiveness (Attewell & Domina, 2008; Green, 2007; Larocque, 2007). A summative program evaluation is used to assess the extent that program objectives are being satisfied (Spaulding, 2008). The program evaluators focus on significant performance indicators matched to the program objectives and collect evaluation data to assess the degree to which those objectives are achieved. Then, the evaluations are used to make informed decisions and determine effectiveness.

Summative performances using the FCAT annual student test scores of all students in middle and high school in this district were analyzed during the time period of 2003 through 2010. These years represent before and during SpringBoard implementation. The historical control group included student data from 2003 through 2006, and the SpringBoard intervention group encompassed student data from 2007 through 2010. All data was de-identified at the point of extract and was analyzed in SPSS using descriptive statistics, repeated measures ANOVA, one-way ANOVA, Pearson correlations, and independent sample *t* tests.

Rationale of Problem

AP participation is lower among racial minority students than majority students; therefore, the College Board created a curriculum to provide equity and access into the rigorous courses of AP for all students by aligning the curriculum to identified National College Board Standards for College Success (College Board, 2009). This district searched for a curriculum to meet the needs of all learners, as all students deserve a rigorous instructional environment. Because of the existing problem of minority student participation in AP, administrators purchased the SpringBoard curriculum and professional development training to increase academic achievement for all students, as well as increase AP participation among the minority student populations.

A summative program evaluation was necessary to address the problem and the findings provided formative feedback for the stakeholders. I collected student data, performed analyses, and displayed the findings of student achievement and AP participation before and during the implementation of SpringBoard. Addressing the

question regarding to what extent the curriculum has increased minority student academic achievement and participation in AP was the main objective of this program evaluation.

Review of Literature

Analysis of Research and Theory about Project Genre

This project was undertaken to evaluate the effectiveness of one intervention within the school district. I researched using terms such as *evaluation, program evaluation, innovations, rigor,* and *instructional environment* from Education Research Complete, Education: a SAGE full-text database, ERIC, and ProQuest Central databases located in the Walden University Library. I used Boolean searches to obtain definitions for these terms. Additionally, information about the various types of evaluations was researched before deciding on the type of program evaluation to perform for this project.

Boolean searches related to this project included *initiatives, test scores, implementation dip, staff development, reform, change process, evaluation types (summative, formative, and outcome based), theory,* and *logic model*. The terms facilitated a deeper understanding of the types, purposes, and principles of the evaluation process.

Program evaluation is the study of programs that contain goals and objectives correlated to activities or curriculum designed for intended purposes (Loots, 2008). Research and program evaluations contain different objectives. Program evaluations are conducted for decision making purposes, whereas research is conducted to build understanding about topics (Spaulding, 2008).

In order for stakeholders to make informed decisions, evaluations are necessary to judge the value or quality of an innovation and its targeted outcomes (Spaulding, 2008). To assess whether or not the intervention was implemented as designed, both qualitative and quantitative methodologies accompany the evaluation process (Loots, 2008; Secret, Abell, & Berlin, 2011). Additionally, a pattern of reasoning is associated with the evaluation process and includes establishing criteria, constructing standards, measuring performance, and synthesizing data into a judgment about the effectiveness of the program (Scriven, 1980).

Guiding principles assist researchers with the stages of the evaluation process. According to Secret et al., 2011, a progression of six junctures occurs: a relationship is established, program goals are formulated, research methodology is selected, data is collected, data is analyzed, and findings are disseminated. These steps provide a comprehensive approach of the evaluation process that ensures researched based procedures are utilized in the development of the evaluation.

Several evaluation approaches are available for researchers to use such as formative, summative (objective), goal free, expertise oriented, and participatory oriented. Formative and summative evaluations determine program effectiveness but with different tactics. Formative evaluations are ongoing and monitor the activities of the project in order to make changes towards its effectiveness. Additionally, formative evaluations provide feedback about the progress of the program to the stakeholders. On the contrary, summative evaluations are outcome-based to judge the worthiness of the

project. Summative evaluations summarize and assess the impact of the implementation (Trochim, 2006).

Because summative evaluations measure outcomes and relate those to the judgment of the success of the program, the genre chosen to evaluate the effectiveness of the SpringBoard intervention was a summative-based program evaluation. A quantitative analysis of students' FCAT test scores, AP participation rates, and AP performance scores in this school district were assessed using the logic model for evaluation of the intervention.

Evaluation is one of this district's main organizational goals. This district has implemented numerous initiatives in the past 4 years, and the superintendent requested each program be evaluated to determine whether the intended outcomes were being achieved. The project for this doctoral study is described as summative, outcome-based program evaluation using the logic model (to be discussed in the next section).

The research of the internal validity of this project pertained to student scores on a state assessment, participation rates within AP courses, and performance scores within AP courses. Research for this project involved evidence that the intervention met the program goals through a first tier quantitative analysis of student scores and participation rates in advanced courses. The findings from section 2 indicated a strong correlation between academic achievements of minority students using the intervention of SpringBoard. Additionally, findings indicated an increase in AP participation and performance for the students using this intervention. The findings led to the conclusion that the SpringBoard intervention met the program objectives and goals of increasing

academic achievement and preparation towards advanced courses to be ready for postsecondary education.

Analysis of How Research and Theory Supports Project

The content of this project is established on the research of the logic model and the theory of change. The logic model assists evaluators in analyzing the effectiveness of a program. This model involves stakeholders at all stages, beginning with the project development stage and ending with the analysis of outcomes phase (Helitzer et al., 2010). Linking the program development with evaluation ensures the logic model is grounded in the change theory and its relationship to the proposed strategies and outcomes (Helitzer et al., 2010; Renger & Titcomb, 2002). Therefore, the logic model becomes the basis for the evaluation process to assess the effectiveness of the implementation of a specific program.

The logic model ensures all stakeholders share a common understanding of the various components of the program by building an operational model related to the program's objectives and measureable outcomes (Helitzer et al., 2010; O'Keefe & Head, 2011; Renger & Titcomb, 2002).The representation includes explicit identification of the problem, the rationale of the program, and the elements of the evaluation (Renger & Titcomb, 2002).

The rationale of the logic model references the root causes of the investigated problem. The causes are explicitly connected to the essential elements of the evaluation that include resources, objectives, activities, and outcomes of the program (Renger &

Titcomb, 2002). The elements are linked to the rationale and the causes, so the foundation is solid to commence the evaluation process.

According to Julian et al. (1995), the logic model consists of three main components: problem statement, activities, and outcomes. These three features are positioned in a table formatted by columns so that the rationale for the evaluation is clearly presented, and the elements of the evaluation underlying the rationale are displayed.

Furthermore, the logic model provides an appraisal of a program's plan, implementation, and evaluation. One logic model follows the Kellogg Foundation, 2001, model that includes five classifications: resources/inputs, program activities, outputs, outcomes, and impact. Program evaluations examine the results through these core areas and displays visual relationships among those components (Bellini & Henry, 2011; Shalock & Bonham, 2003).

These categories are important to understand in the logic model (Bellini & Henry, 2011; Shalock & Bonham, 2003). The "input" component is useful to bring attention to the conjecturers of the outcomes and not to the actual desired outcomes. The predictors are important in identifying the program resources in advance. Additionally, the "program activities" component supports the predictors by aligning the services to the outcomes. Furthermore, "outputs" are the products of the activities aligned to the program. Short term and long term effects of the program's implementation are the "outcomes" that cite specific changes as a result of the innovation. Finally, the "impact" is the noticeable change that occurred within the organization as a result of the program.

The logic model evaluates the entire program and is therefore useful to inform stakeholders for changes that need to occur to meet program goals and objectives for a specific populace.

The logic model informs stakeholders to what extent the innovation is successfully meeting the objectives and goals. In this project, the outcomes based logic model was used to ascertain the extent that the intervention of SpringBoard met the objectives of the district. The district implemented the SpringBoard curriculum through the Advanced Placement Initiative Grant in 2006 to increase the academic achievement levels and AP participation rates of the minority students in the school district. Based on the summative program evaluation using the logic model, the SpringBoard intervention achieved the district goals and objectives for the targeted populations.

One area that became apparent through the project study was an implementation dip. With the AP performance scores, the ninth grade control and intervention group remained the same. The following year, the AP performance scores of those same students, now in the tenth grade, declined for the intervention group. Continuing to track those same students, the performance scores increased for the intervention group in the 11th and 12th grade.

Fullan (2006) defined the implementation dip as the difficulties that people encounter as they learn new programs. The implementation dip is an actual dip in performance due to the new innovation that requires people to acquire different skills and depths of knowledge. People may challenge and question the innovation, need assistance through professional development, or may not have the confidence or trust in the

innovation. All of these factors lead to a decrease in performance, as teachers and students take the time to adjust to the innovation (Fullan, 2006).

According to the work of Herold and Fedor (2008), there is a depth of decline after a change is introduced. Some people within organizations may resist the change, refuse the initiative, or procrastinate about starting the change. The initiative continues to decline until participants have confidence with the innovation. The time that it takes to become skilled, proficient, and confident varies based on the level of expertise and support. Change is difficult as people adjust within uncomfortable situations. Effective leadership enables participants to adjust quickly and find alternate ways to solve problems due to the new initiative (Fullan, 2006). The length of time for the implementation dip varies depending on the participants and leaders.

A culture of change is necessary for the successful implementation of innovations. An understanding about the change process is essential for a change to effectively occur (Fullan, Cuttress, & Kilcher, 2005). Improving society through refining the education system effects all people; therefore, understanding the elements of change requires leaders to engage stakeholders in the ownership process. Directly stating plans and initiatives (top down approach) to stakeholders does not involve others and causes the implementation dip to extend for a longer duration (Fullan, 2006).

In this district, the implementation dip lasted approximately 2 years. The findings indicated that student performance scores increased during their third and fourth year of the SpringBoard program, based on the AP performance scores. Because this project design is purely quantitative, opinions as to why there was an increase in performance

during the third and fourth year were not ascertained. However, information was available through the district's Data Warehouse providing documentation for program support throughout the district. Ongoing professional development, building level coaching assistance, teacher mentors, and district level support were provided to the school sites. Perhaps these resources established the foundation for the successful innovation and shortened timespan of the implementation dip. This will be an area for future investigation.

Resources, Supports, Barriers

The essential resource needed to implement the SpringBoard curriculum initially in this district was funding. Because the curriculum was not on a state adopted textbook list, grant funding was necessary to gain in order to pilot the program. The federal government offered Advanced Placement Initiative Grants, and this district used the 2006 grant application to receive funding for the purchase of SpringBoard for seven schools. Due to the positive impact of increased student achievement after the first year of implementation, the district used internal money to fund all of the middle schools during the second year of implementation and all of the remaining high schools during the third year.

The College Board requires professional development training to occur before the teacher editions are dispersed to educators. A contract between the district and the College Board for three years of professional services must be agreed upon for implementation of fidelity purposes. Teachers received 4 days of initial training the first year, and 2 days of advanced training thereafter for a minimum of 2 years. The

professional development design supports teachers before and after the implementation of the curriculum.

In addition to teachers being trained, every principal and assistant principal within the district received a 3 hour initial and a 3 hour follow up training on effective implementation practices, techniques to actively engage students in the classroom, and best practices for monitoring and supporting the initiative at the building level. The administrative executives and school based administrators must be able to support the teachers and problem-solve barriers for a new innovation to be successful (Borko, Wolf, Simone, & Uchiyama, 2003).

The key contributing factors or barriers to the lack of student participation in AP programs are identified by the College Board as (a) inequitable access to AP courses, (b) lack of rigor in advanced courses, (c) inequity of course offerings, (d) the quality of existing instruction, (e) low expectations of student performance, and (f) lack of parental involvement. SpringBoard addresses these six barriers to pre-AP and AP courses across all participating schools, ensuring equitable access for low-income and racial minority students (College Board, 2011).

Proposal for Implementation

Prior to implementation, administrators and teachers inform themselves about the various components of the curriculum. Teachers may review the research behind the development of SpringBoard, preview the materials specific to their grade level, and speak to College Board representatives to answer their questions. Once teachers are comfortable, then both teachers and administrators must agree to implement the program

and support the new innovation (Fullan et al., 2005). The effective implementation of SpringBoard necessitates all stakeholders have a thorough understanding of the curriculum design and confidence that the program will increase academic achievement and meet the goals and objectives for their students.

Although the timetable for implementation varies from district to district, administrators, teachers, parents, and students should receive ample time and resources before the onset of the implementation of the intervention. Because educators need time to adjust to the concept of change (Fullan et al., 2005) an emphasis and priority should allow for that time. In this way, participants are willing to take part of the new innovation and are confident to effectively implement. Additionally, teachers may want to visit other districts that currently implement the curriculum to speak with students, teachers, and administrators. If face to face visits are not feasible, live chat sessions and webinars assist stakeholders in gathering further information.

Roles and Responsibilities

To completely support teachers, it is essential for administrators to be well informed regarding the various components of SpringBoard. SpringBoard offers a collaborative style of instruction; therefore, teachers may request desks to be removed and replaced with tables. As active learning requires an environment with productive noise while children problem solve together, administrators need to understand and support teachers with this endeavor (Delgado, 2006). Administrators may need to provide assistance to teachers in additional areas that support this curriculum design, such as classroom management, collaborative grouping, and higher order questioning.

Teachers shift their instructional paradigm from explicit teacher directed instruction to facilitator of instruction (Delgado, 2006). The teacher in a SpringBoard classroom is a guide that mentors, models, and elicits higher order thinking and problem solving skills. Additional training may be necessary to support teachers, and their willingness to change to meet the demands of this generation learner is imperative to the successful implementation of the curriculum.

Students also have a paradigm shift in their educational experience (Delgado, 2006). Instead of being a passive recipient, students actively engage in a variety of activities with their peers to emerge themselves into the act of discovery learning. Collaboration, debate, interviews, research, and analyzing text are samples of the areas students will be held accountable.

Project Evaluation Plan

Type of Evaluation

The program evaluation in this study examined to what extent utilizing the SpringBoard curriculum increased reading test scores on the state assessment, whereby allowing student access and increasing enrollment of minority students into AP courses. Meta-evaluations are most commonly performed to assess program evaluations against accepted standards. These standards include utility, feasibility, propriety, and accuracy (Saunders, 1994). The feasibility and propriety of the evaluation were affirmed and documented by the expert review provided during the review of the study proposal. Accuracy was assessed through a gap analysis of the adequacy of the results stemming from the longitudinal panel design. This design proved problematic for the third

dimension in the summative assessment of program efficacy. While simpler designs were employed, parametric analyses were still constrained by the AP participation rate effect. Alternative approaches, including segmented descriptive analyses may be advisable. Utility will be addressed at the completion of the study through a stakeholder review. These reviews would be best conducted through a combination of individual within unit interviews and by employing cross unit focus groups.

Justification

A summative-based quantitative program evaluation was the most logical design to use for this study, because it provides a direct assessment regarding obtaining the SpringBoard program outcomes within the school district. In addition to assessing the goals of the research study with the objectives of the curriculum to ascertain the effectiveness of the implementation, the monetary investment from the school district must be assessed. The SpringBoard curriculum is purchased from internal curriculum funding and is not part of the state textbook adoption budget. Therefore, expenses toward professional development, costs for textbooks, and disbursements toward district personnel to support the intervention have been expended. A meaningful rate on return of investment determines the value of this intervention when measured against student academic achievement.

Goals of the Project

The school district implemented the College Board pre-AP curriculum called SpringBoard to address the need of cultural diversity in high school AP courses. The goals for the implementation of the SpringBoard curriculum were to increase student

achievement in all subgroups, as well as increase AP participation rates and AP performance scores specifically among racial minority groups. The goals of the project were to provide initial outcome assessment of core elements of the program in order to make formative decisions about the continuation, modification, or elimination of the intervention.

Evaluation of the Goals

The focus of the program evaluation was to determine to what extent the SpringBoard intervention achieved the project goals of academic achievement, AP participation, and AP performance. I measured academic achievement using the state reading assessment called the FCAT and reported those student scores using two condition codes (a 4 year time period before SpringBoard implementation and a 4 year time period during SpringBoard implementation). Additionally, AP course participation and AP performance scores were reported using the same condition code design and timeframe. I used archival data from the district's Data Warehouse in those three areas to analyze the data using the SPSS computer software to yield reliable and valid results.

Stakeholders

The key stakeholders are the administrators, teachers, and students in this school district. Findings demonstrated that the implementation of SpringBoard increased minority student academic achievement measured by the FCAT reading scores and increased minority student AP participation. The students benefited from the implementation of this curriculum based on their academic achievement. Additionally, teachers also benefited through the exposure to a new delivery model using the

SpringBoard instructional curriculum design. They further profited by receiving extensive professional development provided by national College Board trainers.

Implications

Social Change

Society has attributed poor student achievement to incompetent teachers who do not create rigorous instructional environments (McNeal & Lawrence, 2009). A demand has been placed on teacher education programs to reform their educational practices in order to raise teacher quality, thereby increasing student achievement (Goodman, Arbona, & Dominguez de Rameriz, 2008). Teacher educators have suggested that teacher candidates pass a performance related measure that demonstrates a teacher's ability to meet the diverse needs of today's students (McNeal & Lawrence, 2009). The theoretical framework is based on the social constructivism theory of Vygotsky and Bakhtin that pertains to the importance of understanding various cultures and optimal learning environments in order to be an effective educator (Vygotsky, 1981).

In addition to providing a rigorous instructional environment, teachers must have confidence that all students can achieve within that environment. According to Douglas et al. (2008), external and internal factors may influence student achievement. External factors include inadequate academic preparation and lack of family support, while internal factors include lower teacher expectations, lack of cultural respect from teachers, poor relationships between minority students with their teachers and peers, and racism. Educators who believe all students can learn and strive to create a rigorous instructional environment for their students can promote social change in the area of academic

achievement across all subgroups. Required professional development from the College Board before the implementation of SpringBoard provides the forum for these topics to be addressed.

This study positively impacts social change through empirically validating programs designed to increase academic achievement and college participation among racial minority students, as well as substantiating the benefits of ongoing professional development for educators. Based on the findings, the program evaluation of the SpringBoard intervention generated data that confirmed the program goals and objectives were achieved in this district. A rigorous instructional environment met the needs of the minority students and increased academic achievement across all subgroups. Therefore, the instructional design of the SpringBoard curriculum supports students when utilized effectively. The implication is that academic success can be achieved for all students when educators implement a rigorous instructional environment.

Local Stakeholders and Larger Context

Teachers play a pivotal role in the academic success of their students by creating an instructional environment conducive to learning. According to Severiens and Wolff (2008), learning may be greatly enhanced for minority students when good contacts are made with peers and teachers. Academic and social integration is positively associated with learning for minority students, as student interactions with educators and peers are connected to the quality of their learning processes. According to Tinto's model (1998) on student attrition, minority students need to participate in the majority student culture to be successful in higher education.

Tomlinson et al. (2006), conducted a 4 year qualitative case study involving three different school sites to explore how teachers contribute to the academic success of low SES minority students. Their findings supported other researchers' data in that the nature of the school setting, and its vision for low SES minority students, is a factor that influences student success. Additionally, the degree to which the educators' understood, addressed, and supported student needs impacted academic achievement. Racially indifferent or noninclusive climates, poor relationships with faculty, student perceptions of racism and stereotyping, faculty who lack cross cultural skill, methods of delivery, and predominately white faculty all contribute to barriers for academic success (Greene, Marti, & McClenney, 2008; Tomlinson et al., 2006). In the required professional development of the SpringBoard intervention, topics such as instructional environment, social integration, teacher attitudes, educator expectations, and cultural differences are addressed.

Professional development from the College Board is also used to educate teachers about creative and analytical learning versus traditional memory-analytical patterns of thinking and learning to procure racial minority students to be academically prepared for AP (The College Board, 2011). Successful intelligence theory increases both diversity and academic achievement simultaneously (Sternberg, 2008). Successful intelligence is the ability to succeed in life based on one's own personal definition of success, analyzing ones strengths and weaknesses, blending creative and analytical skills to successfully implement and convince others of their value, and knowing that abilities are flexible, not fixed (Sternberg, 2008). Successful intelligence involves changing instruction and

assessment, so that more students succeed in school and can be college ready. Good teachers vary teaching methods to reach diverse learning styles of their students, so that students excel (Attewell & Domina, 2008; McTighe & O'Connor, 2005; Severiens & Wolff, 2008; Sternberg, 2008). The professional development provided to teachers for this intervention emphases that all students can learn as long as they are taught in the same way that they learn. Differentiation of instruction is one of the professional development sessions and focuses on meeting specific learner needs.

Teacher expectations influence student performance; that is, students who believe they are high achievers outperform those students who define themselves as low achievers (Jussim, 1989; Jussim & Harber, 2005). High expectations have the power to influence future academic successes; therefore, enrolling more students into rigorous courses such as AP has positive implications regarding self-fulfilling prophecy for teachers and students. In a longitudinal study by Jussim in 1989, teachers' discernments of performance did impact students' self-concept of their capability to be academically successful.

Teacher expectations are also influential in predicting student achievement; they create inequalities that lead students to achieve at intensities consistent with teacher viewpoints. Additionally, teacher expectations can affect future inequalities (Jussim & Harber, 2005). When students are placed in lower academic tracks and expected to achieve at lower levels, then the phenomenon of poor performance may continue past high school into the workplace, thus affecting socioeconomic status of employment and future earnings. The SpringBoard professional development addresses the need for

teachers to maintain high expectations and provides professional literature to participants on this topic.

Students who are in the upper ability groups learn more in comparison to those in the lower tracked ability groups, due to higher quality instruction and greater curricular coverage (Carbonaro, 2005; Hatt, 2007). The higher the academic track, the more effort students exert. Factors related to effort explain students' levels of positive or negative school experiences (Carbonaro, 2005).

Low expectations contribute to teacher bias regarding placement in advanced academic subject areas (Landsman, 2004). Students who are in the higher ability tracks have access to rigorous quality curriculum to be prepared for postsecondary education. Providing the SpringBoard curriculum to all students ensures an equitable instructional environment that allows students future educational opportunities. Not all students may choose to attend college, but all students should have the choice.

The SpringBoard classroom environment provides a rigorous instructional setting to enable students to successfully master the foundational skills necessary to participate in advanced courses. The professional development for educators is a critical component required by the College Board, before implementation, to address these topics that influence academic achievement beyond the curriculum. The combination of employing a quality curriculum in a rich instructional environment and professional development for educators on key components to effective teaching strategies are important aspects for consideration in the pursuit of academic achievement for all students.

Section 4: Reflections and Conclusions

Project's Strengths in Addressing the Problem

The strength of this summative program evaluation was based on the availability of reliable data on pre intervention and post intervention measures over an 8 year time period within the district studied. There was consistency of subjects, as the entire population of middle and high school students' scores that fulfilled the requirement of continuous and uninterrupted attendance in the district during that time period were used. I performed extensive quantitative analyses and used the SPSS software for reliability of results. The summative program evaluation reported positive findings and showed a consistent correlation between the implementation of SpringBoard within this district with racial minority student achievement, AP participation, and AP performance scores.

Project's Weaknesses in Addressing the Problem

One of the weaknesses in addressing the problem is that the results did not take into consideration other possible variables for the increase of academic achievement within the intervention years. Other initiatives within the district may have contributed to the increase of academic achievement, increase of AP participation, and increase of AP performance scores other than the ones studied in this first tier examination. Another limitation was that these results do not include any qualitative analyses that would inform the researcher about teachers and students' attitudes, motivations, and compliance factored into the implementation of the SpringBoard intervention.

Recommendations

A consideration for this project would be to implement a mixed methods program evaluation to ascertain students and educators' beliefs and perceptions about the SpringBoard curriculum. Interviewing and surveying teachers and students regarding those two factors would reveal critical information regarding the implementation of SpringBoard, the fidelity of usage, and the contributing factors associated with the successful implementation of the program. The program evaluation should also analyze the fidelity of the implementation, or extent that teachers are utilizing the intervention.

Additionally, teacher and administrator attitudes regarding the inclusiveness of AP participation should be analyzed. Many teachers include or exclude students into AP courses for a variety of reasons that include perceived student ability. Schools vary regarding their admittance policies for advanced courses depending on administrator, counselor, and teacher attitudes regarding what constitutes acceptance into AP classes.

Another recommendation would be to exclude some of the students in order to control for normality because this study analyzed data for over 4,000 students. The school district in this study contains approximately 9,000 middle and high school students. According to Krejcie and Morgan's (1970) table for determining sample size, a middle school population of 9,000 students should have a minimum sample size of 368 students, and a high school population of 15,000 students should have a minimum sample size of 375 students to ensure the external validity of the sample to the population. This sample size is based on using G Power 3 analyses to find the appropriate threshold of

statistical power; the sample also provides adequate power to detect small to moderate effects on the outcome resulting from the implementation of SpringBoard (Lipsey, 1990).

What was Learned About Scholarship

While developing this project, I learned the significance of conducting research with data analysis, credible sources, and scholarly writing. Research studies that are published in peer reviewed journals must meet rigorous criteria and thousands of hours of work prior to publication. I have a tremendous amount of respect for researchers after participating in this quantitative program evaluation using descriptive and inferential analyses. The process of conducting authentic research beginning with a guiding question, developing hypotheses that can be tested, conducting a literature review, designing the analyses for the study, analyzing the data, and reporting the findings are intensely difficult but simultaneously rewarding. I now appreciate and value research to a greater extent. I question sources while reading research and understand that scholarly writing is necessary for credibility.

What was Learned About Project Development and Evaluation

This program evaluation project was conceptualized from the beginning of my doctoral courses, as this was a significant need within my district. This district has been using the SpringBoard curriculum since 2007, and a program evaluation was needed to ascertain whether the goals of the program were meeting the needs of the students in the district.

Project development was cultivated throughout the doctoral coursework as a gradual acquirement of knowledge. The various modules provided the foundational

information necessary through the hypothetical scenarios of leading professional communities and creating proposed power points and projects. I learned that a successful innovation requires the participation and input from numerous individuals with varying backgrounds. Additionally, projects require an established need and must follow scaffolded procedures that allow for action steps, feedback, and reflective practices.

Project evaluations require immense time, energy, resources, and expert knowledge in order for the results to be reliable and valid. Program evaluations are a necessity for districts to determine whether identified innovations are successfully meeting their objectives, and if not, what steps need to be taken to remedy the situation. Programs without evaluation do not offer the validation and credibility that the stakeholders deserve.

What was Learned About Leadership and Change

Effective leadership involves the commitment from the entire organization (Fullan M. C., 2005). Leaders must develop teamwork and confidence around a shared common vision and assist stakeholders in building endurance for new innovations through collegial conversations, professional learning communities, and professional development. Leaders understand that the change process is the avenue to sustain educational reforms, and that leadership is the foundational piece. Furthermore, effective leaders are concerned about the needs and comfort levels of others while implementing new innovations, as well as a strong commitment to school improvement through collegiality (Fullan M. C., 2005).

The change process is essential to understand within any organization. Having innovations is not enough to activate positive change. Good change agents involve others in the development of ideas and through acquiring a common commitment. Working collaboratively through the change process (where all stakeholders find meaning) and working through the implementation difficulties as a team creates forward progressive movement that produces results sooner rather than later with the innovation.

What was Learned About Being a Scholar

Participating in the doctoral process has been a tremendous growth experience. Becoming an academic scholar has changed my paradigm, as I now view the educational and research practices with a different awareness. I thought that being a scholar was about achieving individual academic excellence; however, I learned that being a scholar was about contributing to the local, state, national, and global communities.

My personal learning style is to assimilate, analyze, and synthesize information alone and then create a possible solution to the problem. What I learned through working through this process is that ideas and suggestions are more powerful when working as a collective group with a common mission and vision to address a need within a school or district. To improve schools, according to Sergiovanni (2005), leaders must create a collaborative culture of continuous learners who share the burden of leadership. As teachers are empowered, this builds community, existing strengths, and capacity for a continuous improvement model for growth through a shared vision about leadership, school culture, and academic advancement.

Through this scholarly journey, I discovered that communities of learners that are contributing to a common cause or vision yield higher results within organizations than one person implementing their innovation with a top down approach. Like the scientific method of inquiry, many educational issues can be addressed effectively through the collaborative process. Meeting with groups of stakeholders, posing the statement of the problem, facilitating discussions, applying new interventions, and evaluating their outcomes with a collective approach creates ownership. As the group shares their beliefs, values, and visions, they work collaboratively to accomplish their mission (DuFour et al., 2008). Inquiry and action research with shared goals all focused towards student learning and achievement leads to shared leadership among the members to obtain and promote academic excellence for students. This scholarly approach is effective when implementing new innovations such as SpringBoard, the intervention for this project.

What was Learned About Being a Practitioner

Being a practitioner of research was an exciting venture that provided numerous opportunities to grow as an educator and researcher. I value, to a larger extent, educators who conduct research as they provide formative feedback in a systematic way to improve educational practices. This experience has taught me to question programs and practices that are not supported by research.

Conducting an extensive literature review was a significant learning experience. I have never read literature about a topic to reach the point of saturation; therefore, I found how beneficial and crucial that part was to the entire research process. Having a thorough understanding of the theoretical underpinnings of the topic, as well as the current research

conducted, is essential to gather a comprehensive understanding of the issue. For example, through the literature review, I was keenly aware that SpringBoard was created to provide a rigorous curriculum for all students in order to increase AP participation and college enrollment, with a focus on minority students. This understanding provided the context to align the program evaluation's goals and objectives in a measurable format. Background knowledge regarding the instructional design of the program was essential to accurately conduct a summative program evaluation using the logic model.

Additionally, before this doctoral study, I believed that all published pieces were reliable and valid. However, through the journey, I now have a clear understanding regarding peer reviewed literature and the significance of how literature informs the researcher before he or she embarks on their own research project.

Educational practitioners provide the information for districts and institutions to organize needed professional development, implement new curriculums, and improve the quality of educational practices. Research produces theories and findings centered on needs, suggestions, recommendations, and strategies in order for educators to receive professional development to improve instruction and academic achievement.

What was Learned About Being a Project Developer

As a project developer, I conducted a quantitative program evaluation and reported those results using an evaluation report template. The process was rigorous, laborious, and arduous. The methodical research progression demanded hundreds of hours to complete before the evaluation template could be finalized.

Through the program evaluation process, I was able to study, learn, and reflect on my district's implementation of an intervention to assess its effectiveness. I am certain, based on the scientific research methods used throughout the study, that the findings of this program evaluation are accurate and will assist my district in their decision for future use of the intervention.

Being a project developer requires a person to become extremely proficient using a selective skill set. In this research, I needed to become proficient with using the SPSS software for data analysis. I learned how to create a data code book to record the analysis process, clean data files for their upload into the SPSS software, recode data in order to run the various analyses, use the software appropriately to run numerous tests, analyze the output to change numbers into words, and create charts, figures, tables, and graphs with narratives explanations of the findings. This significant process is particularly enlightening and beneficial for educators and administrators to use in order to make informed decisions regarding current or future programs for implementation.

Reflection on the Importance of the Work

Conducting a program evaluation involves studying the effects of a particular program on a given population. This work is important as the evaluation provides a clear and concise representation of the effects a program is having for an organization. Questions regarding effectiveness, efficacy, and impact are revealed and difficult financial decisions are determined based on findings.

SpringBoard is the College Board's official pre-AP curriculum (College Board, 2010), and College Board claims to offer an instructional framework within this

curriculum to promote a rigorous environment for all students that ensures academic preparedness for college or careers. A program evaluation was essential to demonstrate to what extent this curriculum was meeting the needs of the students within this district after the implementation of the intervention. The questions regarding academic achievement, AP participation rates, and AP performance scores needed to be answered in order for this district to make formative decisions.

Through this summative program evaluation, I was able to measure the goals and objectives for using the SpringBoard curriculum to student outcomes in the district. The data analyses demonstrated positive outcomes through the use of the SpringBoard intervention and substantiated the funding allocated for this innovation. Based on the findings, the claim of academic achievement made by the College Board through the implementation of SpringBoard did fulfill program objectives and district expectations for all subgroups.

The evaluation process of SpringBoard was important to assess whether the model was being implemented as planned and to what extent intended outcomes were achieved. Additionally, the evaluation validated educator's efforts, demonstrated to stakeholders the value of the program, and improved the quality of student education through the rigorous instructional environment.

Implications, Application, Directions for Future Research

The research questions guiding this study investigated to what extent academic achievement increased, AP participation rates increased, and AP performance scores increased among racial minority students over the 4 year implementation period of the

SpringBoard curriculum. Multiple hypotheses operationalized these questions by tracking SpringBoard's impact on reading scores on the state assessment, AP participation rates, and AP performance scores. The program goals and objectives of the SpringBoard program were actualized in this district and corroborated using pre and postintervention student data analyses pertaining to all three hypotheses.

The hypotheses increase in levels of complexity from basic reading skills to AP participation to AP performance. The components of the logic model allow for successful increases as students' progress through these levels of difficulty. Findings indicated at the foundational level that the intervention was successful, as academic achievement increased (as measured on student FCAT reading scores). The intervention produced the desired results after the 4 year implementation period, as opportunities for improvement in AP participation and AP performance are relative to students' levels of academic achievement. Additionally, the descriptive analyses showed that AP participation rates progressively increased within the years of SpringBoard implementation among all subgroups. By the 12th grade, the overall participation rates more than tripled among the male and female, minority and nonminority, ELL and non-ELL, ESE and non-ESE, and the free and reduced lunch subgroups. Finally, AP performance measures did not illuminate differences between minority and nonminority scores. As minority students increased participation, performance scores did not decline.

This project study was a first tier evaluation of the overall impact of the use of the SpringBoard curriculum within the school district. The findings support the need for future research pertaining to particular AP courses that minority students achieve higher

performance scores as a result of the SpringBoard intervention. Focusing on courses that benefit racial minority students would inform future delivery models of SpringBoard implementation and/or AP course participation.

Additionally, certain schools may produce varying results using the same curriculum; therefore, individual schools could be analyzed for implications regarding professional development, administrator support, demographics, and teacher beliefs and how these factors relate to academic achievement at their sites. Fidelity of the implementation may be stronger at certain schools than others. Analyses of differentiated performances across specific schools and courses could provide information regarding factors that contribute to student success.

The research process for this area of study will be ongoing, as I am passionate about innovations that allow all students access to equitable, rigorous instructional environments. All students must be afforded an opportunity to engage in interactive, critical thinking activities using high yield strategies with effective instructional programs in order to be prepared for the demands of college or career. I will continue to research the effects of this program, and ones that make similar claims, in order to assess the extent that the desired outcomes are being achieved for students. The global community is dependent on productive citizens who contribute and support the endeavors necessary to sustain a thriving society.

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Appendix A: Evaluation Report

Project Title:

A Summative Program Evaluation of SpringBoard, a Systemic Intervention on Student Achievement and AP Participation

Dates of Project:

November 2010 – December 2011

Date of Report:

December 2011

Section 1: Summary and Introduction

Executive Summary

The district has been concerned with the minority student Advanced Placement (AP) enrollment patterns in high school AP classes across this school locality. The district implemented the SpringBoard curriculum (the official pre AP curriculum of the College Board) as a systematic intervention to address the need for more equitable enrollment within advanced courses; however, little empirical evidence currently existed to assess the efficacy of the program. Guided by the logic model, a summative program evaluation investigated to what extent academic achievement, AP participation rates, and AP performance scores increased among racial minority students over the 4 year implementation period of the SpringBoard curriculum when matched to a historical comparison group. The stakeholders for these results include administrators, teachers, parents, and students. The main limitation is that this first tier, initial assessment of the SpringBoard instrument is only within the district in which it was employed. Individual school studies are not included in this study, as only district wide data was interpreted. Archival pre/post intervention data, the overarching assessment of the SpringBoard curriculum, and its specific effectiveness within each school were examined. However, a more thorough, comprehensive examination of the SpringBoard implementation will be performed in additional studies that will be informed from the findings of the current study. Additionally, only state assessment data was used to measure the increase of minority student

academic achievement. Other variables that might increase academic achievement were not controlled in this study.

The findings in this report include quantitative confirmation that students who engaged with the SpringBoard curriculum during the implementation period scored higher on the FCAT state reading assessment than the historical control group not receiving the intervention. Additionally, inferential analyses performed resulted in data that demonstrated a progressive increase of AP participation for minorities. Due to low AP participation of the cohort high schools during, insufficient data was available to perform multivariate tests for AP performance scores; therefore, these tests will be performed in subsequent studies.

Introduction

The evaluation report contains the following six sections: Introduction, Background, Methodology, Discussion of Results, Conclusions and Recommendations, and Summary and References. This summative program evaluation report of a curriculum produced by the College Board, called SpringBoard, provides formative feedback for the stakeholders in this district.

The project team involved in the program evaluation included Kristal Ayres, Ed.D Doctoral student at Walden University; Dr. Louis C. Milanesi, Director of Research Quality Management for Walden University; and Dr. Martha K. Richardson, Faculty for Ed.D Doctoral Program at Walden University

SpringBoard is a pre AP program (100% aligned to the Common Core Standards) designed to increase academic achievement, student participation in AP, and successful

completion of postsecondary education without remediation (College Board, 2011). The program evaluation came about due to the lack of knowledge regarding the effectiveness of the curriculum. The district utilized this curriculum to increase student achievement and AP participation among racial minority students. An evaluation of student data was required to assess the effectiveness of the curriculum in this district.

The program evaluation ascertained whether the program objectives were being obtained. To accomplish this evaluation, student test scores on the FCAT reading section, AP course participation, and AP performance scores were collected for all middle and high school students in the district before and after the implementation of SpringBoard. The data in the years of 2003- 2006 represent scores before SpringBoard instruction, and the data in the years of 2007-2010 represent the scores after SpringBoard instruction.

The evaluation report is intended to provide formative feedback to the district to assess to what extent the implementation of the curriculum has increased minority student academic achievement and enrollment into AP courses. Based on the findings of the program evaluation, the district may choose to endorse, discontinue use, request additional professional development, or pursue other avenues towards the quest of academic achievement.

Section 2: Background

The College Board identified inequitable access to AP courses, lack of rigor in advanced courses, inequity of course offerings, the quality of existing instruction, low expectations of student performance, and lack of parental involvement (College Board, 2008) as key contributing factors or barriers to the lack of student participation in AP

programs. In response to the significant need for all students to have success and access to AP and college through rigorous coursework, the College Board created a pre-AP curriculum called SpringBoard. The curriculum is vertically aligned for grades sixth through 12th in English Language Arts and is based on the National College Board Standards for College Success. As a rigorous instructional environment impacts student achievement, all students need to be exposed to challenging curriculum.

In 2005, this district applied for and received an Advanced Placement Initiative grant with the federal government. The grant application named the SpringBoard curriculum as the vehicle to be used to increase academic achievement and AP participation among minority students in this district.

In order to provide a strong academic foundation and ensure that all students would be ready for the challenging curriculum of pre-AP and AP coursework, students in this district participate in rigorous academic courses beginning in middle school. Committed educators in this district chose to seek programs that offer a change and increase the rigor for students in order to close the achievement gap. Intense focus among the teachers, administrators, and instructional leaders is required. This district took its first step in closing its educational chasm between schools by implementing the 2006 API grant that produced improved student achievement.

One reason that SpringBoard was implemented in this school district was because of the disproportionate representation of racial minority students to majority students enrolled in AP. SpringBoard has two main objectives: increasing academic achievement and increasing AP enrollment among all students (College Board, 2011). A summative-

based quantitative program evaluation was the most logical design to use for this study, since it provides a direct assessment of achieving the outcomes of the SpringBoard program within the school district.

A program evaluation based on the student achievement, AP enrollment, and AP performance scores over the duration of the SpringBoard implementation assessed the extent that the local application of this curriculum impacted students within the district. Key performance indicators included scores reported from the Florida Comprehensive Assessment Test (FCAT) state assessment, the AP enrollment statistics reported from the district's Data Warehouse, and the AP performance scores reported from the district's Data Warehouse. The reported scores included in the study were from cohorts of students in this district from 2003 – 2010 to capture revealing data before and after the intervention.

Section 3: Description of Evaluation Methods

Methodology

Purposes of the Evaluation

The purpose of this program evaluation was to analyze and determine to what extent the implementation of the SpringBoard curriculum have improved educational outcomes as measured by the state reading assessment called the Florida Comprehensive Achievement Test (FCAT). The scores on the state assessment largely determine access to AP courses; therefore, a score of 3, 4, or 5 (with 1 representing the lowest and 5 the maximum performance) must be achieved on the FCAT in order for students to be considered eligible to participate in AP opportunities.

Furthermore, the project attempted to evaluate whether this curriculum has increased minority students' participation and success in AP courses. The district chose to use this curriculum as a means of increasing minority students' academic achievement on the state assessment, whereby permitting students to participate in AP. The goal was to ascertain through a program evaluation whether there was an increase in AP after implementing the program during a 4 year period of time.

Evaluation Design

This evaluation is a first tier examination of the district wide concern of the disproportionate representation of racial minority students compared to nonminority students enrolled in AP courses. With this first examination, a longitudinal panel analysis was used to analyze the achievement levels measured on the state reading assessment, AP enrollment rates, and AP performance scores.

The following subgroups were sampled: African American, Haitian Creole, Hispanic, and Caucasian students. Caucasian students are the numerical majority in only three of the nine high schools and five of the ten middle schools. A three stage stratified random sampling was used that included proportional and non-proportional elements. First, in order to assess the sequential additive effect of the SpringBoard program, only students with uninterrupted attendance across the longitudinal time frame that defines each group were included in the sampling frame. Then, the sample was proportionately drawn across all schools in the district. I conducted a deliberate over sampling of three of the minority sub groups: African Americans, Hispanics, and Haitians. This disproportionate sampling was designed to ensure adequate statistical power within each

subgroup and allow for more detailed between groups analyses within the proposed design.

The sample size was informed by using G Power 3 analyses to find the appropriate threshold of statistical power. Therefore, the sample also provides adequate power to detect small to moderate effects on the outcome resulting from the implementation of SpringBoard (Lipsey, 1990).

The statistical power to calculate for internal validity using repeated measures ANOVA (including tests for within, between, and interaction effects) is .95 based on an effect size of .10, error probability (α) of .05, power ($1-\beta$) of .95, number of groups being 4, number of measurements being 4, correspondence of measures being .5 and nonsphericity correction of 1. The effect size was set at .10 to afford the ability to detect a small effect of the intervention due to the relatively brief deployment of the intervention. The combination of these specifications indicated a minimum sample of 300 would be required.

Potential limitations for this study include the extent to which teachers implement the SpringBoard program, teachers receive appropriate professional development, teachers believe in the program and implement with fidelity, and teachers present materials to the students regarding motivation, efficacy, and engagement. Additionally, there are limitations to the access in some school sites to AP courses. Teachers and counselors admit or exclude students into AP courses based on unrelated factors to FCAT student achievement.

Threats imposed on internal validity due to student mobility within the district were partially controlled through the longitudinal panel research design. Potential contamination of the control group was controlled by the historical control group, and contamination of the intervention groups was controlled by the longitudinal panel design. Only students who have data in the district system for all years of the outlined study were used during the repeated analysis; students that did not participate with the SpringBoard intervention were not part of this study.

The main limitation is that this first tier, initial assessment of the SpringBoard instrument is within the district in which it was employed. Individual school studies were not included in this study, as only district wide data was interpreted. The overarching assessment of the SpringBoard curriculum was examined; its specific effectiveness within each school were covered to some extent; however, a more thorough, comprehensive examination of the SpringBoard implementation will be performed in additional studies that will be informed from the findings of the current study. Additionally, only state assessment data was used to measure the increase of minority student academic achievement. Other variables that might increase academic achievement were not controlled in this study.

Data Collection Instruments Used

Two instruments were used in this study. The first instrument was the Florida Comprehensive Assessment Test (FCAT). Students are assessed using this annual criterion referenced state assessment that measures individual student performance of the state standards identified through the reading, math, writing, and science benchmarks.

Scale scores are reported for each grade level ranging from 100 to 500, which are transformed into proficiency levels ranging from 1 to 5 reported for individuals (with 1 representing the lowest and 5 the maximum performance).

The test is both valid and reliable. The FCAT has internal consistency and is highly reliable based on the findings that the reliability coefficient using Cronbach's alpha is .90. The validity of the FCAT instrument is based on content, criterion, and construct related evidence as reported in the Assessment and Accountability Briefing Book produced by the Florida Department of Education (2004).

For the purpose of this evaluation, only the reading scores were used to assess the SpringBoard program's objective of increasing academic achievement. This metric was selected as the key indicator since passing scores on this test assist in determining eligibility towards AP course placement. Traditionally in this district, only students scoring a 4 or 5 on a scale of 1 to 5 would be permitted to enroll in AP courses.

In addition to using the FCAT results reported by the Department of Education, participation and performance scores in the AP program are included in this report. Schools were compared by AP course enrollment and AP performance before and after the implementation of SpringBoard. AP course enrollment was obtained through the district's Data Warehouse and confirmed using the College Board's score report. For the purpose of this evaluation, student AP performance was measured using end of course grades obtained through the district's Data Warehouse.

Data Collection Procedures

The school district studied is located in southwest Florida and contains 9 high schools and 10 middle schools. The school district has a minority population of 60% with 61% of the district receiving free/reduced lunch, and 60.7% of students being identified as ELL (District School Board of Collier County, 2011). The population included all of the middle schools and high schools in the entire school district. The middle and high schools in this district use SpringBoard with their students as the core curriculum in the English/Language Arts classes, which makes all students from these schools eligible to participate.

The statistics reported in the census data illustrate the sharp contrast between national levels from those of the current setting and sample. The demographic profiles of this district contain a heavy racial minority student population that is different from the national populace. The population of this district is different from the global national norm, as the combined minority populations are the numerical majority in the region. Moreover, individual schools within this district report a wide range of demographic profiles related to the diversity in race, ethnicity, SES, and ELL subgroups. For example, Table 1 represents the current national and state averages of populations based on the 2010 United States Census and local data as reported through the local district's 2011 Data Warehouse.

Table 1

National and Local Population Percentages for 2010

Populations	Whites	Hispanics	African Americans	Haitians
National	72%	16%	13%	.3%
State	79%	21%	16%	Not reported
Local	40%	44%	6%	7%

Note: United States 2010 Census

The archival data for this study are performance measures that were extracted for the FCAT scores, AP participation rates, and AP performance scores from 2003 through 2010. The FCAT, AP participation, and AP performance scores of the sample population cohort in 2003-2006 established the historical control group before implementation of SpringBoard. The FCAT, AP participation, and AP performance scores of the sample population cohort in 2007 through 2010 were analyzed as the intervention group to test hypotheses related to the impact of the implementation of SpringBoard on performance as defined by these key indicators. In addition to repeated measures ANOVA, one-way ANOVA, Pearson correlations, independent sample *t*-tests, and descriptive statistics were used to analyze and report the data.

Section 4: Discussion of Results

Participants

I sampled four subgroups: African American, Haitian Creole, Hispanic, and Caucasian students. First, in order to assess the sequential additive effect of the SpringBoard program, only students with uninterrupted attendance across the longitudinal time frame that defined each group was included in the sampling frame. Then, the sample drew proportionately across all schools in the district. I conducted a deliberate over sampling of three of the minority sub groups: African American, Hispanic, and Haitian Creole students. This disproportionate sampling was designed to ensure adequate statistical power within each subgroup and allowed for more detailed between groups analyses within the proposed designed.

Results, Interpretation, Explanations

Analyses of Middle School

Student data is displayed on Tables 2 through 11representing the years of 2003 to 2010 for the SpringBoard intervention and historical control groups, as well as the minority/nonminority middle school groups. The FCAT state assessment mean reading scores are reported (see Table 2) by experimental condition groups and demographic subgroups for the middle school students in this study (N = 4,208). The data included the FY10 eighth grade minority and nonminority intervention group that used SpringBoard during FY07 to FY10 (n = 2,140), and the FY06 eighth grade minority and nonminority historical control group (not using SpringBoard) during FY03 to FY06 (n= 2,068).

Table 2

Mean Reading Scores by Experimental Condition Groups for Eighth Graders

Group	Subgroup	*N*	Fifth grade reading	Sixth grade reading	Seventh grade reading	Eighth grade reading
Overall		4,208	300.03 (60.60)	306.55 (61.39)	312.30 (58.21)	307.72 (49.47)
SpringBoard		2,140	311.01 (55.31)	313.52 (57.39)	322.15 (53.44)	314.23 (46.51)
Historical Control		2,068	288.67 (63.67)	299.33 (64.50)	302.10 (61.13)	300.98 (51.51)
SpringBoard	Male	1,111	308.75 (55.55)	311.97 (59.71)	319.85 (55.22)	309.87 (46.70)
	Female	1,029	313.44 (54.96)	315.19 (54.75)	324.62 (51.36)	318.94 (45.86)
Historical Control	Male	1,009	285.08 (64.97)	295.75 (67.30)	294.26 (62.80)	294.48 (53.22)
	Female	1,059	292.10 (62.25)	302.75 (61.55)	309.57 (58.55)	307.19 (49.05)
SpringBoard	Minority	1,189	291.80 (53.94)	296.26 (54.89)	307.14 (51.25)	302.41 (46.36)
	Nonminority	951	335.02 (47.01)	335.10 (53.01)	340.91 (50.10)	329.01 (42.30)
Historical Control	Minority	1,002	258.84 (59.93)	269.72(61.14)	279.30 (60.37)	281.45 (51.29)
	Nonminority	1,066	316.72 (53.55)	327.17 (54.40)	323.53 (53.65)	319.35 (44.50)
SpringBoard	ELL	121	227.75 (59.15)	247.52 (53.51)	262.97 (49.08)	270.26 (47.07)
	non-ELL	2,019	316.00 (50.93)	317.47 (55.17)	325.69 (51.58)	316.87 (45.15)
Historical Control	ELL	164	213.71 (47.36)	233.43 (52.10)	255.84 (52.51)	262.19 (47.82)
	non-ELL	1,904	295.13 (60.71)	305.01 (62.28)	306.09 (60.19)	304.33 (50.45)
SpringBoard	ESE	302	260.82 (59.31)	262.30 (58.46)	275.39 (55.13)	272.83 (51.42)
	non-ESE	1,838	319.25 (50.03)	321.93 (52.66)	329.83 (49.08)	321.04 (41.92)
Historical Control	ESE	260	233.14 (59.42)	243.49 (57.95)	246.96 (53.06)	253.01 (57.05)
	non-ESE	1,808	296.66 (60.20)	307.37 (61.35)	310.03 (58.06)	307.88 (46.79)
SpringBoard	Free/reduced Lunch	1,191	294.92 (54.49)	297.57 (55.35)	308.87 (51.69)	302.79 (46.20)
	Non Free/reduced Lunch	949	331.20 (49.40)	333.53 (53.53)	338.81 (50.88)	328.59 (42.78)
Historical Control	Free/reduced Lunch	940	256.41(59.69)	266.97 (61.80)	274.81 (58.92)	278.07 (51.27)
	Non Free/reduced Lunch	1,128	315.56 (53.62)	326.31 (53.34)	324.85 (53.12)	320.08 (43.26)

The overall reading mean for the SpringBoard intervention group was higher than the overall mean of the historical control group across all four grade levels. Additionally, the standard deviation was lower in the SpringBoard intervention group across the four grade levels. The results of the overall mean and standard deviation suggest that the SpringBoard intervention positively impacted student achievement as reported on the FCAT reading test results. Additionally, I compared data to various subgroups: male/female, minority/nonminority, ELL/non-ELL, ESE/non-ESE, free or reduced lunch/non free or reduced lunch. In all subgroups, the mean was greater for students who received the SpringBoard intervention, as opposed to students not receiving intervention of SpringBoard in the historical control group.

Furthermore, I calculated the mean FCAT reading scores by ethnic groups and experimental conditions. Table 3 displays the data for the reading means of the FY10 eighth grade SpringBoard intervention group by ethnicity and condition code for FY07to FY10, as well as the reading means of the FY06 eighth grade historical control group by ethnicity and condition code for FY03 to FY06.

Table 3

Mean Reading Scores by Ethnic Groups for Eighth Graders

Ethnic Group	Condition	*N*	Fifth grade reading	Sixth grade reading	Seventh grade reading	Eighth grade reading
African American	SpringBoard	141	293.88 (46.07)	297.12 (53.58)	302.93 (47.38)	303.79 (45.68)
	Historical Control	174	261.39 (52.60)	273.41 (56.37)	279.15 (51.70)	284.14 (41.92)
Haitian Creole	SpringBoard	221	293.67 (50.70)	296.85 (54.04)	310.78 (50.79)	305.24 (41.68)
	Historical Control	186	265.34 (64.04)	278.20 (60.81)	289.11 (63.50)	291.20 (53.99)
Hispanic	SpringBoard	827	290.95 (56.02)	295.95 (55.39)	340.91 (50.10)	301.42 (47.65)
	Historical Control	642	256.26 (60.48)	266.26 (62.25)	276.50 (61.40)	277.89 (52.44)
European American	SpringBoard	951	335.02 (47.01)	335.10 (53.01)	340.91 (50.10)	329.01 (42.30)
	Historical Control	1,066	316.72 (53.55)	327.17 (54.40)	323.53 (53.65)	319.35 (44.50)

The patterns observed in the more granular analysis by individual ethnic groups directly mirrored the aggregated minority grouping, thus confirming the argument to use the aggregate classification. Across all ethnic groups, the mean was greater for the SpringBoard intervention group as opposed to the historical control group. The Hispanic population showed the greatest mean gains across the ethnic groups.

I also assessed associations linking comparison condition codes and demographic subgroups with FCAT reading scores using Pearson correlations. Significant correlations

linking reading score to condition code and all demographic factors were observed at the .01 levels (see Table 4). As hypothesized, a significant correlation existed between the groups ($p < .001$) as reported using the Pearson product-moment correlation.

Table 4

Pearson Correlation Between Condition Codes for Eighth Graders

		Condition Code	Minority Status	ELL	ESE	Free and Reduced Lunch	Gender
Fifth grade read	Pearson C.	.184**	-.401**	-.358**	-.337**	-.369**	.042**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.006
	N	4,208	4,208	4,208	4,208	4,208	4,208
Sixth grade read	Pearson C.	.116**	-.381**	-.295**	-.339**	-.371**	.038*
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.014
	N	4,208	4,208	4,208	4,208	4,208	4,208
Seventh grade read	Pearson C.	.172**	-.320**	-.247**	-.338**	-.321**	.080**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	4,208	4,208	4,208	4,208	4,208	4,208
Eighth grade read	Pearson C.	.134**	-.314**	-.229**	-.350**	-.324**	.105**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	4,208	4,208	4,208	4,208	4,208	4,208

Analyses of High School

I also analyzed high school student FCAT scores, AP participation rates, and AP performance scores. Reported in Table 5 are the FCAT state assessment mean reading scores by experimental condition groups and demographic subgroups ($N = 851$). The data for the SpringBoard intervention group ($n = 545$) includes the reading score means of the FY10 12th grade minority and nonminority students that used SpringBoard in the high schools during FY07 to FY10 (only three high schools used SpringBoard during this timeframe). The data for the historical control group ($n = 306$) includes the reading means of the FY06 12th grade minority and nonminority students (not using SpringBoard) in those same high schools during FY03 to FY06.

Table 5

Mean Reading Scores by Experimental Condition Groups for 12th Graders

Group	Subgroup	*N*	Ninth grade reading	10th grade reading
Overall		851	284.91	281.56
			(51.74)	(54.63)
SpringBoard		545	290.07	282.81
			(51.26)	(57.10)
Historical Control		306	275.71	279.33
			(51.40)	(49.94)
SpringBoard	Male	257	289.64	285.81
			(52.07)	(56.79)
	Female	288	290.45	280.13
			(50.61)	(57.34)
Historical Control	Male	133	268.88	273.95
			(52.64)	(51.93)
	Female	173	280.97	283.46
			(49.94)	(48.09)
SpringBoard	Minority	461	285.27	276.70
			(50.82)	(54.29)
	Nonminority	84	316.43	316.33
			(45.58)	(60.75)
Historical Control	Minority	256	272.13	275.16
			(51.56)	(49.35)
	Nonminority	50	294.04	300.64
			(46.80)	(47.86)
SpringBoard	ELL	70	242.91	243.90
			(50.71)	(52.59)
	non-ELL	475	297.02	288.55
			(47.59)	(55.52)
Historical Control	ELL	23	201.70	211.26
			(43.25)	(39.66)
	non-ELL	283	281.73	284.86
			(47.20)	(46.54)
SpringBoard	ESE	54	264.17	245.11
			(45.27)	(64.76)
	non-ESE	491	292.92	286.96
			(51.12)	(54.70)
Historical Control	ESE	34	249.53	242.56
			(51.32)	(45.61)
	non-ESE	272	279.00	283.92
			(50.55)	(48.60)
SpringBoard	Free/reduced Lunch	419	285.34	277.20
			(51.62)	(57.25)
	Non Free/reduced Lunch	126	305.80	301.48
			(46.89)	(52.64)
Historical Control	Free/reduced Lunch	197	269.03	272.12
			(51.63)	(50.42)
	Non Free/reduced Lunch	109	287.80	292.36
			(48.92)	(46.50)

Similar to the results found with the middle school students, the overall mean for the SpringBoard intervention group was higher than the overall mean of the historical control group for ninth and 10th graders Additionally, data among all subgroups (male/female, minority/nonminority, ELL/non-ELL, ESE/non-ESE, free or reduced lunch/non free or reduced lunch) demonstrated that the mean was greater for all students who received the SpringBoard intervention as opposed to the historical control group. The results of the overall mean and standard deviation indicated that the intervention had a positive impact on student academic achievement as reported on the FCAT reading test results.

Furthermore, I calculated the mean FCAT reading scores by ethnic groups and experimental conditions. Table 6 displays the data for the reading means of the FY10 12th grade SpringBoard intervention group by ethnicity and condition code for FY07 to FY10, as well as the reading means of the FY06 12th grade historical control group by ethnicity and condition code for FY03 to FY06.

Table 6

Mean Reading Scores by Ethnic Groups for 12th Grade

Ethnic Group	Condition	*N*	Ninth grade reading score	Tenth grade reading score
African American	SpringBoard	69	273.32 (52.38)	261.26 (52.72)
	Historical Control	33	280.52 (48.61)	285.03 (41.56)
Haitian Creole	SpringBoard	66	260.83 (59.44)	254.00 (62.75)
	Historical Control	53	272.21 (50.20)	269.45 (46.44)
Hispanic	SpringBoard	326	292.75 (46.55)	284.57 (50.84)
	Historical Control	170	270.48 (52.67)	275.03 (51.53)
European American	SpringBoard	84	316.43 (45.58)	316.33 (60.75)
	Historical Control	50	294.04 (46.80)	300.64 (47.86)

The patterns observed in the more granular analysis by individual ethnic groups directly mirrored the aggregated minority grouping, thus confirming the argument to use the aggregate classification. The ethnic groups that showed mean gains were the Hispanic and European American populations.

In addition to mean reading score analyses, associations linking comparison condition codes and demographic subgroups with FCAT reading scores were assessed using Pearson correlations (see Table 7).

Table 7

Pearson Correlations Between Condition Codes for 12th Grade

		Condition Code	Minority Status	English Language Learner Status	Exceptional Student Education Status	Lunch Status	Gender Status
Ninth grade read	Pearson Correlation	.133**	-.194**	-.354**	-.173**	.150**	.042
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.224
	N	851	851	851	851	851	851
10th grade read	Pearson Correlation	.031	-.229**	-.293**	-.233**	.178**	-.004
	Sig. (2-tailed)	.372	.000	.000	.000	.000	.918
	N	851	851	851	851	851	851

Significant correlations linking reading score to condition code and all demographic factors were observed at the .01 levels (Table 7). The ninth grade reading scores were significantly correlated with the condition code, minority status, ELL status, ESE status, free/reduced lunch status, but not gender status. The 10th grade reading scores were significantly correlated with minority status, ELL status, ESE status, free/reduced lunch status, but not condition code or gender status.

In addition to Pearson Correlation analyses, I used SPSS to calculate the total number of AP courses taken for 12th graders of FY10 during their high school years (*N* =

441). Table 8 provides the number of AP courses in each grade level for the historical control group (n = 103), as well as the SpringBoard intervention group (n = 338).

Table 8

Number of AP Courses for FY10 12th Graders by Condition Code

Group	Subgroup	*N*= Total AP courses	Ninth grade	10th grade	11th grade	12th grade
Overall		441	6	33	164	238
SpringBoard		338	3	19	135	181
Historical Control		103	3	14	29	57
SpringBoard	Male	121	0	3	47	71
	Female	217	3	16	88	110
Historical Control	Male	27	1	3	6	17
	Female	76	2	11	23	40
SpringBoard	Minority	282	2	14	106	160
	Nonminority	56	1	5	29	21
Historical Control	Minority	80	3	11	21	45
	Nonminority	23	0	3	8	12
SpringBoard	ELL	31	0	3	12	16
	non-ELL	307	3	16	123	165
Historical Control	ELL	2	0	0	0	2
	non-ELL	101	3	14	29	55
SpringBoard	ESE	8	0	0	3	5
	non-ESE	330	3	19	132	176
Historical Control	ESE	2	0	0	0	2
	non-ESE	101	3	14	29	55
SpringBoard	Free/reduced lunch	247	2	13	94	138
	Non free/reduced lunch	91	1	6	41	43
Historical Control	Free/reduced lunch	55	3	7	15	30
	Non free/reduced lunch	48	0	7	14	27

AP participation rates showed a progressive increase within the years of SpringBoard implementation among all subgroups. By the 12th grade, the overall participation rates more than tripled among the male and female, minority and nonminority, ELL and non-ELL, ESE and non-ESE, and the free and reduced lunch subgroups.

In addition to participation rates, the means for AP performance scores were reported by experimental condition groups and demographic subgroups (see Table 9). The data for the SpringBoard intervention group included the means of AP performance scores for the FY10 12th grade minority and nonminority cohort that used SpringBoard in the high schools during FY07 to FY10. Also, the means of AP performance scores were reported for the historical control group for the FY06 12th grade minority and nonminority cohort (not using SpringBoard) in the high schools during FY03 to FY06.

Table 9

Mean AP Performance Scores for FY10 12th Graders by Condition Code

Group	Subgroup	Ninth grade	10th grade	11th grade	12th grade	Ninth-12th Average
Overall		3.5	3.21	3.07	2.93	2.94
		(.55)	(.86)	(.86)	(.78)	(.79)
SpringBoard		3.67	3.00	2.97	2.92	2.89
		(.58)	(.94)	(.89)	(.78)	(.79)
Historical Control		3.33	3.50	3.53	2.97	3.09
		(.58)	(.65)	(.50)	(.80)	(.76)
SpringBoard	Male	0.00	2.67	2.86	2.72	2.73
		(.00)	(1.53)	(1.05)	(.86)	(.87)
	Female	3.67	3.06	3.03	3.05	2.83
		(.58)	(.85)	(.79)	(.70)	(.75)
Historical Control	Male	4.00	3.00	3.50	3.29	3.25
		(.00)	(1.00)	(.55)	(.83)	(.78)
	Female	3.00	3.64	3.54	2.83	3.03
		(.00)	(.50)	(.50)	(.75)	(.76)
SpringBoard	Minority	3.50	2.93	2.94	2.93	2.88
		(.71)	(.99)	(.90)	(.77)	(.80)
	Nonminority	4.00	3.20	3.07	2.83	2.98
		(.00)	(.84)	(.85)	(.88)	(.77)
Historical Control	Minority	3.33	3.63	3.50	2.90	3.06
		(.58)	(.50)	(.50)	(.79)	(.79)
	Nonminority	0.00	3.0	3.62	3.21	3.20
		(.00)	(1.0)	(.52)	(.78)	(.67)
SpringBoard	ELL	0.00	3.33	3.46	3.06	3.18
		(.00)	(1.15)	(.58)	(.75)	(.68)
	non-ELL	3.67	2.93	2.92	2.91	2.86
		(.58)	(.93)	(.90)	(.78)	(.80)
Historical Control	ELL	0.00	0.00	0.00	3.00	3.00
		(.00)	(.00)	(.00)	(.00)	(.00)
	non-ELL	3.33	3.50	3.53	2.96	3.10
		(.58)	(.65)	(.50)	(.81)	(.78)
SpringBoard	ESE	0.00	0.00	2.33	3.10	2.81
		(.00)	(.00)	(.58)	(.74)	(.75)
	non-ESE	3.68	3.00	2.98	2.92	2.90
		(.58)	(.94)	(.89)	(.78)	(.79)
Historical Control	ESE	0.00	0.00	0.00	3.00	3.00
		(.00)	(.00)	(.00)	(0.00)	(0.00)
	non-ESE	3.33	3.50	3.53	2.97	3.10
		(.58)	(.65)	(.50)	(.81)	(.78)
SpringBoard	Free/reduced lunch	3.50	2.92	2.99	2.99	2.74
		(.71)	(.86)	(.87)	(.75)	(.83)
	Non free/reduced lunch	4.00	3.17	2.92	2.70	2.95
		(0.00)	(1.17)	(.93)	(.84)	(.77)
Historical Control	Free/reduced lunch	3.33	3.57	3.43	3.07	3.22
		(.58)	(.53)	(.50)	(.83)	(.77)
	Non free/reduced lunch	0.00	3.43	3.64	2.85	2.94
		(.00)	(.79)	(.50)	(.76)	(.75)

As displayed in Table 9, the AP performance score means were higher among the historical control groups in all areas. However, the increased AP participation rates among all subgroups may have some influence on the decrease in AP performance scores.

In addition to reporting the participation rates and performance scores from the three pilot high schools before and during SpringBoard implementation, I analyzed the other six high school participation rates and performance scores in this district for 11th graders during FY10 (SpringBoard intervention group) and FY07 (historical control group). A frequency distribution was used to examine the total number of AP courses taken for 11th graders during these 2 years based on their condition code. Table 10 provides the number of AP courses for the historical control group as well as the SpringBoard intervention group.

Table 10

Number of AP Courses for 11th Graders by Condition Code

Group	Subgroup	*N*= Total AP Tests
Overall		1,132
SpringBoard		608
Historical Control		524
SpringBoard	Male	250
	Female	358
Historical Control	Male	228
	Female	296
SpringBoard	Minority	164
	Nonminority	444
Historical Control	Minority	110
	Nonminority	414
SpringBoard	ELL	18
	non-ELL	590
Historical Control	ELL	13
	non-ELL	511
SpringBoard	ESE	13
	non-ESE	595
Historical Control	ESE	6
	non-ESE	518
SpringBoard	Free/reduced lunch	117
	Non free/reduced lunch	491
Historical Control	Free/reduced lunch	52
	Non free/reduced lunch	472

AP Participation rates among the SpringBoard intervention 11th grade students revealed an increase in all subgroups. Most noteworthy were the minority, ELL, and lunch status groups. AP participation rates for minority students increased by 54 courses, and both the ELL and Low SES (free/reduced lunch) AP participation rates more than doubled.

Additionally, I analyzed the AP performance scores for these same 11th grade students. In Table 11, the means for the end of course AP grades are reported by experimental condition groups and demographic subgroups. The data for the SpringBoard intervention group included the AP performance score means of the FY10 11th grade minority and nonminority students that used SpringBoard in the high schools during FY07 to FY10. The data for the historical control group included the AP performance score means of the FY06 11th grade minority and nonminority students (not using SpringBoard) in the high schools during FY03 toFY06.

Table 11

Mean AP Performance Scores for FY10 11th Graders by Condition Code

Group	Subgroup	11th grade Averages
Overall		3.14 (.79)
SpringBoard		3.25 (.78)
Historical Control		3.01 (.78)
SpringBoard	Male	3.13 (.81)
	Female	3.34 (.76)
Historical Control	Male	2.84 (.84)
	Female	3.14 (.72)
SpringBoard	Minority	3.19 (.83)
	Nonminority	3.28 (.77)
Historical Control	Minority	2.96 (.73)
	Nonminority	3.02 (.80)
SpringBoard	ELL	3.31 (.96)
	non-ELL	3.25 (.78)
Historical Control	ELL	3.23 (.73)
	non-ELL	3.01 (.79)
SpringBoard	ESE	3.54 (.52)
	non-ESE	3.25 (.79)
Historical Control	ESE	3.17 (.75)
	non-ESE	3.01 (.79)
SpringBoard	Free/reduced lunch	3.25 (.81)
	Non free/reduced lunch	3.26 (.78)
Historical Control	Free/reduced lunch	2.90 (.69)
	Non free/reduced lunch	3.02 (.79)

Although there is not a significant difference between the means, the intervention cohort increased performance using the SpringBoard intervention. The results indicated that the mean AP performance scores increased across all subgroups. The most significant gains occurred among the low SES population (free/reduced lunch) and the ESE population.

The descriptive statistical analyses provided evidence that the SpringBoard cohorts improved their academic achievement using the intervention. The middle and high school intervention groups scored higher on the FCAT reading test based on the overall reading mean. Additionally, all subgroups (male/female, minority/nonminority, ELL/non-ELL, ESE/non-ESE, free or reduced lunch/non free or reduced lunch) obtained a higher reading mean on the FCAT. The middle school students showed mean gains across all ethnic groups (African American, Haitian Creole, Hispanic, European American), and the high school students showed mean gains with the Hispanic and European American populations. Pearson correlations revealed significant correlations for middle and high school students linking reading scores to condition code and all demographic factors were observed at the .01 levels. Also, AP participation rates showed a progressive increase, as well as AP mean performance scores increased across all subgroups within the years of the SpringBoard implementation.

Inferential Analyses

Using inferential tests, I assessed the guiding research questions and hypotheses of this capstone project based on the proposed problem. The problem pertains to cultural diversity in AP enrollment, as there are a limited number of racial minority students

participating in high school AP classes within this district. The research questions guiding this study investigated to what extent academic achievement increased, AP participation rates increased, and AP performance scores increased among racial minority students over the 4 year implementation period of the SpringBoard curriculum in one school district. Multiple hypotheses operationalized these questions by tracking SpringBoard's impact on reading scores on the state assessment, AP participation rates, and AP performance scores. Different analyses were used for each hypothesis as follows:

Preliminary Analyses for First Hypothesis Test

I performed a series of tests to explore significant violations of normality and homoscedasticity that might interfere with interpretation of the multivariate analyses used to examine the hypotheses. These tests included Box's test of equality of covariance matrices, Mauchly's test of sphericity, and Levene's test of equality of error variances.

Visual analyses performed facilitated understanding the relative contribution of skew and kurtosis to the statistically significant and practical violations of normality because the very large sample size (n= 4,208) would increase the likelihood that minor to moderate deviations would reach the threshold for statistical significance. Skew and kurtosis provide central information about the shape of distribution and assessment of normality (DeCarlo, 1997). Figures 1 to 4 display histograms of the FCAT reading scores for each grade level by the intervention of SpringBoard and the historical control group that did not receive the intervention.

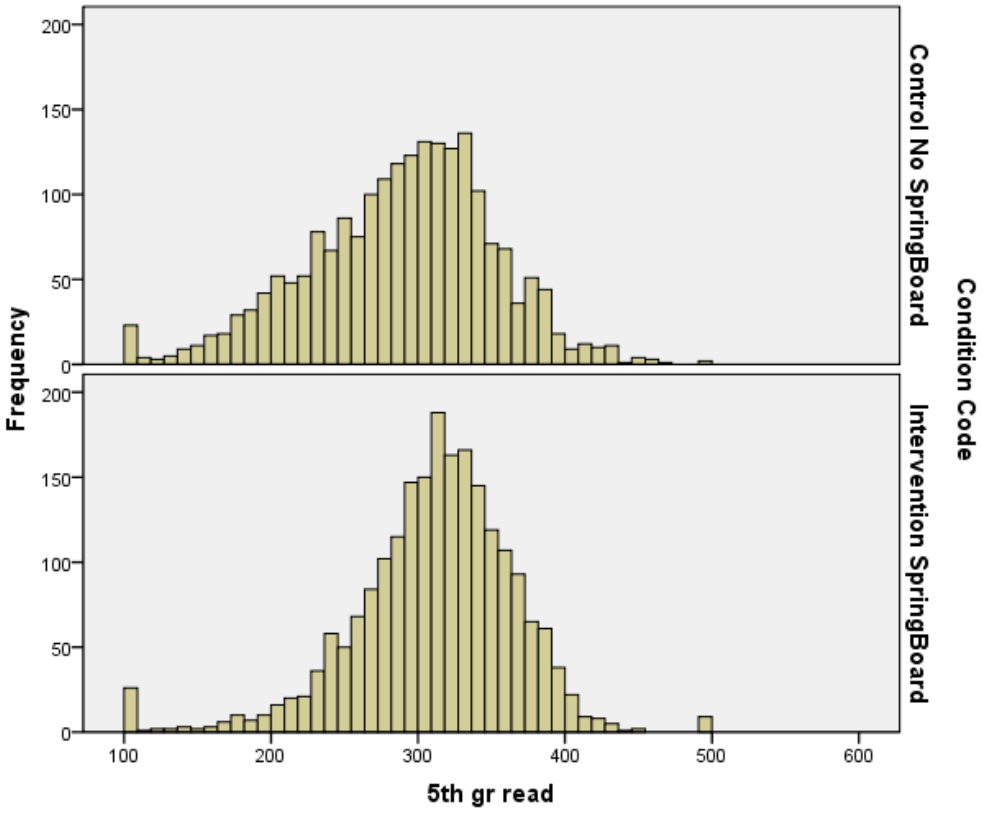

Figure 1. Histogram of fifth grade FCAT scores with condition codes

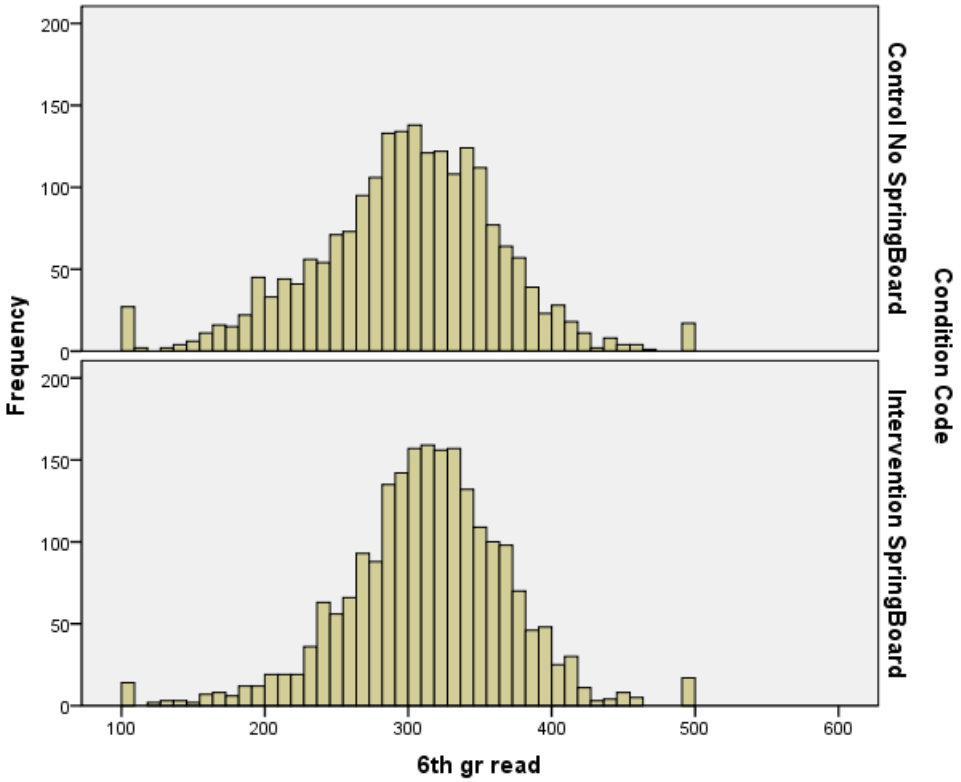

Figure 2. Histogram of sixth grade FCAT scores with condition codes

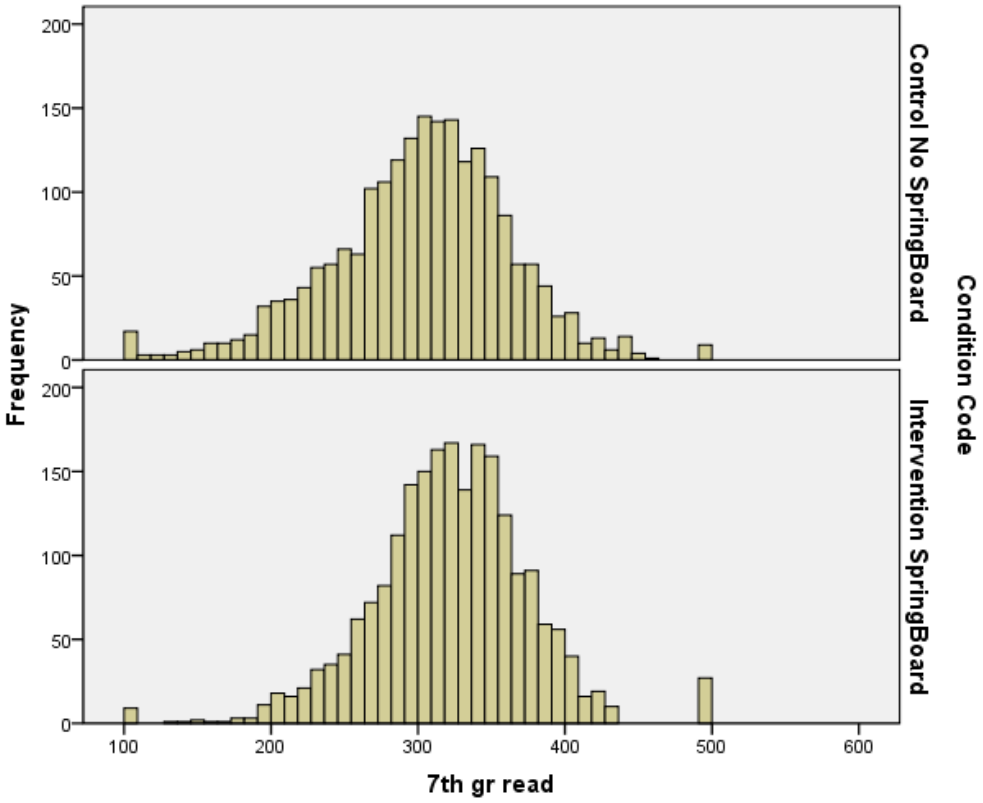

Figure 3. Histogram of seventh grade FCAT scores with condition codes

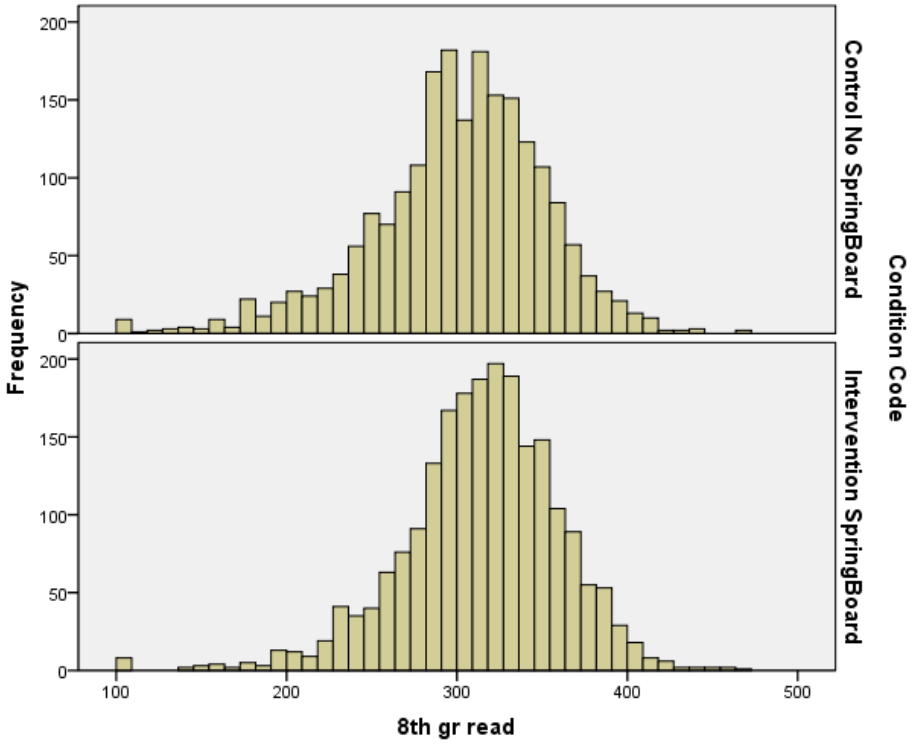

Figure 4. Histogram of eighth grade FCAT scores with condition codes

A recommended strategy to assess normality is to use Kolmogorov-Smirnov and Shapiro-Wilk tests of skew and kurtosis (DeCarlo, 1997). Table 12 displays the results of these analyses and validates departures from normality. The reported data confirmed that the deviations of skew and kurtosis were statistically significant ($p < .01$) across testing at all four grade levels.

Table 12

Tests of Normality for Condition Codes and Grade Levels

Grade	Condition Code	Mean	Range	Variance	Skewness	Kurtosis	Kolmogorov-Smirnov		Shapiro-Wilk	
							df	sig	*df*	sig.
Fifth	SpringBoard	311.01 (1.20)	400	3058.78 (55.31)	-.77 (.05)	2.31 (.11)	2,140	.00	2,140	.00
	Control No SpringBoard	288.67 (1.40)	400	4054.06 (63.67)	-.36 (.05)	.27 (.11)	2,068	.00	2,140	.00
Sixth	SpringBoard	313.52 (1.24)	400	3293.58 (57.39)	-.30 (.05)	1.54 (.11)	2,140	.00	2,140	.00
	Control No SpringBoard	299.33 (1.42)	400	4159.59 (64.50)	-.27 (.05)	.84 (.11)	2,068	.00	2,140	.00
Seventh	SpringBoard	322.15 (1.16)	400	2855.34 (53.44)	-.15 (.05)	1.86 (.11)	2,140	.00	2,140	.00
	Control No SpringBoard	302.10 (1.34)	400	3736.86 (61.13)	-.36 (.05)	.85 (.11)	2,068	.00	2,140	.00
Eighth	SpringBoard	314.23 (1.01)	369	2163.07 (46.51)	-.67 (.05)	1.89 (.11)	2,140	.00	2,140	.00
	Control No SpringBoard	300.98 (1.13)	369	2652.89 (51.51)	-.64 (.05)	1.17 (.11)	2,068	.00	2,140	.00

Previous investigations established that repeated measures demonstrate a reasonable robustness to moderate violation of normality (Tabachnick & Fidell, 2000). However, repeated measures are less robust to violations of homoscedasticity.

Tests such as Box's test of equality of covariance matrices, Levene's test of equality of error variances, and Mauchly's test of sphericity were developed to understand the effect of equality of variances (DeCarlo, 1997). The Box, Mauchly, and Levene tests were each significant ($p < .01$); therefore, I established a series of precautionary adjustments to compensate for Type I error in the tests of the hypotheses. Also, I set the Bonferroni correction to $p < .01$ for the hypothesis test to be conservative,

and employed Greenhouse-Geisser and Huynh-Feldt corrections in interpreting multivariate results related to the hypotheses.

Inferential Analyses for Hypothesis #1

$H_1$1: There will be an increase in minority student academic achievement, as measured by the annual state reading assessment, throughout the 4 years of SpringBoard implementation.

I used repeated measures ANOVA to test the first hypothesis and cross sectional ANOVAs validated the multivariable analyses. Descriptive statistics' results are reported in Table 13 by means for each grade level, minority status, and condition code for intervention and control groups.

Table 13

Means of Condition Code, Minority Status, and Grade Levels

Group	Subgroup	*N*	5th grade reading	6th grade reading	7th grade reading	8th grade reading
Overall		4,208	300.03	306.55	312.30	307.72
			(60.60)	(61.39)	(58.21)	(49.47)
SpringBoard		2,140	311.01	313.52	322.15	314.23
Intervention			(55.31)	(57.39)	(53.44)	(46.51)
Historical		2,068	288.67	299.33	302.10	300.98
Control			(63.67)	(64.50)	(61.13)	(51.51)
SpringBoard	Minority	1,189	291.80	296.26	307.14	302.41
			(53.94)	(54.89)	(51.25)	(46.36)
	Nonminority	951	335.02	335.10	340.91	329.01
			(47.01)	(53.01)	(50.10)	(42.30)
Historical	Minority	1,002	258.84	269.72	279.30	281.45
Control			(59.93)	(61.14)	(60.37)	(51.29)
	Nonminority	1,066	316.72	327.17	323.53	319.35
			(53.55)	(54.40)	(53.65)	(44.50)

The overall sample size was 4,208 students comprising the intervention group (n = 2,140) and the control group (n = 2,068). The intervention sample size contained minority students (n = 1,189) and nonminority students (n = 951), and the historical group included minority students (n = 1,002) and nonminority students (n = 1,066).

The mean for the SpringBoard intervention cohorts progressively increased and was higher than the mean of the historical control cohorts. Additionally, the mean scores were higher for the minority students across each grade level that engaged in the intervention as opposed to the control group.

I performed multivariate analyses to test main effect and interactions. The variables under consideration included gender, minority status, and condition code when compared to the scores reported on the FCAT for the students in this study (see Table 14).

Table 14

Multivariate Tests for FCAT Scores, Gender, Minority Status, and Condition Code

Effect		Value	*F*	Hypothesis *df*	Error *df*	Sig.	Partial Eta Sq
FCAT scores	Pillai's Trace	.036	53.028[a]	3.000	4201.00	.000	.036
	Wilks' Lambda	.964	53.028[a]	3.000	4201.00	.000	.036
	Hotelling's Trace	.038	53.028[a]	3.000	4201.00	.000	.036
	Roy's Largest Root	.038	53.028[a]	3.000	4201.00	.000	.036
FCAT	Pillai's Trace	.009	12.650[a]	3.000	4201.00	.000	.009
scores *	Wilks' Lambda	.991	12.650[a]	3.000	4201.00	.000	.009
Gender	Hotelling's Trace	.009	12.650[a]	3.000	4201.00	.000	.009
	Roy's Largest Root	.009	12.650[a]	3.000	4201.00	.000	.009
FCAT	Pillai's Trace	.026	36.843[a]	3.000	4201.00	.000	.026
scores *	Wilks' Lambda	.974	36.843[a]	3.000	4201.00	.000	.026
Condition	Hotelling's Trace	.026	36.843[a]	3.000	4201.00	.000	.026
Code	Roy's Largest Root	.026	36.843[a]	3.000	4201.00	.000	.026
FCAT	Pillai's Trace	.072	108.245[a]	3.000	4201.00	.000	.072
scores *	Wilks' Lambda	.928	108.245[a]	3.000	4201.00	.000	.072
Minority	Hotelling's Trace	.077	108.245[a]	3.000	4201.00	.000	.072
	Roy's Largest Root	.077	108.245[a]	3.000	4201.00	.000	.072
FCAT	Pillai's Trace	.004	5.079[a]	3.000	4201.00	.002	.004
scores *	Wilks' Lambda	.996	5.079[a]	3.000	4201.00	.002	.004
Condition	Hotelling's Trace	.004	5.079[a]	3.000	4201.00	.002	.004
Code *	Roy's Largest Root	.004	5.079[a]	3.000	4201.00	.002	.004
Minority							

Partial Eta square is not dependent on how many factors there are, but provides the contribution of each factor as if it were the only variable (Tabachnick & Fidell, 2001). The analyses were used to document a significant main effect and interactions. The overall main effect of the FCAT scores were F= 53.03, $p < 01$, and $\eta_p^2 = .036$ (see Table

14). Additionally, differences in the means with gender and minority variables among the two condition codes had significant interactions.

ANOVAs are not robust for violations of sphericity, but can be corrected using certain statistical adjustments, such as Partial Eta Squared analyses (Tabachnick & Fidell, 2001). I performed within subject tests and used Partial Eta Squared (see Table 15) to document that the interaction between condition code and minority status was significant, as the minority student scores were consistently lower than nonminority student scores. However, results indicated that condition code influenced the interaction. The within subject factors revealed a positive interaction effect of gender and minority status between condition codes as significant ($p < .01$). The Greenhouse-Geisser and Huynh-Feldt corrected values for effects involving all variables were significant ($p < .01$) for gender, minority status, and condition codes.

Table 15

Tests of Within-Subjects Effects for FCAT, Gender, Minority Status, and Condition Code

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
FCAT scores	Sphericity Assumed	112274.79	3	37424.930	56.321	.000	.013
	Greenhouse-Geisser	112274.79	2.970	37800.351	56.321	.000	.013
	Huynh-Feldt	112274.79	2.975	37734.793	56.321	.000	.013
FCAT	Sphericity Assumed	26752.48	3	8917.495	13.420	.000	.003
scores *	Greenhouse-Geisser	26752.48	2.970	9006.948	13.420	.000	.003
Gender	Huynh-Feldt	26752.48	2.975	8991.328	13.420	.000	.003
FCAT	Sphericity Assumed	70177.69	3	23392.564	35.204	.000	.008
scores *	Greenhouse-Geisser	70177.69	2.970	23627.222	35.204	.000	.008
Condition	Huynh-Feldt	70177.69	2.975	23586.245	35.204	.000	.008
Code							
FCAT	Sphericity Assumed	223955.54	3	74651.848	112.345	.000	.026
scores *	Greenhouse-Geisser	223955.54	2.970	75400.702	112.345	.000	.026
Minority	Huynh-Feldt	223955.54	2.975	75269.933	112.345	.000	.026
FCAT	Sphericity Assumed	10631.09	3	3543.695	5.333	.001	.001
scores *	Greenhouse-Geisser	10631.09	2.970	3579.243	5.333	.001	.001
Condition	Huynh-Feldt	10631.09	2.975	3573.035	5.333	.001	.001
Code *							
Minority							
Error	Sphericity Assumed	8378538.81	12609	664.489			
(FCAT	Greenhouse-Geisser	8378538.81	12483.772	671.154			
scores)	Huynh-Feldt	8378538.81	12505.460	669.990			

In addition to Partial Eta Square, I observed the overall pattern of between subjects effects within the study (see Table 16) with particular attention concentrated on the condition code and minority status interaction. Tests of between subject effects provided evidence of a significant effect ($p < .01$) between gender, condition code, and minority status. There was a positive interaction effect ($p < .01$) between the condition code and minority status.

Table 16

Tests of Between Subject Effects

Source	Type III Sum of Squares	df	Mean Square	*F*	Sig.	Partial Eta Squared
Intercept	7.758E8	1	7.758E8	86044.982	.000	.953
Gender	258857.019	1	258857.019	28.711	.000	.007
Condition Code	1744254.088	1	1744254.088	193.461	.000	.044
Minority	7536736.261	1	7536736.261	835.926	.000	.166
Condition Code * Minority	199774.360	1	199774.360	22.158	.000	.005
Error	3.789E7	4203	9016.036			

To compensate for potential effect of the multivariate normality issues, I performed independent ANOVAs for each FCAT grade level. A sequence of four cross sectional ANOVAS were tested for each grade level and findings were used to confirm the results from the multivariate tests.

The inferential analyses performed yielded results confirming a mean increase of student achievement as reported on the reading section of the FCAT across all four grade levels for the SpringBoard intervention groups. The inferential analyses provided the support to reject the first null hypothesis that there would not be a difference with student academic student achievement after the intervention. Thus, it appears that the SpringBoard intervention contributes a modest positive effect on reading performance.

Preliminary Analyses for Second Hypothesis Test

Following the approach used in testing the first hypothesis, I once again performed Box's test of equality of covariance matrices, Mauchly's test of sphericity, and Levene's test of equality of error variances to explore violation of normality and homoscedasticity that might interfere with the interpretation of multivariate analyses. All three tests were significant ($p < .01$). Paralleling the previous analyses, as well as employing all of the previous adjustments applied in testing the first hypothesis, the data confirmed that the deviations of skew and kurtosis were statistically significant ($p < .01$) across the 4 years of AP participation.

Inferential Analyses for Hypothesis #2

$H_2$2: There will be an increase in minority student enrollment in AP throughout the 4 years of SpringBoard implementation based on the AP participation reports produced by the district's Data Warehouse.

I created charts for visual analyses of AP participation for Grades 9 through 12. Student enrollments in AP courses are depicted in Figures 5 through 9 by the intervention and control group for minority and nonminority students. The intervention group is about

3 times larger than control group due to the enrollment and demographic characteristics of the three project high schools; therefore, I used percentage of participation for graphical displays and visual analyses segmented by condition code and minority status.

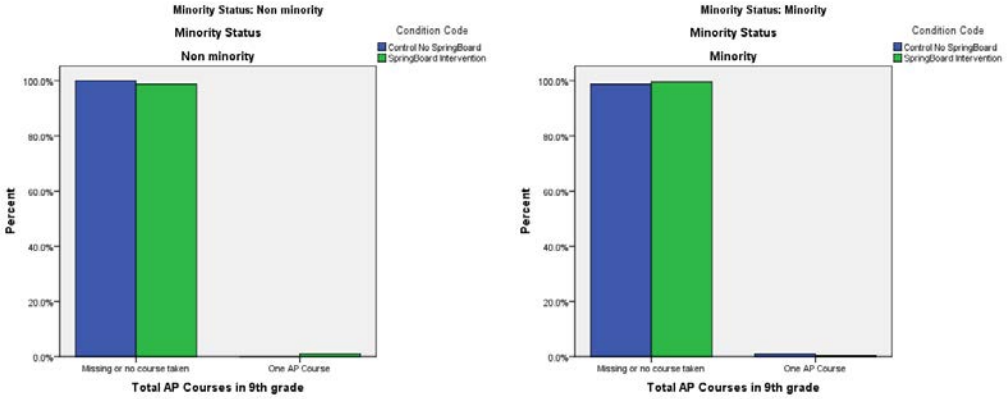

Figure 5. AP participation of ninth grade by minority status

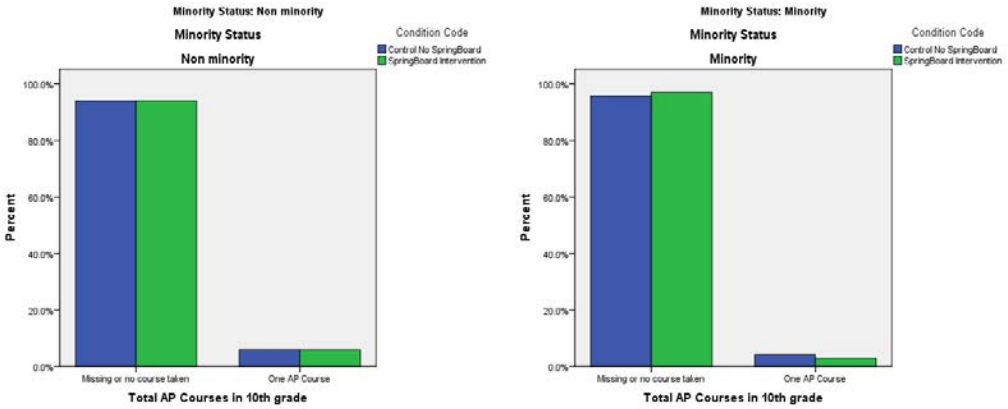

Figure 6. AP participation of 10th grade by minority status

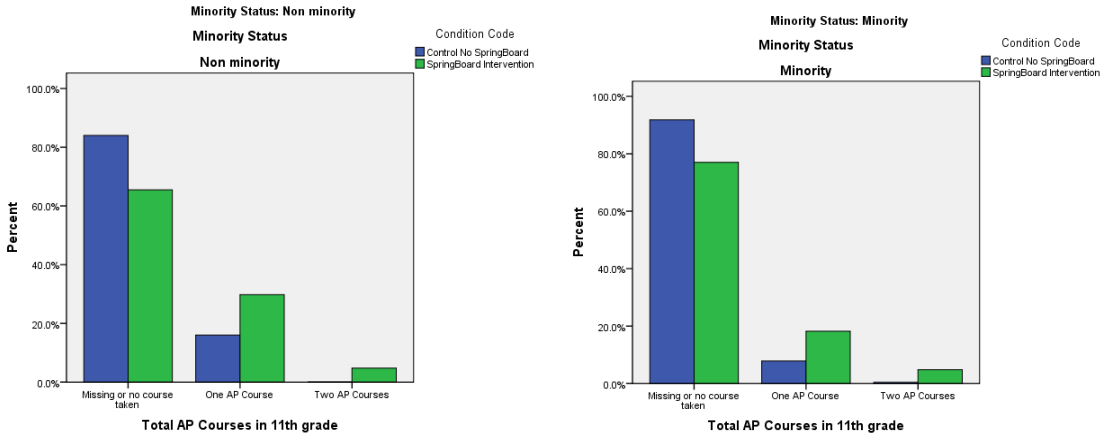

Figure 7. AP participation of 11th grade by minority status

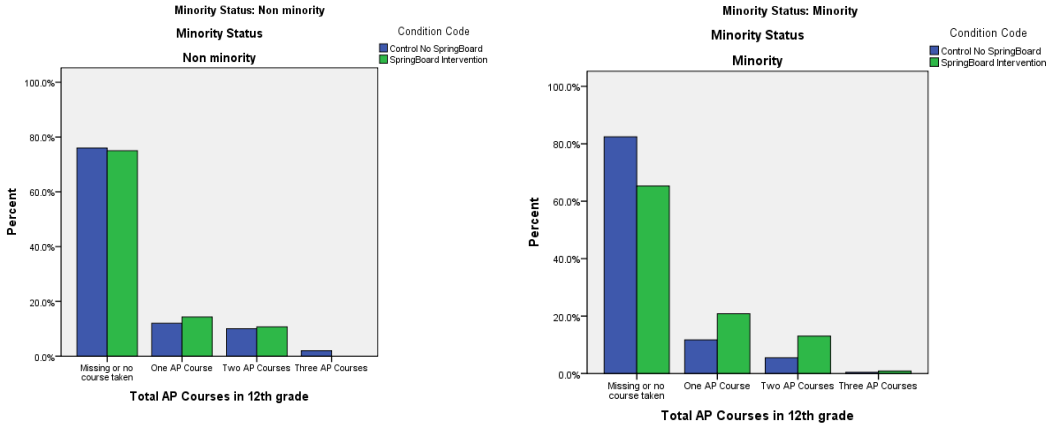

Figure 8. AP participation of 12th grade by minority status

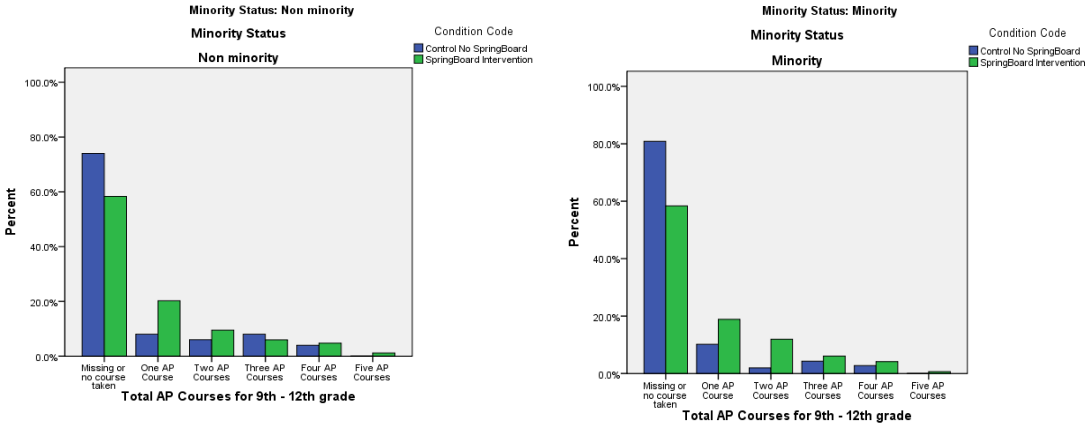

Figure 9. Total AP participation of ninth through 12th grades by minority status

The charts (Figures 5 - 9) show the degree to which students were enrolled in AP courses during their high school years. During the ninth and 10th grade years, students in this study participated in AP courses at the same rate regardless of the control or intervention. However, Figure 7 indicates confirmation to support that approximately 10 to 15% more students engaged with AP courses among minority students and nonminority students using SpringBoard during the 11th grade year. Additionally, AP participation continued to increase during the 12th grade year for minority students but remained the same for nonminority students. The overall AP participation rate for ninth through twelfth grade intervention group increased for minority and nonminority students by approximately 15%, as visually demonstrated in Figure 9.

I reported the descriptive statistic results (see Table 17) by number of AP courses taken for each grade level, minority status, and condition code of intervention or control groups. The overall sample size included 441 students encompassing the intervention group (n = 338) and the control group (n = 103). The intervention sample size included

minority status (n = 282) and nonminority status (n = 56), and the historical control group contained minority status (n = 80) and nonminority status (n = 23). The nonminority group (n = 23) was a small sample size, and even with the over sampling of students in this study, there were only 23 nonminority students that participated in AP courses at these high schools during the control group years.

Based on the descriptive analyses, the number of AP courses taken by minority students within the intervention group was higher than the control group and progressively increased from ninth grade through 12th grade. The most noticeable increase of AP participation occurred with the 12th grade minority intervention group (n = 160) as compared to the 12th grade minority control group (n = 45).

I performed multivariate tests (see Table 18) for AP participation to test for effects of condition code and minority status. Repeated measures ANOVA tested the second hypothesis and a sequence of 4 cross sectional ANOVAs tested each grade level. Findings from the cross sectional ANOVAs confirmed the results from the multivariable analyses. The analyses for the multivariate overall main effect for AP participation, Wilks Lambda = .97, $p < .01$, $\eta p2 = .028$, displayed a significant interaction for AP participation among all students; however, there was not a significant condition code X minority status interaction.

Furthermore, within subject tests were performed (see Table 19) and observed using Partial Eta Squared. Tests of within subjects documented a significant interaction between AP participation and condition code ($p < .01$), and a significant interaction between AP participation, condition code, and minority status ($p < .01$). Although the

interaction between AP participation and minority status was not significant, the condition code still revealed a significant interaction ($p < .01$) for all students in this study (Note; in this case a significant interaction would have been observed if the assumption of a normal distribution had been valid; however, the interaction failed to achieve significance once corrections were made for violations of normality and homoscedasticity). The Greenhouse-Geisser and Huynh-Feldt corrected values for effects involving all variables were significant for AP participation and condition code ($p < .01$) but not for AP participation, condition code, and minority status.

In addition to within subject tests, I observed the overall patterns of between subject effects (see Table 20) within the study, with particular attention concentrated on the condition code and minority status interaction. Tests of between subject effects provided evidence of a significant effect with condition code ($p < .01$) but not between subject effects for condition code X minority status interaction.

Furthermore, I performed univariate ANOVAs to test for significant effect of condition code that indicated an overall conditional effect; however, this effect is believed to be due to the list-wise panel sample size reduction. Also, there was not a significant interaction by condition code with the minority group.

Univariate ANOVAs demonstrated significant condition code and minority status interactions with 11th and 12th grades ($p < .01$). The 11th grade intervention group had significant main effects for condition code but not a main effect for minority status. Also, there was not a significant interaction between condition code and minority status.

With the 12th grade intervention group, a main effect was present for condition code but the interaction by condition code was not significant at the $p < .01$ level. Although the between subjects did not show significant effect with 12th grade, the univariate tests captured the effect between subject condition and showed this effect for the minorities in their 12th grade year.

A conspicuous lag effect was apparent in the visual inspection of Tables 17 through 20 indicating that the benefit of the intervention on AP participation was not realized until the 11th and 12th grade years. Additional one-way ANOVA analyses confirmed that the SpringBoard intervention exerted a lagged effect where significant differences between conditions began to emerge during the 11th grade. The lagged effect appeared to be further delayed within the minority condition. For example, Figure 8 illustrates that within the 12th grade students, more of an effect for condition was apparent within the minority group. The charts illustrate an overall increase of approximately 15 % with AP participation among the minority students.

Table 17

Number of AP Courses by Grade, Minority Status, and Condition Code

Group	Subgroup	*N*= Total AP courses	Ninth grade	10th grade	11th grade	12th grade
Overall		441	6	33	164	238
SpringBoard		338	3	19	135	181
Historical Control		103	3	14	29	57
SpringBoard	Minority	282	2	14	106	160
	Nonminority	56	1	5	29	21
Historical Control	Minority	80	3	11	21	45
	Nonminority	23	0	3	8	12

Table 18

Multivariate Tests for AP Participation, Minority Status, and Condition Code

Effect		Value	*F*	Hypothesis df	Error df	Sig.	Partial Eta Sq
AP Participation	Pillai's Trace	.143	46.972[a]	3.00	845.00	.000	.143
	Wilks' Lambda	.857	46.972[a]	3.00	845.00	.000	.143
	Hotelling's Trace	.167	46.972[a]	3.00	845.00	.000	.143
	Roy's Largest Root	.167	46.972[a]	3.00	845.00	.000	.143
AP Participation *	Pillai's Trace	.028	8.043[a]	3.00	845.00	.000	.028
Condition Code	Wilks' Lambda	.972	8.043[a]	3.00	845.00	.000	.028
	Hotelling's Trace	.029	8.043[a]	3.00	845.00	.000	.028
	Roy's Largest Root	.029	8.043[a]	3.00	845.00	.000	.028
AP Participation *	Pillai's Trace	.008	2.144[a]	3.00	845.00	.093	.008
Minority	Wilks' Lambda	.992	2.144[a]	3.00	845.00	.093	.008
	Hotelling's Trace	.008	2.144[a]	3.00	845.00	.093	.008
	Roy's Largest Root	.008	2.144[a]	3.00	845.00	.093	.008
AP Participation *	Pillai's Trace	.009	2.419[a]	3.00	845.00	.065	.009
Condition Code *	Wilks' Lambda	.991	2.419[a]	3.00	845.00	.065	.009
Minority	Hotelling's Trace	.009	2.419[a]	3.00	845.00	.065	.009
	Roy's Largest Root	.009	2.419[a]	3.00	845.00	.065	.009

Table 19

Within Subject Tests of AP Participation, Minority Status, and Condition Code

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Sq
AP Participation	Sphericity Assumed	35.263	3	11.754	80.060	.000	.086
	Greenhouse-Geisser	35.263	1.869	18.865	80.060	.000	.086
	Huynh-Feldt	35.263	1.880	18.758	80.060	.000	.086
AP Participation	Sphericity Assumed	3.410	3	1.137	7.741	.000	.009
* Condition	Greenhouse-Geisser	3.410	1.869	1.824	7.741	.001	.009
Code	Huynh-Feldt	3.410	1.880	1.814	7.741	.001	.009
AP Participation	Sphericity Assumed	.635	3	.212	1.442	.229	.002
* Minority	Greenhouse-Geisser	.635	1.869	.340	1.442	.237	.002
	Huynh-Feldt	.635	1.880	.338	1.442	.237	.002
AP Participation	Sphericity Assumed	1.829	3	.610	4.153	.006	.005
* Condition	Greenhouse-Geisser	1.829	1.869	.978	4.153	.018	.005
Code * Minority	Huynh-Feldt	1.829	1.880	.973	4.153	.018	.005
Error	Sphericity Assumed	373.064	2541	.147			
(AP	Greenhouse-Geisser	373.064	1583.249	.236			
participation)	Huynh-Feldt	373.064	1592.240	.234			

Table 20

Tests of Between Subject Effects for AP Participation, Minority Status, and Condition

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Sq
Intercept	44.746	1	44.746	144.328	.000	.146
Condition Code	2.776	1	2.776	8.955	.003	.010
Minority	.365	1	.365	1.178	.278	.001
Condition Code	.281	1	.281	.906	.341	.001
* Minority						
Error	262.596	847	.310			

Another repeated measure ANOVA was performed using only junior and senior year data to avoid the severe list-wise reduction in panel sample size caused by universally low AP participation in the freshman and sophomore years (see Table 21). There was a significant condition code X minority status interaction for junior and senior AP participation, Wilks Lambda = .99, $p < .01$, $\eta p2 = .008$. Furthermore, within subject tests were performed (see Table 22) and observed using Partial Eta Squared. Tests of within subjects documented the junior and senior AP participation as having significant interaction ($p < .01$) with the condition code X minority status..

Table 21

Multivariate Tests for Junior and Senior AP Participation

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Jun Sen AP	Pillai's Trace	.024	21.167[a]	1.000	847.000	.000	.024
	Wilks' Lambda	.976	21.167[a]	1.000	847.000	.000	.024
	Hotelling's Trace	.025	21.167[a]	1.000	847.000	.000	.024
	Roy's Largest Root	.025	21.167[a]	1.000	847.000	.000	.024
Jun Sen AP *	Pillai's Trace	.003	2.524[a]	1.000	847.000	.113	.003
ConditionCode	Wilks' Lambda	.997	2.524[a]	1.000	847.000	.113	.003
	Hotelling's Trace	.003	2.524[a]	1.000	847.000	.113	.003
	Roy's Largest Root	.003	2.524[a]	1.000	847.000	.113	.003
Jun Sen AP *	Pillai's Trace	.003	2.364[a]	1.000	847.000	.125	.003
Minority	Wilks' Lambda	.997	2.364[a]	1.000	847.000	.125	.003
	Hotelling's Trace	.003	2.364[a]	1.000	847.000	.125	.003
	Roy's Largest Root	.003	2.364[a]	1.000	847.000	.125	.003
Jun Sen AP *	Pillai's Trace	.008	7.086[a]	1.000	847.000	.008	.008
ConditionCode	Wilks' Lambda	.992	7.086[a]	1.000	847.000	.008	.008
* Minority	Hotelling's Trace	.008	7.086[a]	1.000	847.000	.008	.008
	Roy's Largest Root	.008	7.086[a]	1.000	847.000	.008	.008

Table 22

Within Subject Tests of Junior and Senior AP Participation

Source		Type III Sum of Squares	*df*	Mean Square	*F*	Sig.	Partial Eta Squared
Jun Sen AP	Sphericity Assumed	4.034	1	4.034	21.167	.000	.024
	Greenhouse-Geisser	4.034	1.000	4.034	21.167	.000	.024
	Huynh-Feldt	4.034	1.000	4.034	21.167	.000	.024
	Lower-bound	4.034	1.000	4.034	21.167	.000	.024
Jun Sen AP *	Sphericity Assumed	.481	1	.481	2.524	.113	.003
Condition	Greenhouse-Geisser	.481	1.000	.481	2.524	.113	.003
Code	Huynh-Feldt	.481	1.000	.481	2.524	.113	.003
	Lower-bound	.481	1.000	.481	2.524	.113	.003
Jun Sen AP *	Sphericity Assumed	.450	1	.450	2.364	.125	.003
Minority	Greenhouse-Geisser	.450	1.000	.450	2.364	.125	.003
	Huynh-Feldt	.450	1.000	.450	2.364	.125	.003
	Lower-bound	.450	1.000	.450	2.364	.125	.003
Jun Sen AP *	Sphericity Assumed	1.351	1	1.351	7.086	.008	.008
Condition	Greenhouse-Geisser	1.351	1.000	1.351	7.086	.008	.008
Code *	Huynh-Feldt	1.351	1.000	1.351	7.086	.008	.008
Minority	Lower-bound	1.351	1.000	1.351	7.086	.008	.008
Error	Sphericity Assumed	161.420	847	.191			
(Jun Sen AP)	Greenhouse-Geisser	161.420	847.000	.191			
	Huynh-Feldt	161.420	847.000	.191			
	Lower-bound	161.420	847.000	.191			

The small participation size of this cohort (minority and nonminority students engaging in AP courses) was challenging due to the demographics of the schools sampled. Even with the small sample size, there was consistent overall substantiation that provided evidence to question the validity of the null hypothesis; therefore, the null hypothesis was rejected. Inferential analyses performed resulted in data that demonstrated a progressive increase of AP participation for minorities, as reported across the high

school grade levels for the SpringBoard intervention groups. The inferential tests applied in this study did not lead to the definitive rejection of the null hypothesis regarding an increase of AP participation among the minorities in this cohort. However, there was consistent evidence with small but significant effect of an increase of AP participation through the visual analyses of the descriptive data, as well as significant interactions with junior and senior AP participation.

Inferential Analyses for Hypothesis #3

$H_{33}3$: There will be an increase in minority student AP performance throughout the 4 years of SpringBoard implementation, measured by AP student grades retained in the district's Data Warehouse.

To analyze AP performance scores, I used a sample population of 851 students encompassing the intervention group (n = 545) and the control group (n = 306). As previously noted, all controls for violations of normality were followed as described in the preceding sections.

I created charts for visual analyses of AP performance scores for Grades 9 through 12. The AP performance scores are depicted in Figures 10 through 14 by intervention and control group based on passing scores (students end of course score is 70% or higher) or failing scores (students end of course score is 69% or lower). Performance scores during the ninth through 12th grades did not display significant differences between the intervention group and control group. The 11th graders did exhibit a slight increase in the visual analyses; however, the trend did not continue, as the

pass and fail AP performance scores were equal for the 12th grade students within both cohorts.

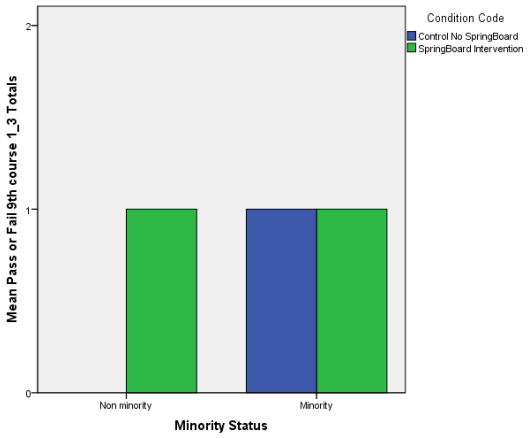

Figure 10. AP performance for ninth grade by condition code

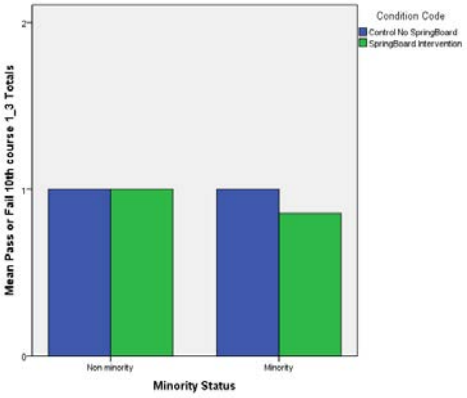

Figure 11. AP Performance for tenth grade by condition code

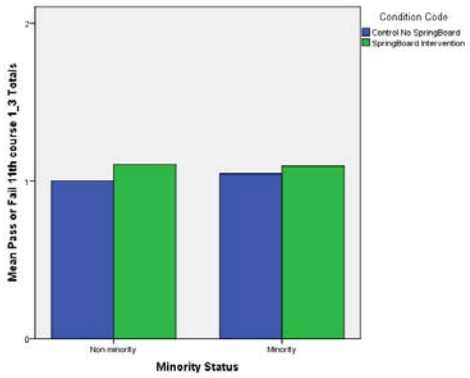

Figure 12. AP performance for 11th grade by condition code

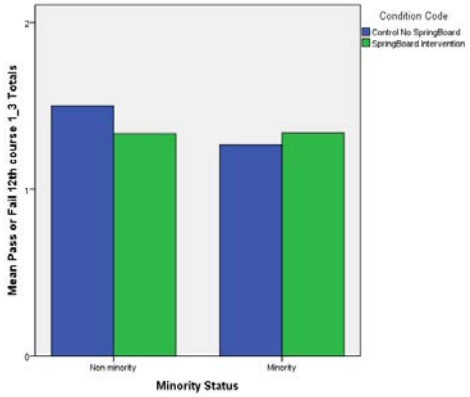

Figure 13. AP performance for 12th grade by condition code

Due to the low overall participation in AP courses in the ninth and 10th grades, I graphed the average number of successful AP completions across the 11th and 12th grades (see Figure 14). Although the differences are small, the following patterns are apparent. The minority and nonminority SpringBoard intervention group illustrate an overlap, indicating the consistent increase of AP performance from 11th to 12th grades within the intervention. Additionally, the intervention minority group showed consistently better

performance for AP passed courses than the control minority group. It should be noted that the control nonminority group (red line) is likely the least reliable expression of change due to the limited number of subjects (pre-post n = 8 and 12 respectively).

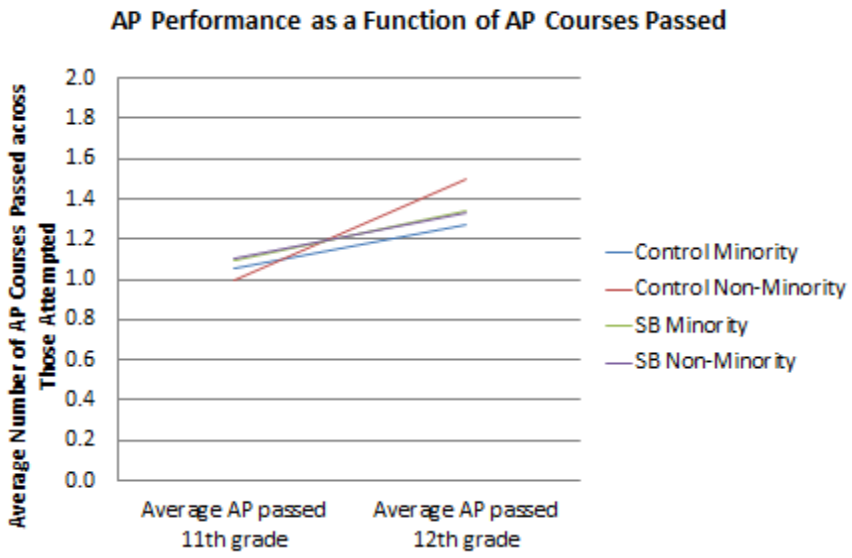

Figure 14. Junior and senior AP performance patterns

I performed multivariate tests for AP performance scores to test for effects of condition code. The analyses for the multivariate overall main effect for AP performance were not displayed because of insufficient residual degrees of freedom. Furthermore, within subject tests were performed and observed using Partial Eta Squared. Tests of within subjects were used to document the interaction between AP performance scores and condition codes. Similarly, to the previous findings, partial eta squared could not be calculated due to insufficient data.

In addition to within subject tests, the overall patterns of between subject effects were calculated to provide evidence of a significant effect with condition code. However, due to the low participation, significant results were not demonstrated.

Furthermore, I performed independent ANOVAs for each AP performance level to compensate for potential effect of the multivariate normality issues. The findings confirmed that there was not a significant difference for AP performance scores between the control group and intervention group.

Finally, I performed an Independent Samples *t* Test (see Table 23) to test the effects for AP participation and condition code. The results indicated that there was not any significant difference between the two groups. Although a greater percentage of the intervention students were attempting AP courses, no significant difference regarding AP performance between the two groups was observed.

Table 23

Independent Samples t Test for AP Performance and Condition Code

		Levene's Test for Equality of Variances		*t*-Test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	*df*	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pass or Fail tenth course 1-3 Totals	Equal variances assumed	7.949	.008	1.244	31	.223	.105	.085	-.067	.278
	Equal variances not assumed			1.455	18.000	.163	.105	.072	-.047	.257
Pass or Fail 11th course 1-3 Totals	Equal variances assumed	10.647	.001	-.694	162	.489	-.062	.089	-.238	.114
	Equal variances not assumed			-1.161	113.600	.248	-.062	.053	-.167	.044
Pass or Fail 12th course 1 to 3 Totals	Equal variances assumed	.916	.339	-.255	236	.799	-.021	.083	-.185	.143
	Equal variances not assumed			-.239	84.994	.812	-.021	.089	-.198	.156
Pass or Fail 9th - 12th course 1 to3 Totals	Equal variances assumed	3.709	.055	1.031	287	.304	.162	.157	-.147	.470
	Equal variances not assumed			.970	89.741	.335	.162	.167	-.169	.492

Because of the number of students who took AP courses within this project study and the requirements for the multipanel design analyses, repeated measures' tests could not be performed and reported. Due to the relatively low AP participation within the cohort high schools, insufficient data was available to perform multivariate repeated measures tests. Therefore, with subsequent evaluations, the AP participation and AP performance hypotheses will need to have a larger population with sufficient statistical power to effectively analyze data. Although the inferential tests applied in this study did not indisputably lead to the rejection of the null hypothesis regarding an increase of AP

performance scores among minority intervention students, the visual trend analysis provided sufficient evidence to question the validity of the null. Therefore, the null for hypothesis 3 was rejected due to lack of statistical power for the longitudinal panel analyses.

Strengths and Weaknesses shown in Results

The strength of this summative program evaluation was based on the availability of reliable data on pre intervention and post intervention measures over an 8 year time period within the district studied. There was consistency of subjects, as the entire population of middle and high school students' scores that fulfilled the requirement of continuous and uninterrupted attendance in the district during that time period were used. I performed extensive quantitative analyses and used the SPSS software for reliability of results. The summative program evaluation reported positive findings and showed a consistent correlation between the implementation of SpringBoard within this district with racial minority student achievement, AP participation, and AP performance scores.

One of the weaknesses in addressing the problem is that the results did not take into consideration other possible variables for the increase of academic achievement within the intervention years. Other initiatives within the district may have contributed to the increase of academic achievement, increase of AP participation, and increase of AP performance scores other than the ones studied in this first tier examination. Another limitation was that these results do not include any qualitative analyses that would inform the researcher about teachers and students' attitude, motivation, and compliance factored into the implementation of the SpringBoard intervention.

Section 5: Conclusions and Recommendations

Conclusions

The descriptive statistical analyses provided evidence that the SpringBoard cohorts improved their academic achievement using the intervention. The middle and high school intervention groups scored higher on the FCAT reading test based on the overall reading mean. Additionally, all subgroups (male/female, minority/nonminority, ELL/non ELL, ESE/non ESE, free or reduced lunch/non free or reduced lunch) obtained a higher reading mean on the FCAT. The middle school students showed mean gains across all ethnic groups (African American, Haitian Creole, Hispanic, Caucasian), and the high school students showed mean gains with the Hispanic and Caucasian populations. Pearson correlations revealed significant correlations for middle and high school students linking reading scores to condition code and all demographic factors were observed at the .01 levels. Also, AP participation rates showed a progressive increase, and AP mean performance scores increased across all subgroups within the years of the SpringBoard implementation.

Using multivariate inferential analyses, the SpringBoard intervention cohorts (eighth grade and 12th grade students that used this curriculum during FY07 – FY10) outperformed the historical control cohorts (eighth grade and 12th grade students that did not use SpringBoard during FY03 – FY06) as documented from analyses of the FCAT reading scores and AP participation rates. Across all subgroups (male/female, minority/nonminority, ELL/non ELL, ESE/non ESE, free or reduced lunch/non free or

reduced lunch), descriptive and inferential analyses indicated a mean increase of student achievement on FCAT reading scores for students who received the intervention.

In addition to the FCAT scores, AP participation rates were analyzed. The descriptive analyses showed that AP participation rates progressively increased within the years of SpringBoard implementation among all subgroups. By the 12th grade, the overall participation rates more than tripled among the male and female, minority and nonminority, ELL and non-ELL, ESE and non-ESE, and the free and reduced lunch subgroups.

Recommendations

The SpringBoard intervention obtained the goal of increasing student achievement for this district based on the pre intervention and post intervention statistical analyses presented in this summative program evaluation report. The program should be continued and extended wherever possible, so that all students are provided a rigorous instructional environment. Furthermore, building level administrators should continue to receive professional development regarding the best practices for usage of this curriculum and monitor to what extent teachers are utilizing the SpringBoard pre AP curriculum with the district's fidelity expectation.

As more students are exposed to the SpringBoard intervention, and more teachers are implementing the intervention with fidelity, the anticipation would be higher AP participation rate and higher AP performance scores. Following the logic model, as more students obtain higher levels of academic achievement, more students are prepared for the rigorous demands of AP coursework. Higher order thinking skills or critically

analyzing text is required. Only when students engage in curriculum that demands this output are students prepared to achieve at those levels.

In future research for this district, a school by school evaluation may provide valuable information. Certain schools may produce varying results using the same curriculum; therefore, individual schools could be analyzed for implications regarding professional development, administrator support, demographics, and teacher beliefs and how these factors relate to academic achievement at their sites. Fidelity of the implementation may be stronger at certain schools than others, and process focused evaluations of the program implementation could be employed to document significant contributing factors that predict any differential outcomes across educational units. Analyses of differentiated performances across specific schools and courses could provide information regarding factors that contribute to student success.

Section 6: Summary

Summary of Analyses

The foundational structure for academic achievement begins with successfully passing the state baseline reading test, as reading is fundamental to all areas of academic endeavors. Without the basic structure being intact, students are unable to obtain higher levels of advanced curriculum that enables them to successfully complete their postsecondary education. Statistical analyses in this study support the claim made by the College Board that SpringBoard increases academic achievement with regards to reading proficiency. In this district, the implementation of the SpringBoard intervention did increase academic achievement, as measured by the FCAT state reading test. Across all subgroups (male/female, minority/nonminority, ELL/non ELL, ESE/non ESE, free or reduced lunch/non free or reduced lunch) the mean was greater for all students who received the SpringBoard intervention as opposed to the historical control group.

The complexity of requisite factors underlying success increases as students move from fundamental skills (foundational skills assessed on the FCAT) to college readiness skills (higher level thinking skills essential for college). The next step in this progression is engaging in coursework to be prepared for college. Participation in advanced courses such as AP is critical to ensure successful completion of college. The overall AP participation rate for the 9^{th} through 12^{th} grade intervention group increased for minority and nonminority students by approximately 15%. More students attempted AP after the intervention, thus supporting the College Board claim that the use of SpringBoard increases AP participation.

In the final question of this study, I wanted to measure AP performance scores. Following the logic model for incremental increases, AP performance follows the participation of AP and would indicate mastery of the college readiness skills. Due to the relatively low participation of the three cohort high schools sampled, the patterns of improvement observed for the intervention group failed to achieve statistical significance. However, these trends will likely become significant as best practices in deploying higher order thinking competencies are defined and replicated.

The SpringBoard curriculum is too complex to assess all aspects of change model within one study. This first tier analysis illuminates the opportunity for student development as indicated with the positive progression from improved reading scores to increased AP participation to enhanced AP performance for racial minority students. At the foundational level, the intervention was successful, as academic achievement increased. The intervention is producing the desired results after the 4 year implementation period, as opportunities for improvement in AP participation and AP performance are relative to students' levels of academic achievement.

Based on the findings of this study, the implementation of the SpringBoard intervention displayed a positive impact on student achievement and AP participation. Additionally, the intervention is attaining the proposed goals and objectives of the district by meeting the needs of the minority student populations, as previously described, by participating in a rigorous instructional environment. The district implemented the SpringBoard curriculum as a systematic intervention to address the need for more

equitable enrollment within advanced courses. Based on the descriptive and inferential analyses performed, these goals have been obtained.

Curriculum Vitae

KRISTAL AYRES

EDUCATION and CERTIFICATION

2011 **Doctor of Education,** Focus on Administrative Leadership**,** Walden University

2011 **Educational Leadership Certification**, Florida State Department of Education

2008 **National Certification, Trainer, SpringBoard English /Language Arts,** The College Board

2007 **Exceptional Education Certification,** Florida State Department of Education

1992 **Master of Education, Reading K – 12,** University of Central Florida

1989 **Bachelor of Science, Elementary Education**, University of South Florida

PROFESSIONAL EXPERIENCE

- **Co-Director of AVID and Coordinator of Advanced Studies Programs for AP Laureate and SpringBoard,** Administrative Office, 2007 - present
- **SpringBoard Instructional Coach and Consultant** for the College Board, New York, 2010 - present
- **Reading Coach and Reading Resource Teacher,** Naples, Florida, 2006 - 2007
- **Reading Teacher,** Naples, Florida, 1995 - 2006
- **Adjunct Professor of Humanities,** Embry Riddle Aeronautical University, Daytona Beach, Florida, 1993 - 1995
- **Reading Specialist,** Mainland High School, Daytona Beach, Florida, 1994 - 1995
- **Elementary Educator,** Horizon Elementary, Port Orange, Florida, 1989 - 1994

SUPPORTIVE DATA

Special Skills

- **Quantitative Program Evaluations**: Currently in the process of conducting educational research to be published in 2012
- **Writing computer webinars**: College Board administrator training
- **Federal Grant Writing**: Part of team to write and manage the 2009 AP Initiative Grant for Collier County Public Schools
- **Grant Relations**: Part of team to manage 2006 Advanced Placement Initiative Grant from federal government
- **Technology Expert in the following areas:** SPSS quantitative analyses system, Excel, Power Point, and all Microsoft Office products
- **Personal Qualities**: Organized, strategic/critical/analytical thinker, proactive, communicator, personable, goal-oriented, and intrinsically driven
- **Applicant Screening**: Screen candidates for Human Resource Department for positions within the Advanced Studies Department
- **Web Design**: Created and maintained various webpages to support district staff

Professional Training Received

- 2011- Administrator training for the Cambridge University (AICE) program.
- 2011 - Administrator training for Robert Marzano's teacher evaluation model
- 2010 - College Board Instructional Coach/Consultant/and National trainer
- 2009 - AVID District Director Certification
- 2009 - Florida Department of Education **FAIR** Train the Trainer
- 2009 - RTI: Response to Intervention Model courses
- 2009 - SpringBoard Administrative Leadership Institute, Dallas, Texas

Community and Professional Involvement

- College Board Advisory Council Member in New York, NY, 2008 - present
- Team facilitator for seven SpringBoard Lead Teachers within the district
- Advanced Placement Laureate District Coordinator for the Laureate Program
- Curriculum/Literacy Map Writing for middle and high schools in English/Language Arts

- Choir Director at First Baptist Church of Bonita Springs, Florida
- Member of the National Association for Teachers of English, International Reading Association, and ASCD

Awards/Accomplishments

- 2011 - Presenter at the National College Board Forum, New York, NY
- 2011 - Presenter at the Learning Forward Conference, Anaheim, CA
- 2011 - Presenter at the National Advanced Placement Conference, San Francisco
- 2010 - Highlighted in College Board National Newsletter for district wide systemic implementation and management of the SpringBoard program in raising AP scores
- 2009 - Presenter at The College Board Regional Forum, Atlanta, GA
- 2008 - College Board National Trainer status for the College Board programs

Staff Development Delivered

- Current: Manager and Trainer for SpringBoard and AVID curriculum for middle/high ELA teachers: Design, arrange, supervise, organize and monitor the SpringBoard and AVID institutes for the professional development of teachers (SpringBoard Curriculum in 26 schools and AVID curriculum at 7 sites)

- Current/on-going: Supervised, organized, and monitored the SpringBoard Training of over 250 teachers of Middle and High School English/L.A. for Collier County Public Schools

- 2007 - 2001: Conducted variety of workshops for the teachers throughout the district: New Blooms Higher Order Thinking, Differentiated Instruction, Scoring with Rubrics, etc.

- 2008 - current: Organized and trained all of CCPS's Assistant Principals and Principals of Middle and High School (48 administrators) on the Administrative Components of SpringBoard